



# Thank you for joining us today for the Joint Regulatory Plan Review Stakeholder Meeting



All participants have been joined in “listen only” mode.

For meeting audio, you can use your microphone and speakers (VoIP) or call in using your telephone at **877-309-2074**.

Access code: **808-265-564**

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# BEFORE WE BEGIN



This webinar is scheduled for two hours. We have left time for questions.



All participants will be muted during the presentation.



Questions can be submitted via the Go To Webinar “Questions” screen at any time.



This webinar is being recorded.



We will post slides on our website after the meeting today.



HARRIS-GALVESTON



SUBSIDENCE  
DISTRICT



FORT BEND  
SUBSIDENCE DISTRICT

# 2023 JOINT REGULATORY PLAN REVIEW

Stakeholder Meeting 6

September 8, 2022

# KEYS STAKEHOLDER ENGAGEMENT OPPORTUNITIES



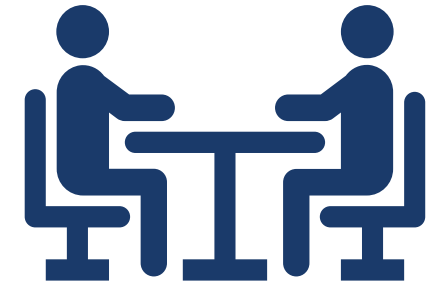
Meeting attendance and project awareness



Providing data for technical analyses



Providing feedback on draft material



Participating in targeted outreach efforts

# 1

## Develop Population and Demand Projections

Develop projections of population and water demand over a ten-county area through the year 2100.



# 2

## Conduct Alternative Water Supply Assessment

Review alternative water supplies for the capability of reducing future groundwater demand.



# 3

## Develop the Gulf Coast Land Subsidence and Groundwater Flow Model

Development of the GULF-2023 model for simulating regional groundwater flow and subsidence in the Gulf Coast Aquifer.



# 4

## Evaluate Regulatory Scenarios

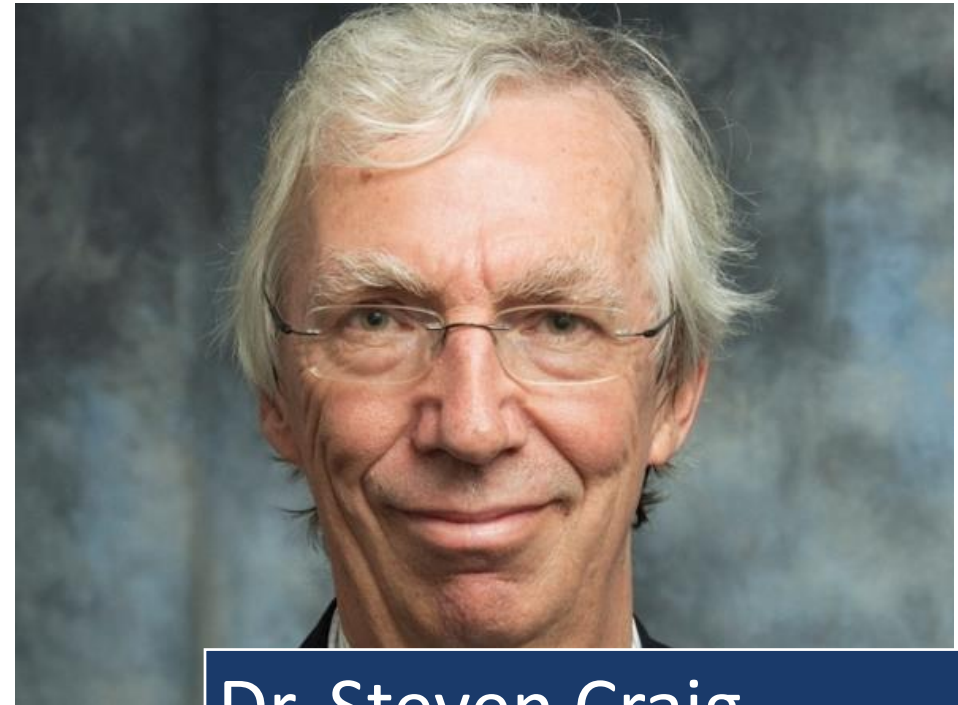
Evaluate the performance of the HGSD and FBSD regulatory plans and consider refinements to the regulatory plan framework to accommodate future growth, alternative water supplies, and the most recent aquifer science.



# TODAY'S SPEAKERS



**Jason Afinowicz**  
• Freese and Nichols



**Dr. Steven Craig**  
• University of Houston



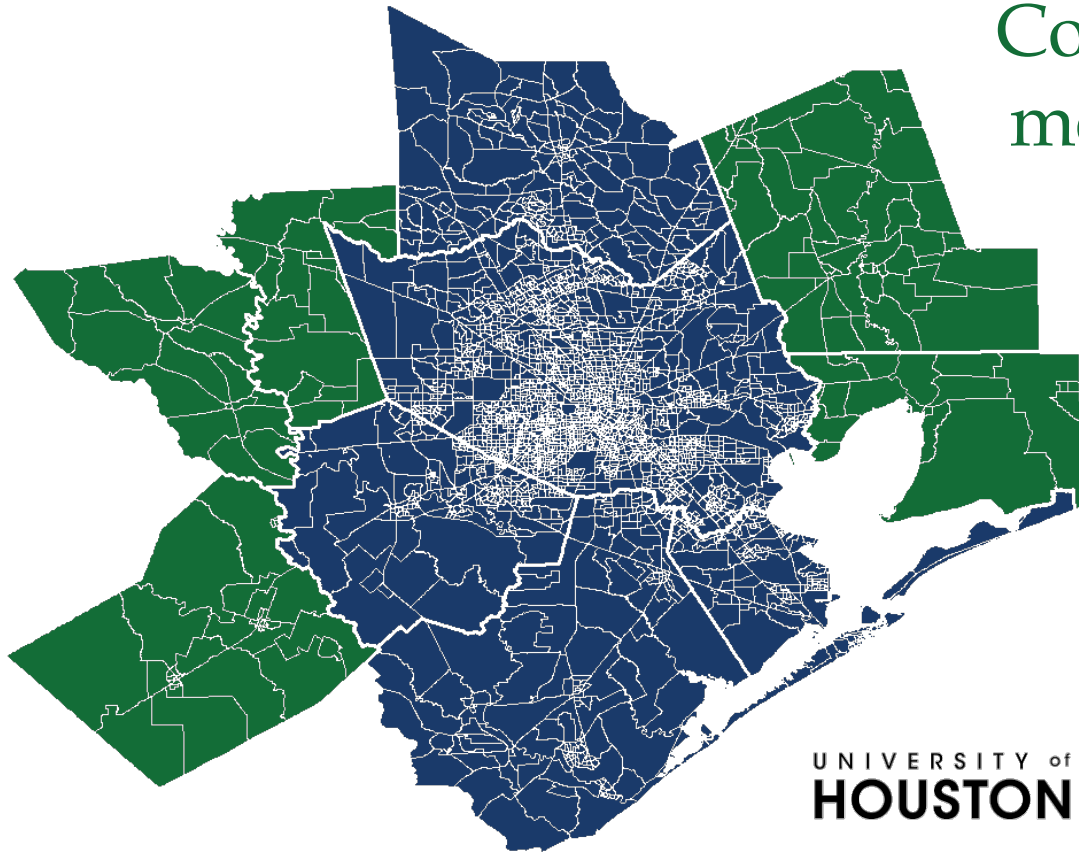


PROJECT  
ELEMENTS

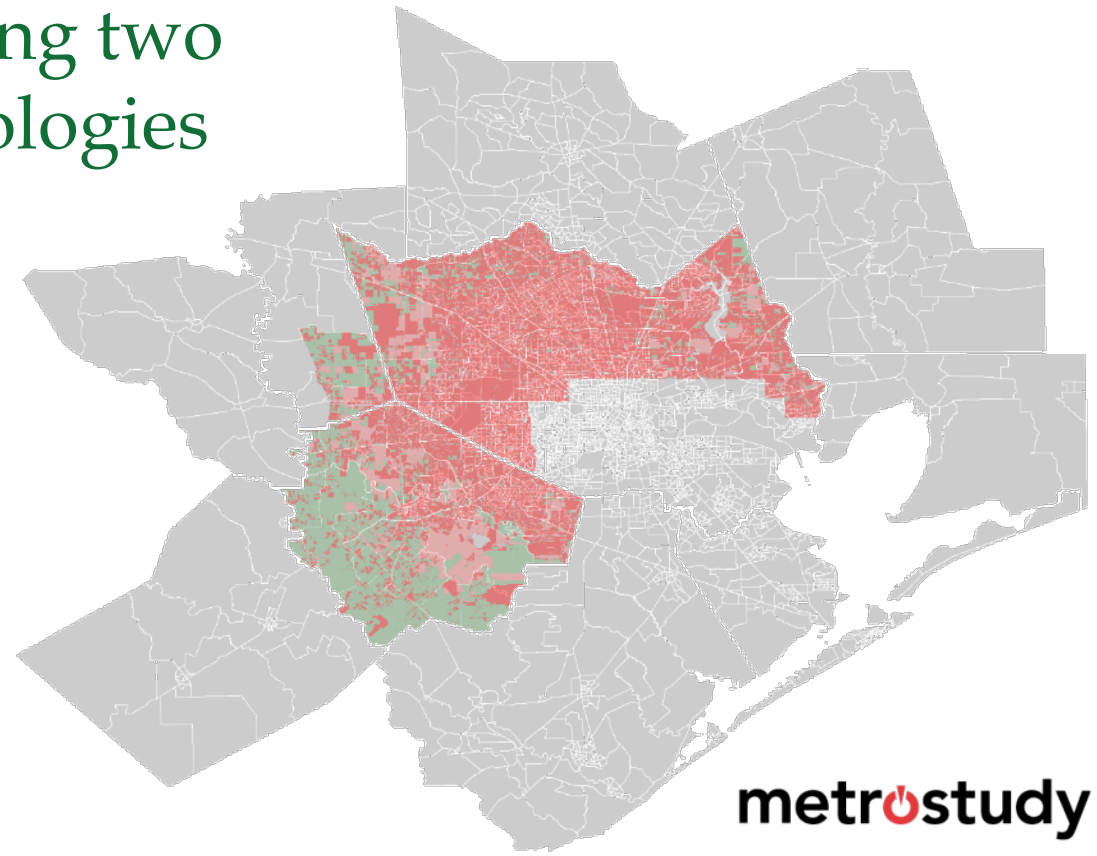
# Population Projections

# POPULATION PROJECTIONS

Combining two methodologies



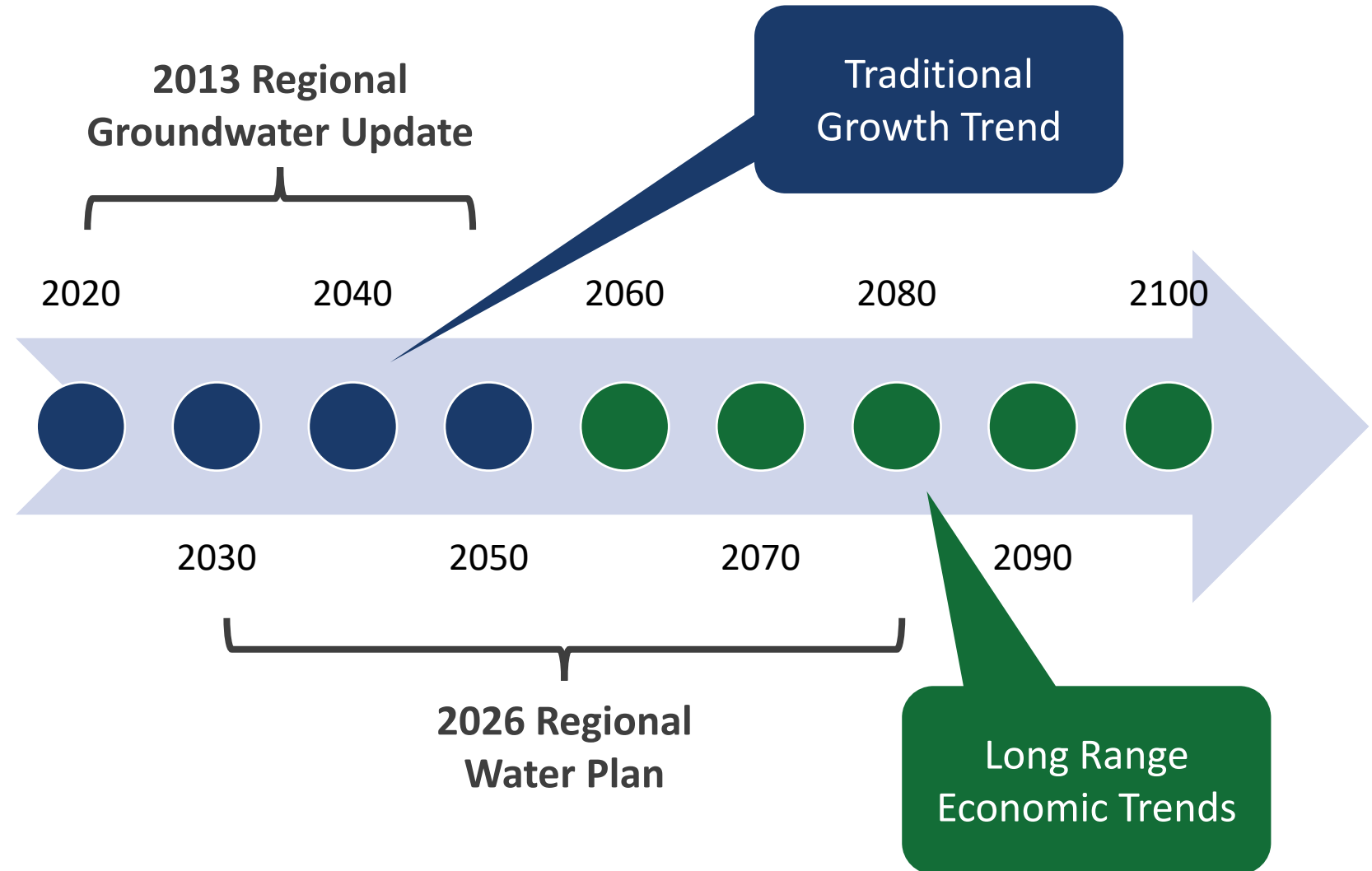
Small Area Model Houston (SAM-Houston)  
Long-range, wide-area projections



Projected Development Methodology  
Short-range, detailed projections



# TRENDS



# POPULATION PROJECTIONS

Petroleum industry is an essential part of Houston's economy

Illustrated by COVID slowdown and economic distress

US oil prices would have increased without fracking

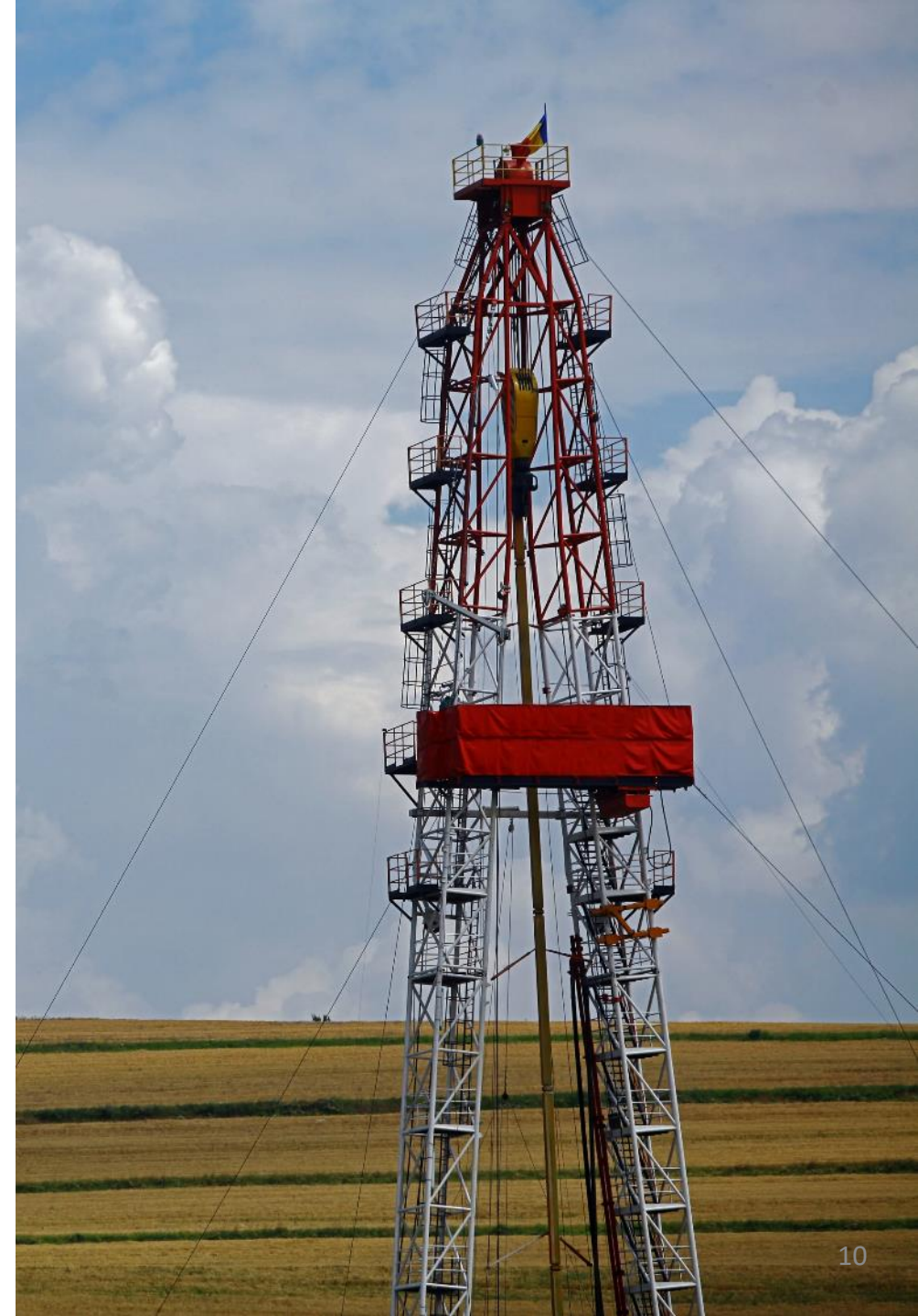
\$125/bbl in 2020 forecasted in 2000

Houston significantly benefitted from technological change

May not occur again soon

Oil forecasts not available past 2050

Lack of clear direction



# POPULATION PROJECTIONS

70% of Petroleum production is used in transportation

Petroleum demand will be reduced globally which may impact:

- Oil exploration
- Houston's high-tech geology and related employment
- Transportation of hydrocarbon products (e.g., pipelines)



# Urban Case Studies

① St. Louis ② Birmingham ③ Pittsburgh ④ Cleveland

## DEVELOPING LONG-TERM TRENDS

Center city growth slows  
when main industries  
begin to decline

Suburban  
growth  
continues

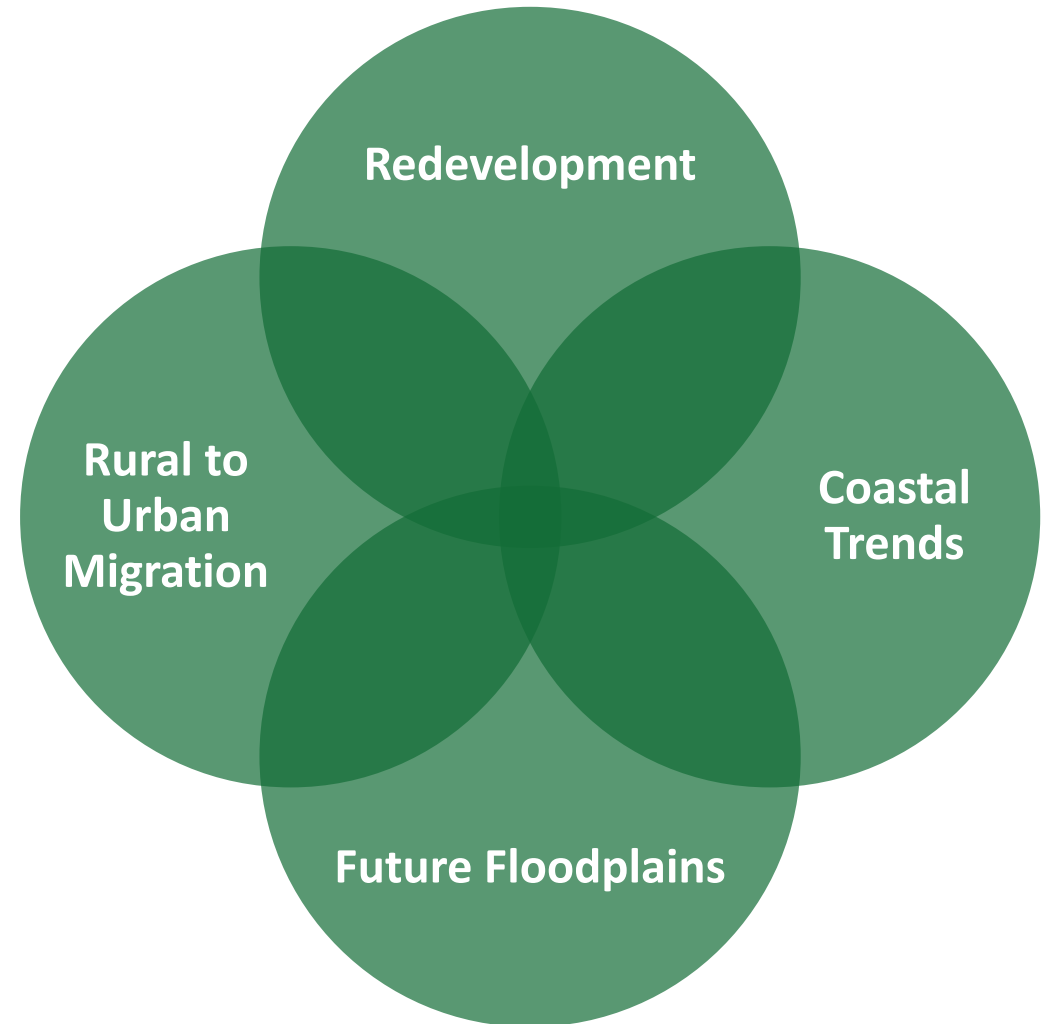
Slow reaction  
in public sector  
to economic  
change

Reduction in  
average firm  
size

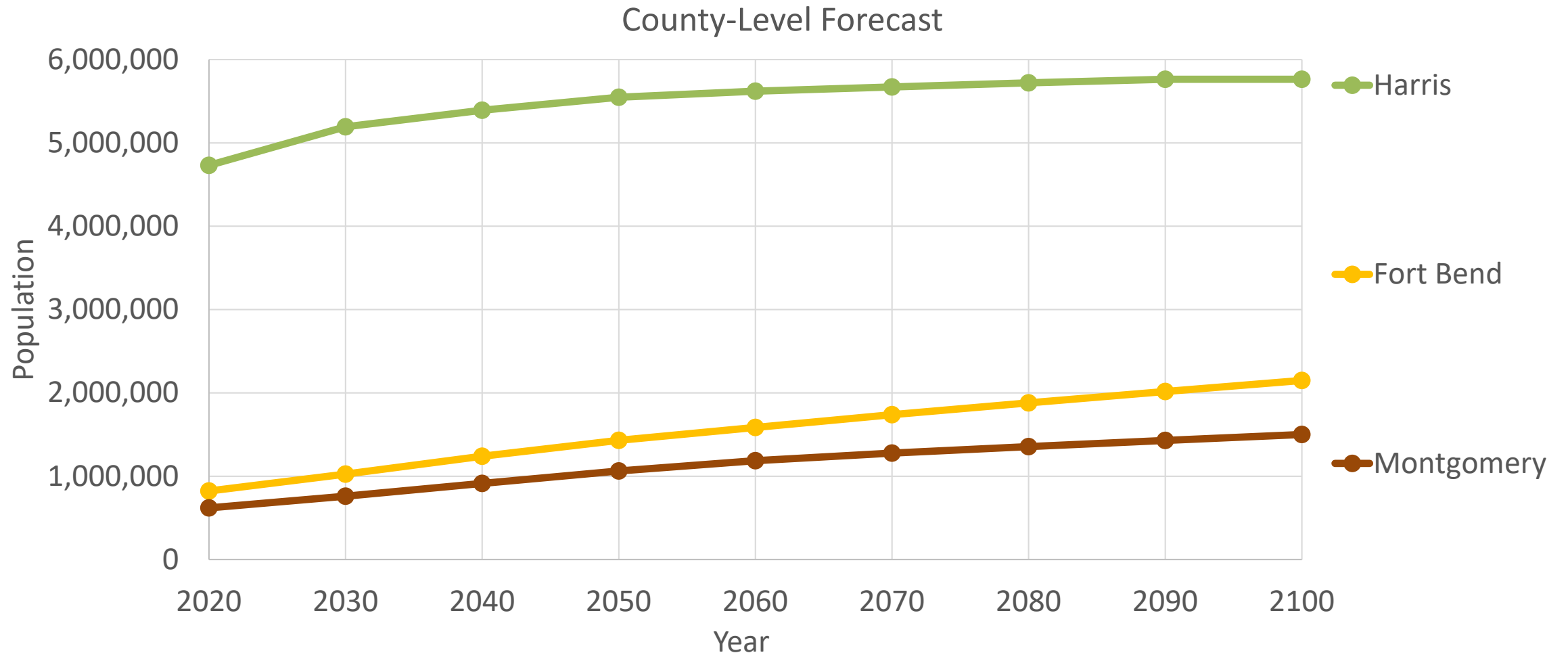
At a more  
modest pace

# POPULATION PROJECTIONS

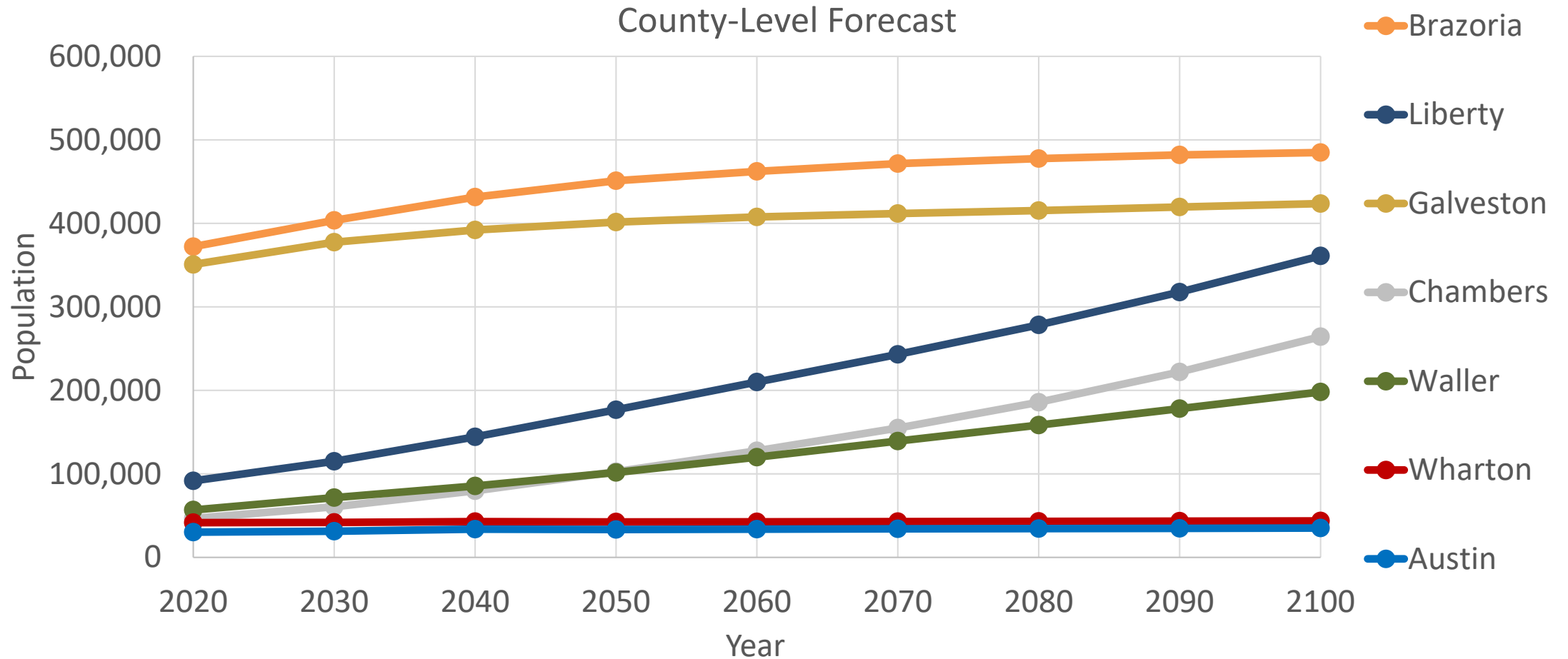
## Other Trends



# POPULATION PROJECTIONS

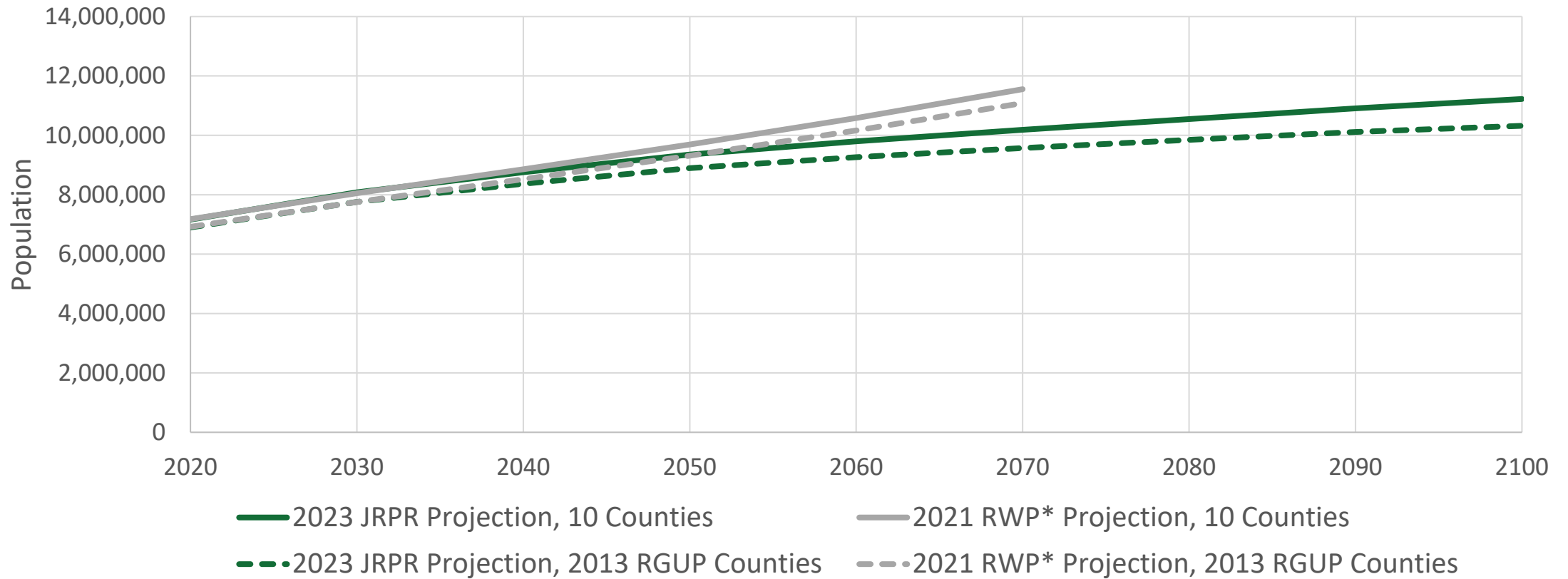


# POPULATION PROJECTIONS



# POPULATION PROJECTIONS

## Comparison to Previous Projections



*\*2021 RWP and 2016 RWP used projections developed in 2013 RGUP for Brazoria, Harris, Galveston, Montgomery, and Fort Bend Counties, with only slight modifications (<0.01%).*

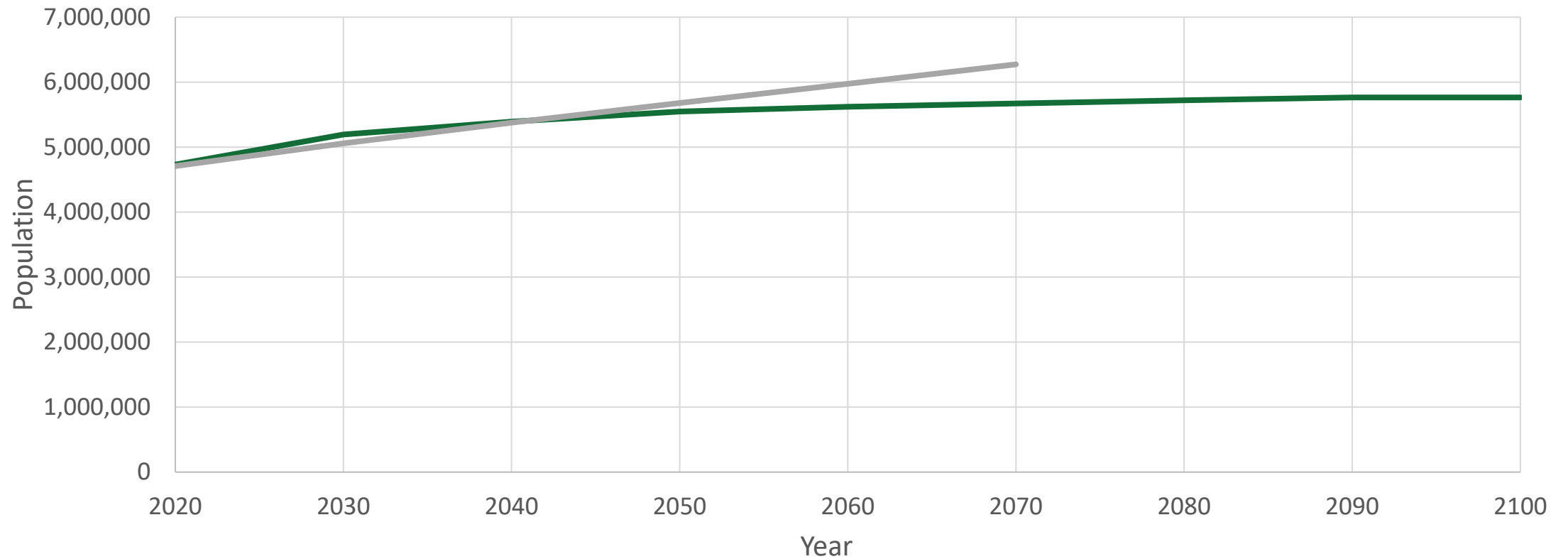


# POPULATION PROJECTIONS

## COMPARISON TO PREVIOUS PROJECTIONS

Harris

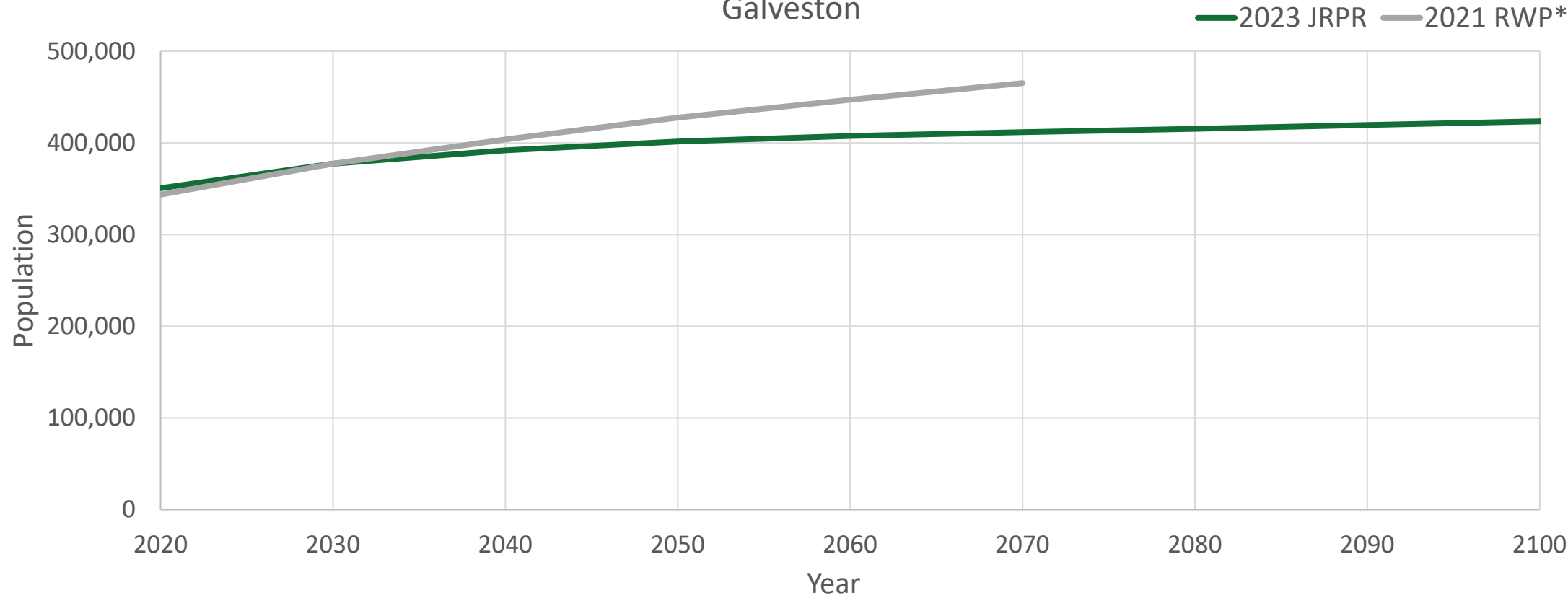
— 2023 JRPR — 2021 RWP\*



# POPULATION PROJECTIONS

## COMPARISON TO PREVIOUS PROJECTIONS

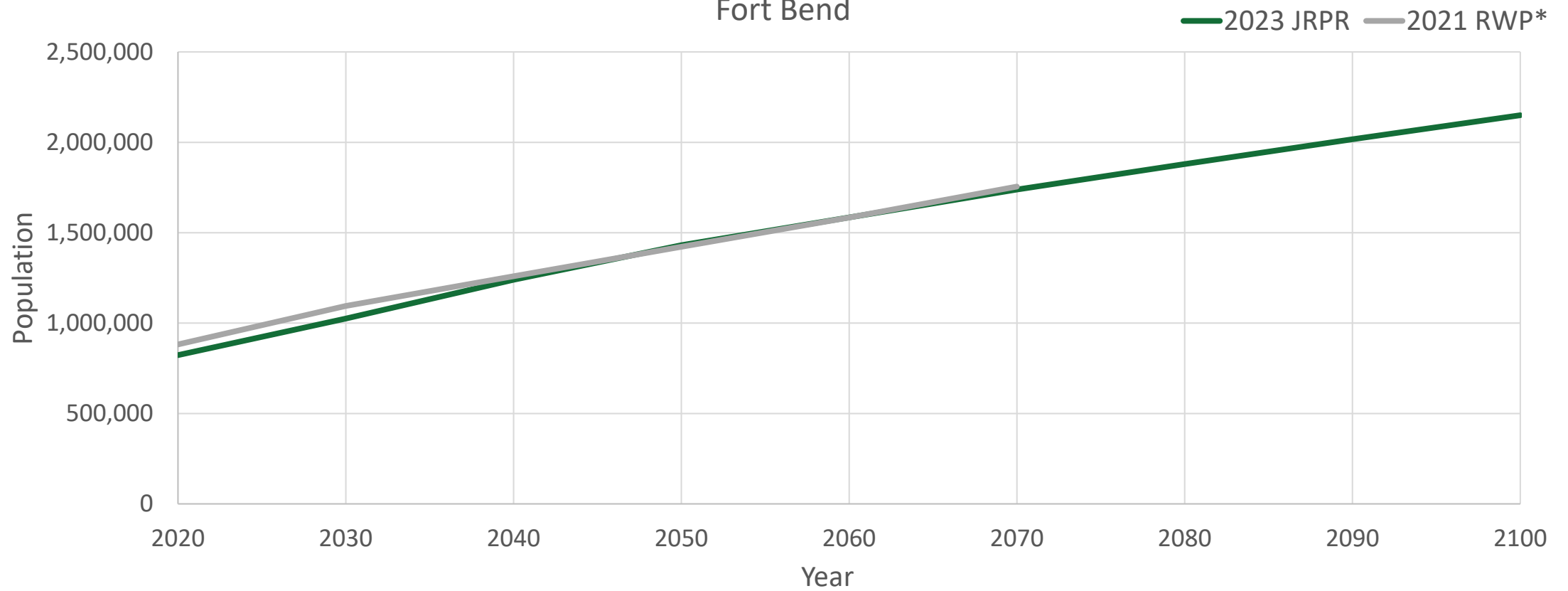
Galveston



# POPULATION PROJECTIONS

## COMPARISON TO PREVIOUS PROJECTIONS

Fort Bend



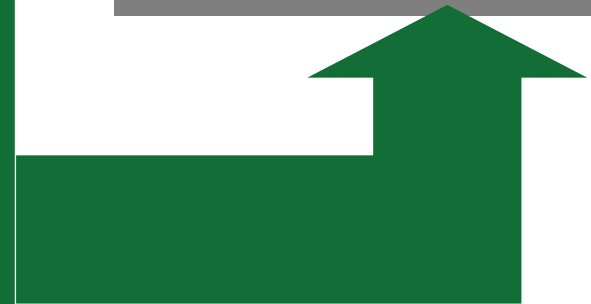
PROJECTIONS  
AT VARYING  
SPATIAL  
SCALES

Census Tracts



Census Blocks

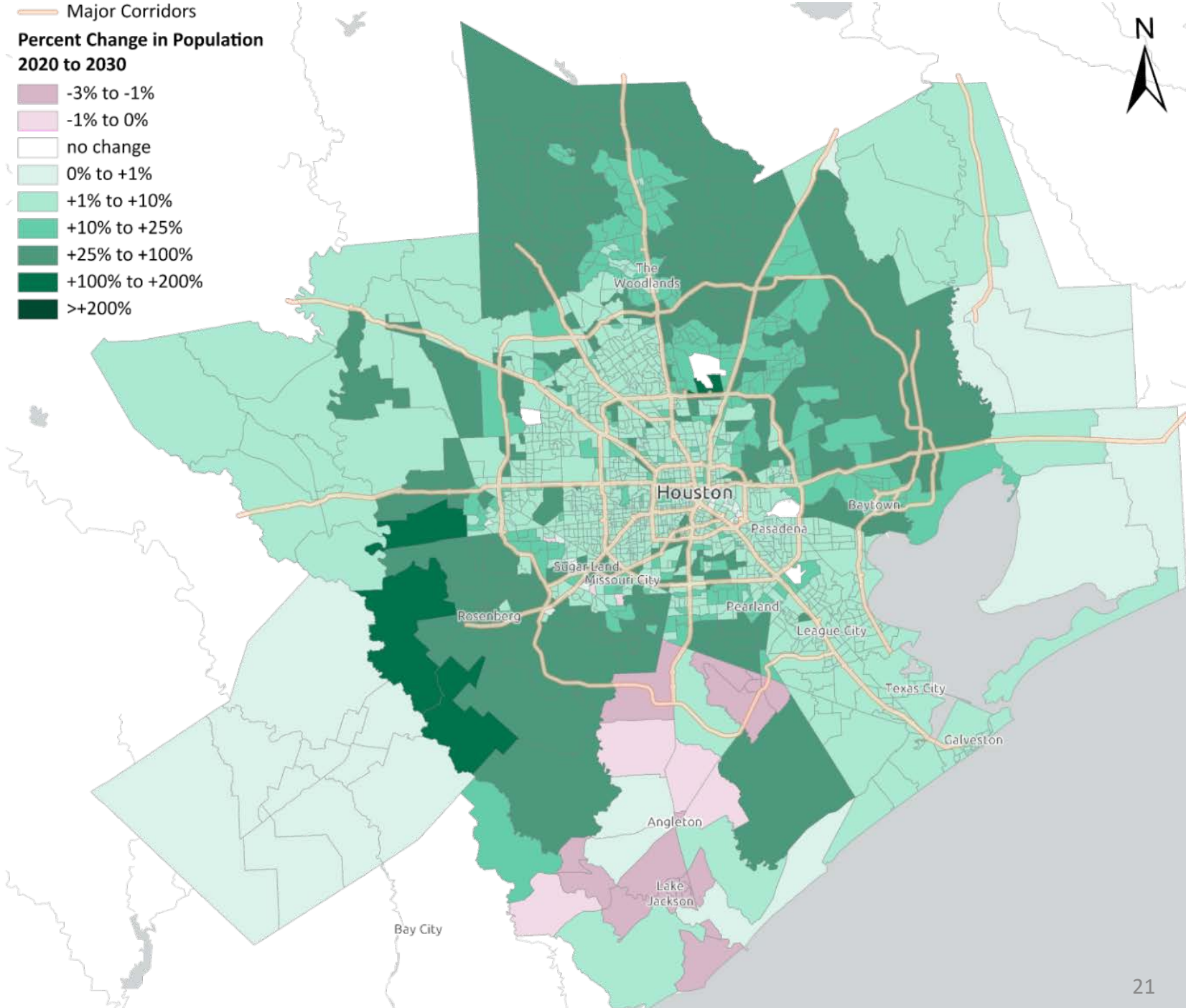
Utilities



# POPULATION GROWTH FORECAST 2020 TO 2030

## Percent change in population by census tract

	<u>2020</u>	<u>2030</u>	<u>% Change</u>
Austin	30,167	31,300	+4%
Brazoria	372,031	403,497	+8%
Chambers	46,571	60,631	+30%
Fort Bend	822,779	1,025,010	+25%
Galveston	350,682	377,403	+8%
Harris	4,731,145	5,193,657	+10%
Liberty	91,628	115,074	+26%
Montgomery	620,443	759,919	+22%
Waller	56,794	71,599	+26%
Wharton	41,570	41,827	+1%

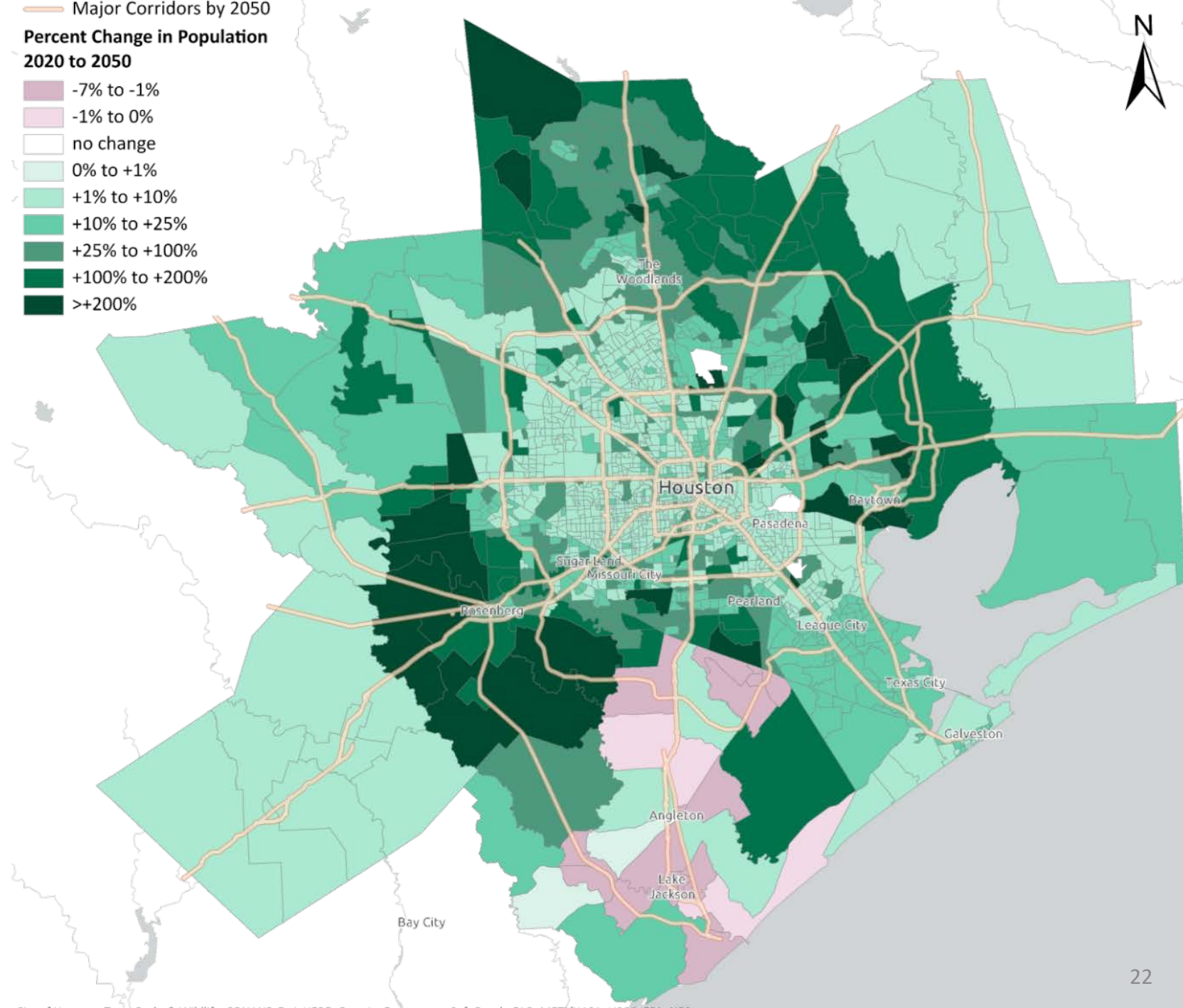


City of Houston, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, Foursquare, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

# POPULATION GROWTH FORECAST 2020 TO 2050

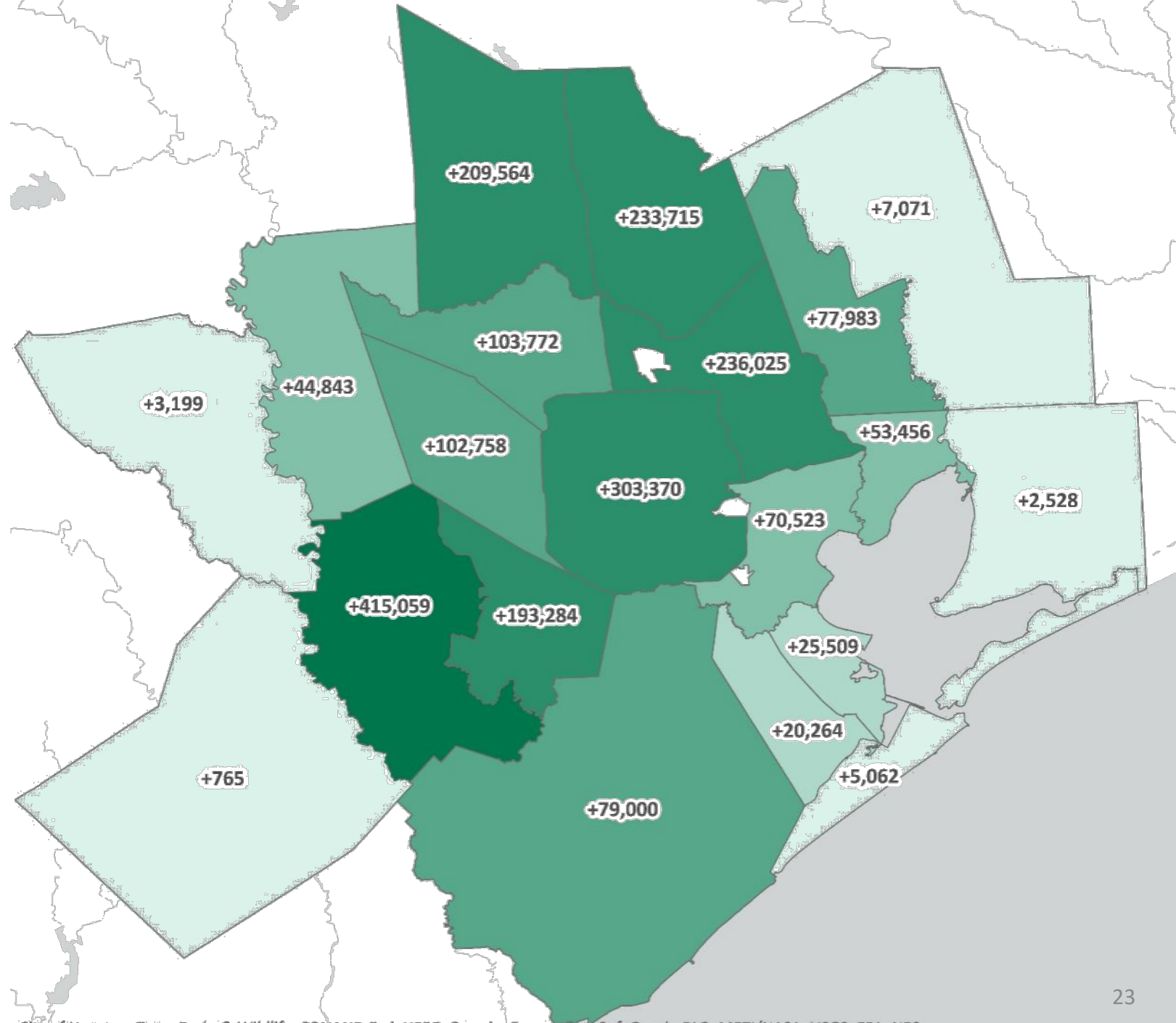
## Percent change in population by census tract

	<u>2020</u>	<u>2050</u>	<u>% Change</u>
Austin	30,167	33,366	+11%
Brazoria	372,031	451,031	+21%
Chambers	46,571	102,555	+120%
Fort Bend	822,779	1,431,122	+74%
Galveston	350,682	401,517	+14%
Harris	4,731,145	5,547,593	+17%
Liberty	91,628	176,682	+93%
Montgomery	620,443	1,063,722	+71%
Waller	56,794	101,637	+79%
Wharton	41,570	42,335	+2%



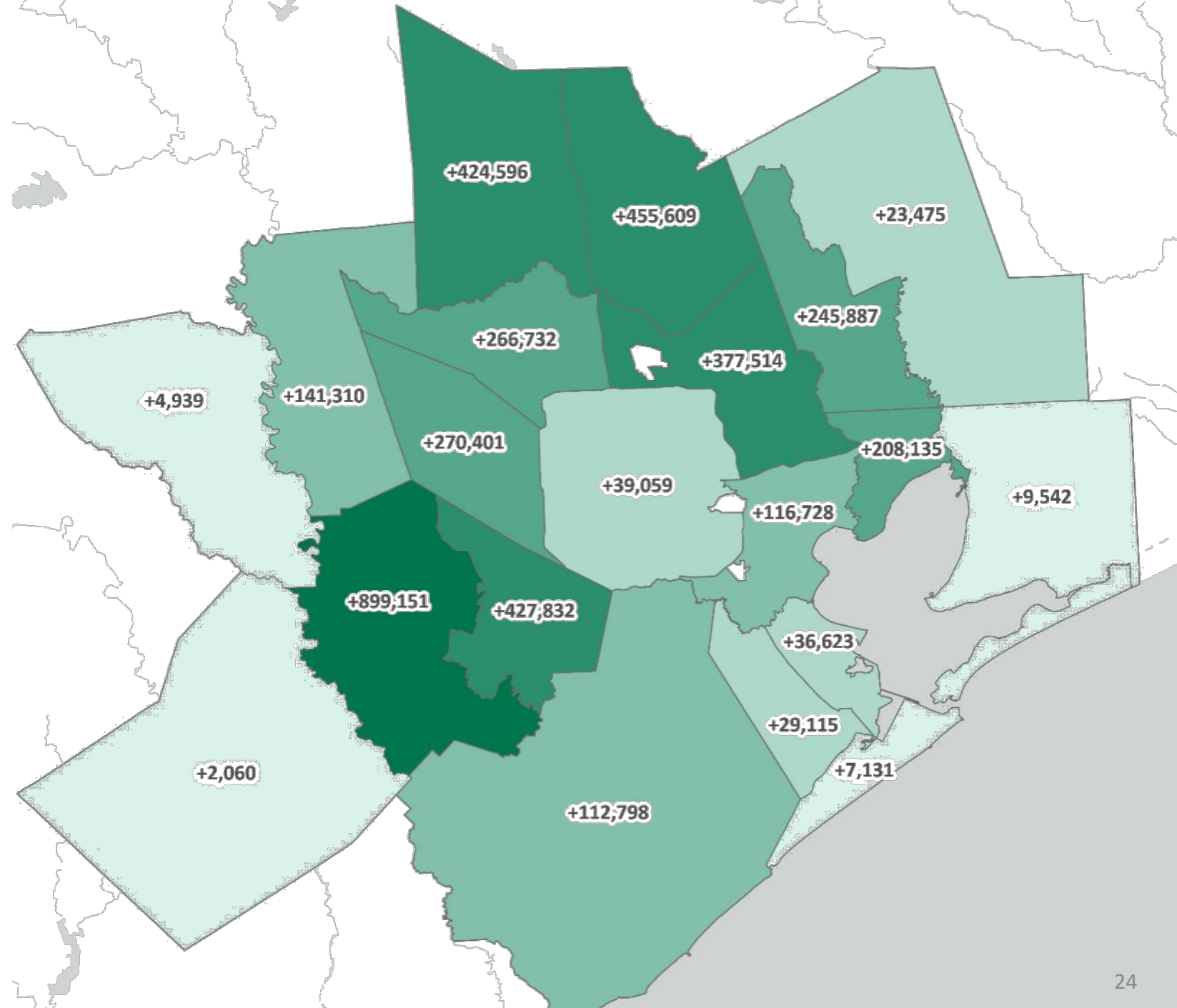
# POPULATION GROWTH FORECAST 2020 TO 2050

Magnitude of growth  
in population



# POPULATION GROWTH FORECAST 2020 TO 2100

Magnitude of growth  
in population

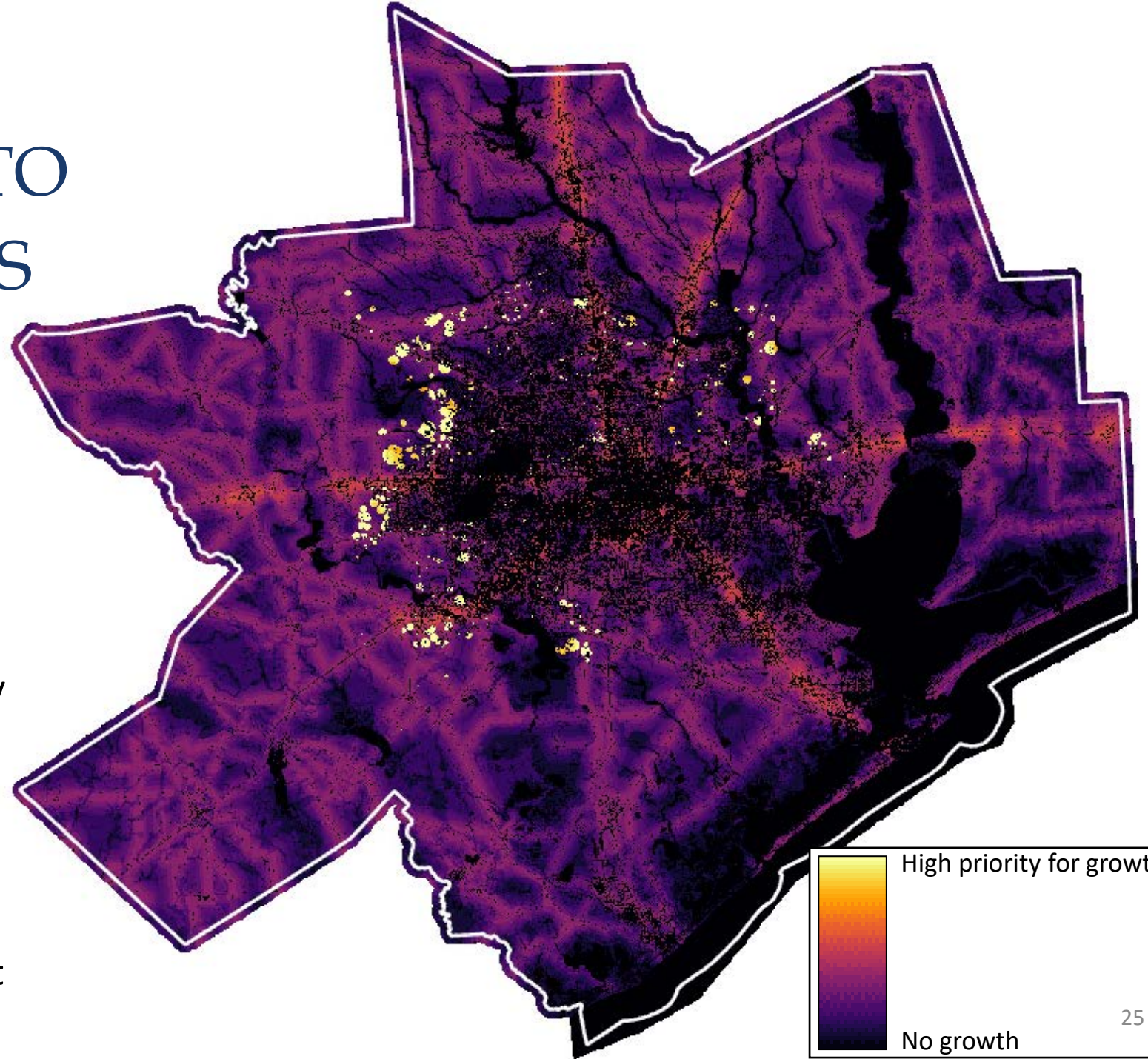




# DISTRIBUTION TO CENSUS BLOCKS

Within tracts, growth is distributed based on:

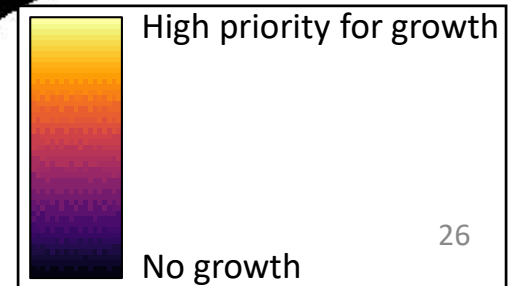
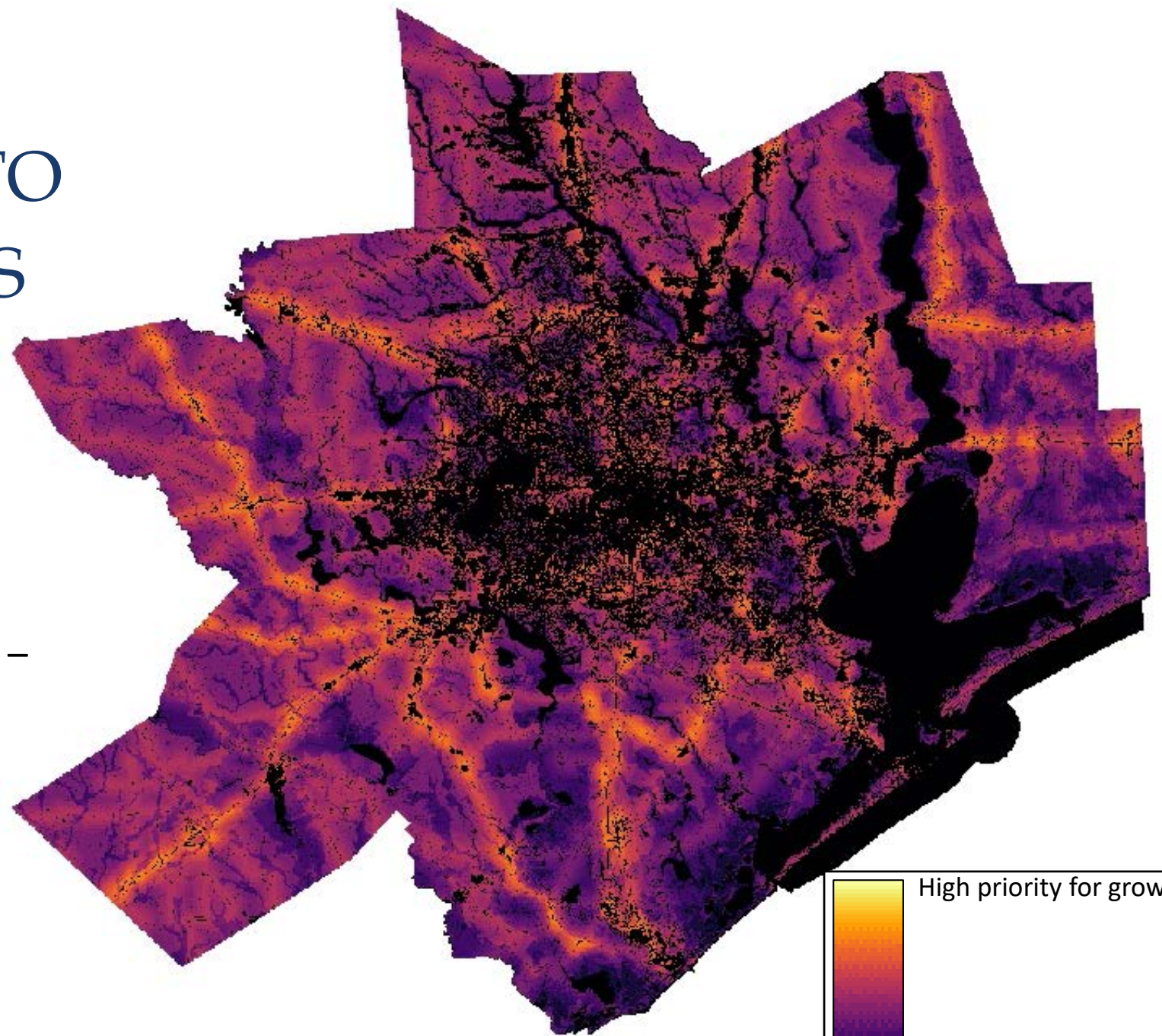
- Near-term development (2020-2030, Metrostudy)
- Interstate and highway proximity
- Wetlands
- Floodplains
- Existing and recent development



# DISTRIBUTION TO CENSUS BLOCKS

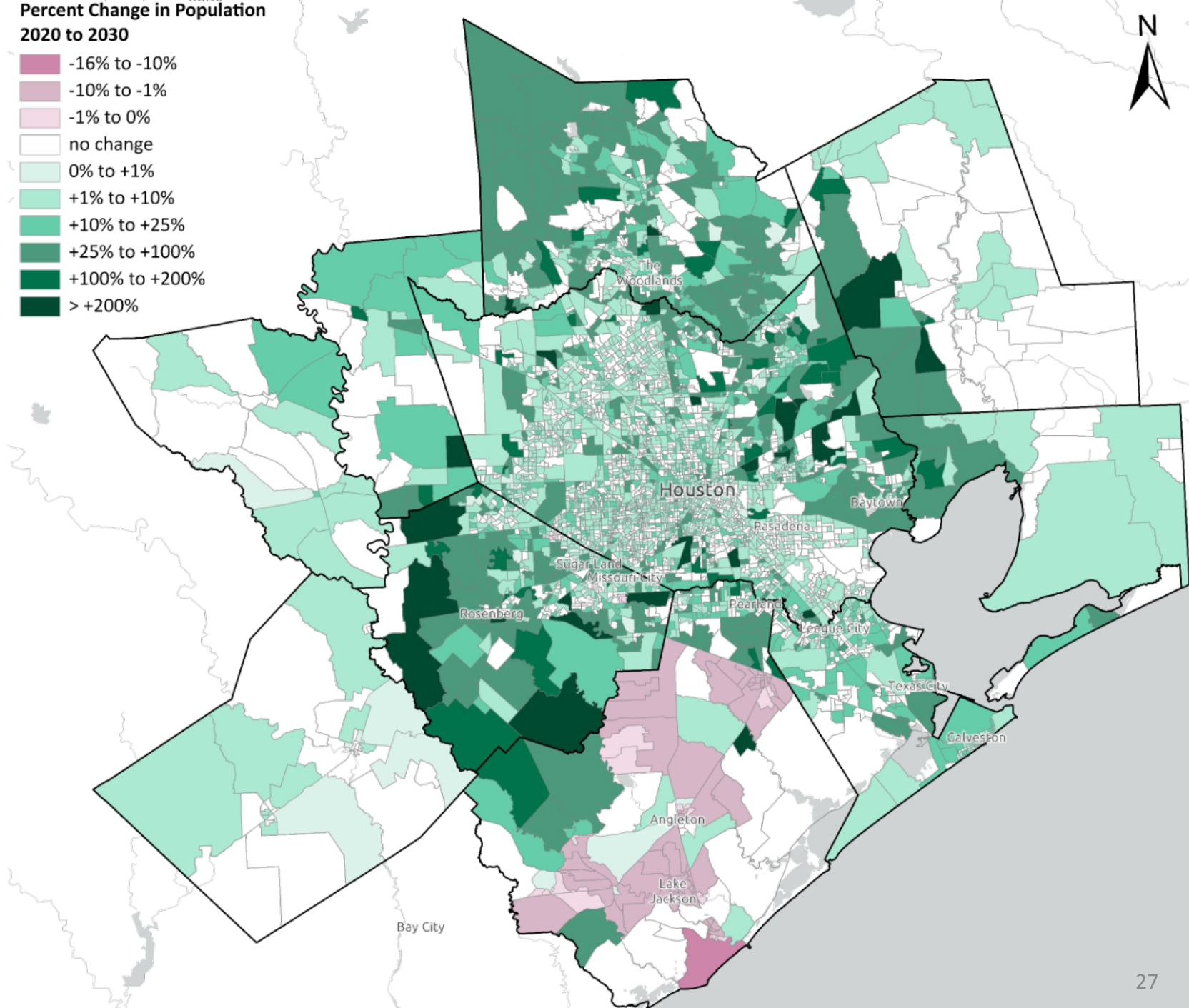
Distribution after 2030:

- Less certainty about precise development locations
- Interstate and highway proximity – **expansion of major corridors**
- Wetlands
- Floodplains – **potential changes**

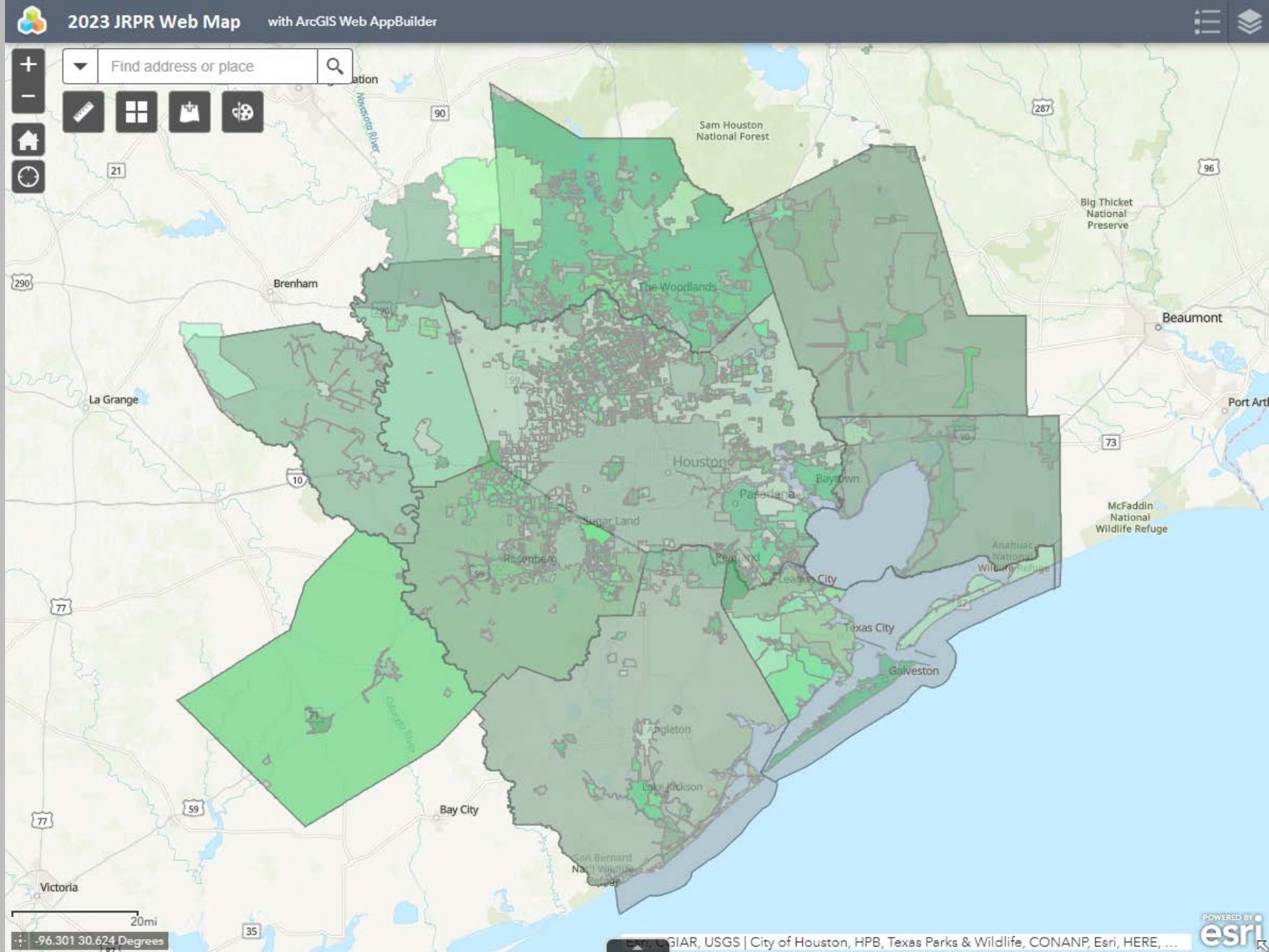


# POPULATION GROWTH FORECAST 2020 TO 2030

Percent change by block group



# STAKEHOLDER ENGAGEMENT





# SCHEDULE AND NEXT STEPS



## GULF 2023 Model

## Projected Water Needs

## Alternative Water Supplies

## PRESS Assessment

## Water Use Scenarios

2020

Model Conceptual Report

Methodology, Model Updates

Overview of Alternatives

PRESS Model Validation

2021

Complete Model Update

Population and Demand Projections

Technical Characterization, Final Report

2022  
**STATUS**

Complete Model Update

Direct Stakeholder Process, Final Projections

Scenario Development

2023

Scenario Testing

Scenario Testing, Recommendations

# UPCOMING MILESTONES

**Q3 2022**

Population projections stakeholder outreach

**Q4 2022**

Baseline Scenario development and execution

**Q1 2023**

Baseline Scenario evaluation

# QUESTIONS AND ANSWERS







# Thank you for attending the Joint Regulatory Plan Review Stakeholder Meeting



**We appreciate your interest and  
engagement in this meeting.**