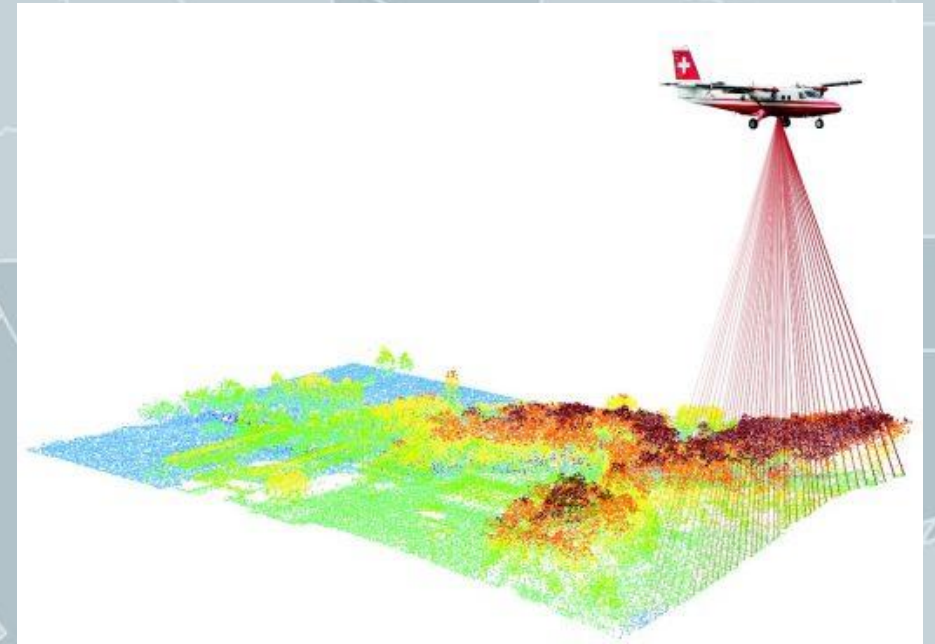
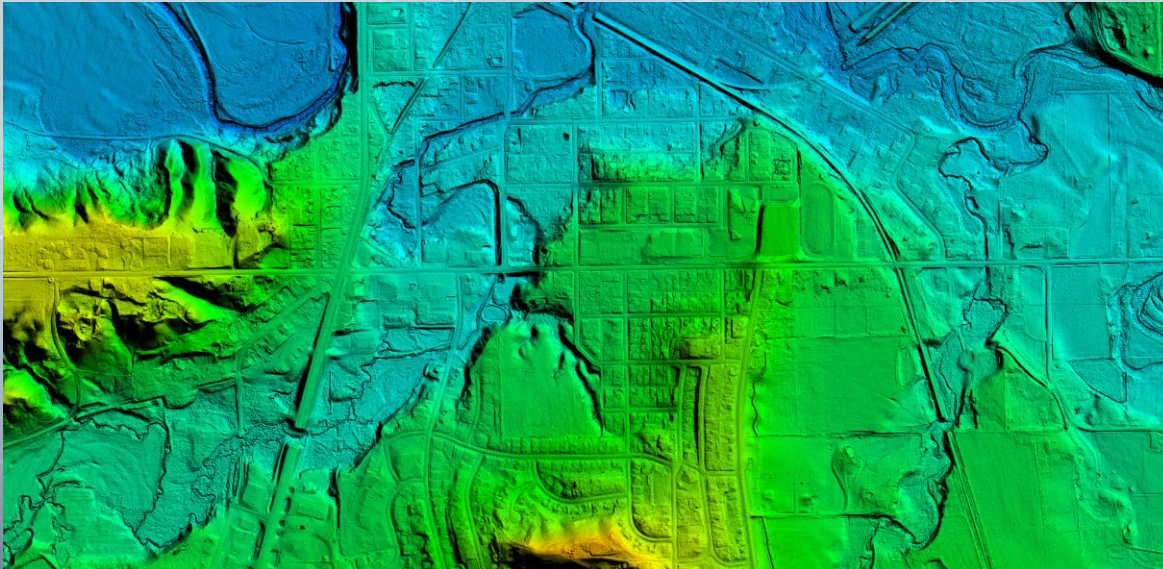


# **2024 H-GAC LiDAR and Aerial Imagery Cost-Share Program Updates**

**Thushara Ranatunga**  
**GIS Program Lead**  
**Houston-Galveston Area Council**

# Lidar Explained

- **L**ight **D**etection **a**nd **R**anging
- High-frequency laser scanning
- Airborne, mobile, or stationary
- High-resolution topographic data (3-D point cloud > Elevation Models)



- FEMA Risk Mapping, Assessment and Planning (RiskMAP)
- USGS 3D Elevation Program (3-DEP)

# 2024 Lidar Scope

- Resolution / Point Density (USGS Quality Levels):

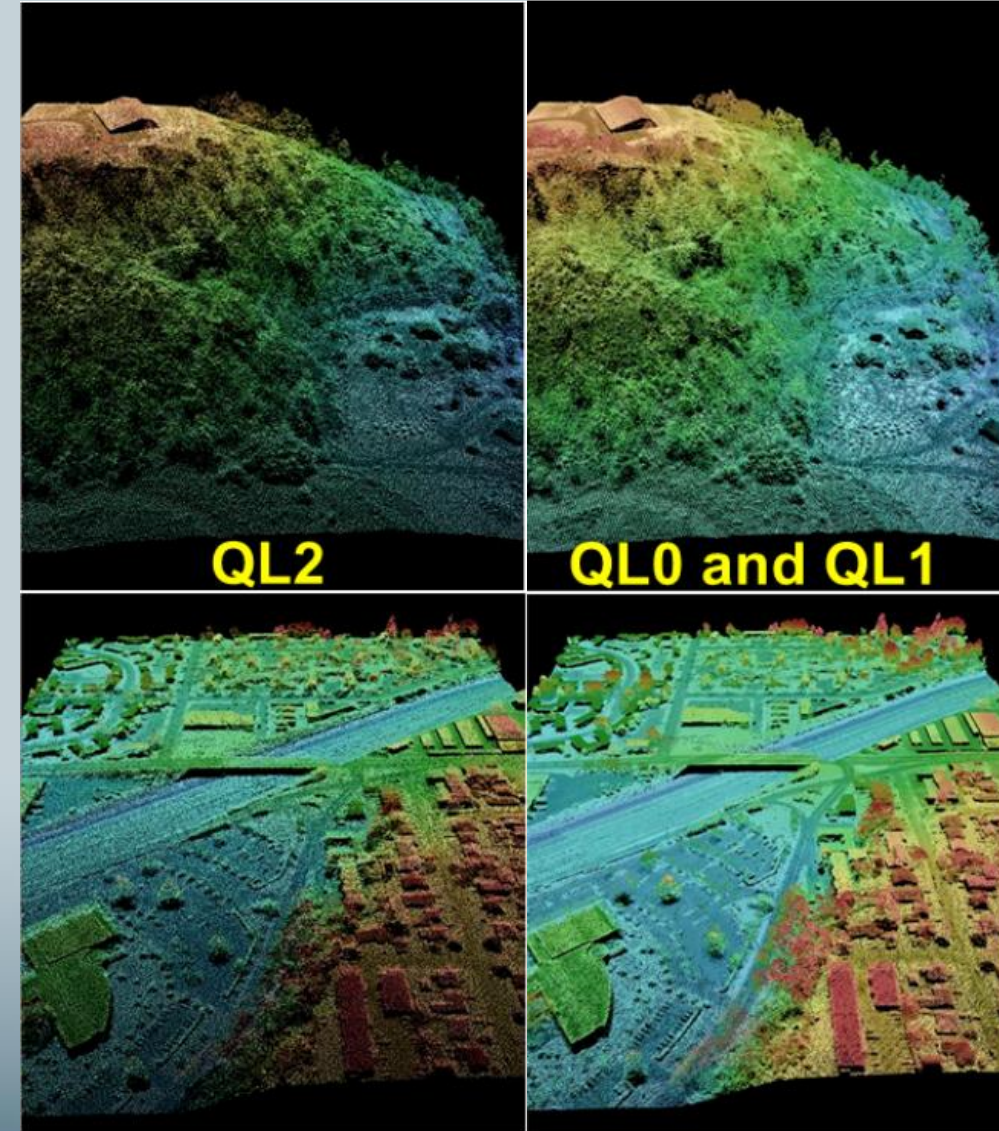
Quality Level	Point Density	DEM Resolution	Vertical Accuracy
QL 2	$\geq 2 \text{ pts/m}^2$	1 m / 2ft	10 cm RMSE <sub>z</sub>
QL 2+	$\geq 4 \text{ pts/m}^2$	0.5 m / 1 ft	10 cm RMSE <sub>z</sub>
QL 1	$\geq 8 \text{ pts/m}^2$	0.5 m / 1 ft	10 cm RMSE <sub>z</sub>
QL 0	$\geq 8 \text{ pts/m}^2$	0.5 m / 1 ft	5 cm RMSE <sub>z</sub>

- Products:

- Classified point cloud: ground, vegetation (high, medium, low), structures, water, other/noise
- Hydro delineation breaklines
- 2ft and 5ft Contours
- Digital elevation models (DEMs)
  - Hydro-flattened – water bodies  $>2 \text{ ac}$ ,  $>100 \text{ ft}$
  - Hydro-enforced? – for drainage modeling
- Building footprint extraction?

- Est'd. Cost:

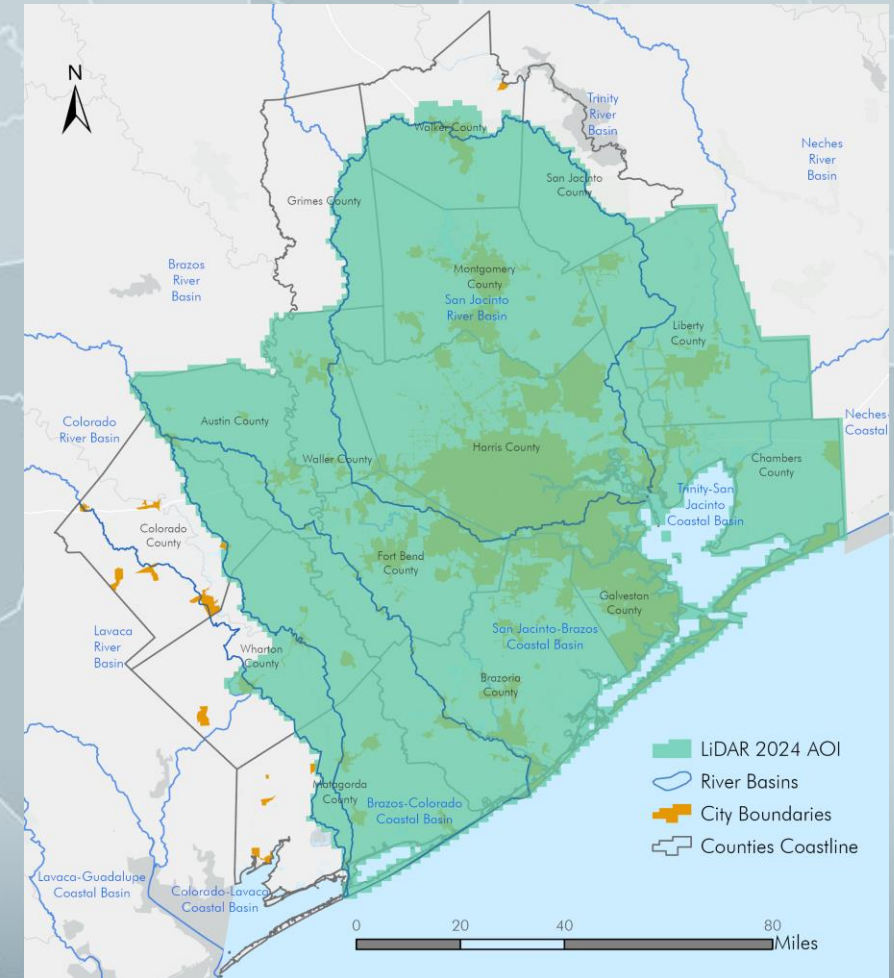
- $8 \text{ pts/m}^2$  : \$240/ mi<sup>2</sup>



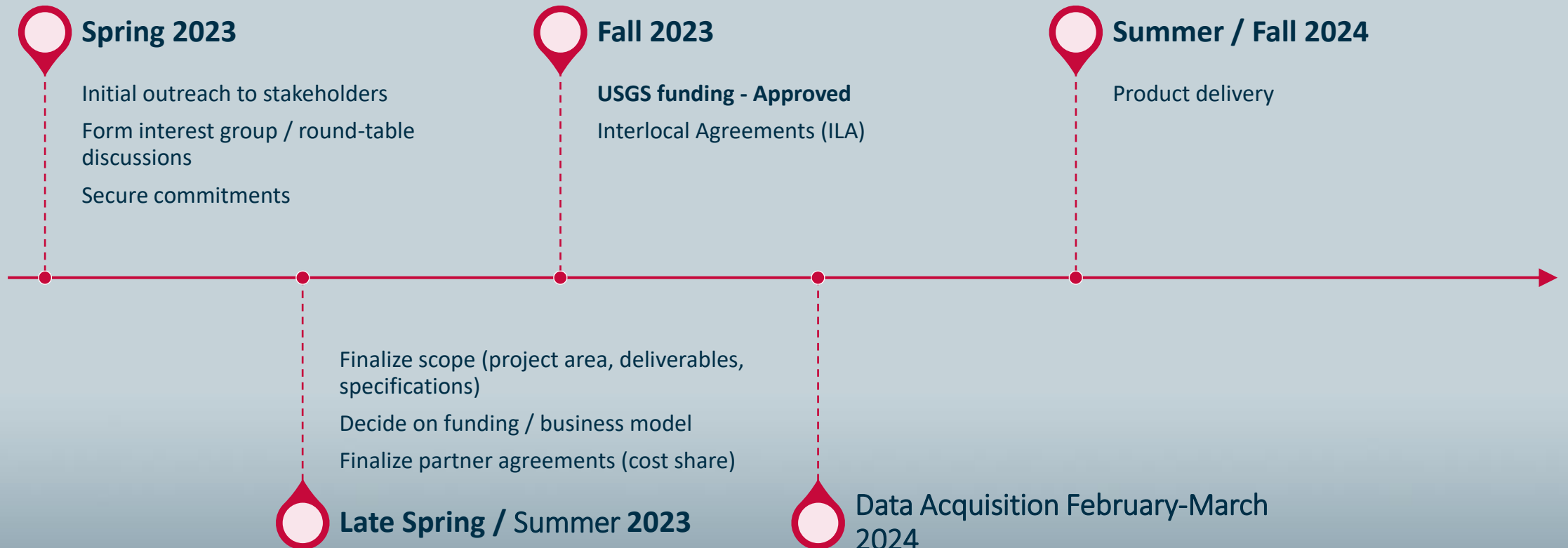
# 2024 Lidar Program

- Point density of 8 pls/m2 for > 11,500 mi2
- Funds committed by fifteen (15) cost-share member organizations for a total of \$1,761,480.
- Federal contributions through USGS' Data Collaboration Announcement (DCA) for a total of \$1,063,290.
- Total program value \$2,824,770.

Organization	Commitment
Harris County Flood Control District	\$400,000
Harris County Engineering	\$166,000
Liberty County	\$253,000
Fort Bend County	\$183,000
Galveston County	\$120,000
Brazoria County	\$282,000
Waller County	\$94,000
Austin County	\$40,000
City of Houston	\$71,000
City of Pearland	\$8,500
City of Huntsville	\$17,000
Friendswood	\$2,000
Port of Houston	\$16,000
Rice University	\$3,000
City of Wharton	\$6,480



# Tentative Timeline

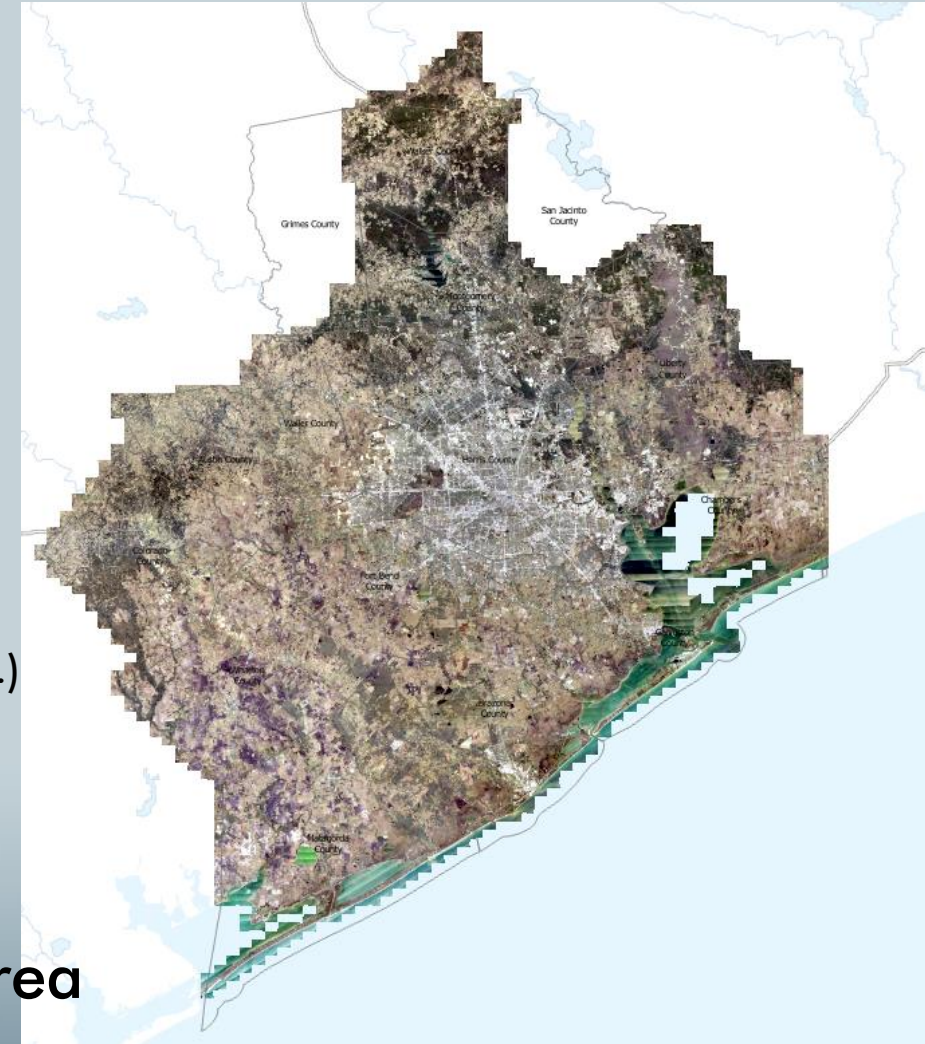


# 2024 Lidar Next Steps..

- Request Board Approval to
  - Enter into Interlocal Agreements (ILAs) with fifteen (15) partner organizations for the acquisition and processing of high resolution lidar data over 11,570 mi<sup>2</sup> area, and the production of elevation derivatives.
  - Enter into a Joint Funding Agreement (JFA) with the USGS for federal subsidies to cover vendor selection, contract administration, project management, and data QA/QC.

# Regional Aerial Imagery Cost-Share Program – Upcoming 2024

- Region wide Biannual Imagery collection
- Intended uses of the imagery include:
  - Cartographic representation
  - Land use / land cover classification
  - Change detection analyses
  - Planimetrics (feature extraction) for
    - Structures (buildings, porches, fences, etc.)
    - Transportation features (roadways, sidewalks, paths, parking lots, signage, railroads, etc.)
    - Water bodies and associated features (bridges, culverts, dams, etc.)
    - Utilities (power poles, light poles, etc.)
    - Vegetated areas (forested, grasslands, crops, etc.)
    - Other (pools, pads, etc.)
- Last Imagery Collection 2022
  - 6 in – RGB and Color Infrared for 13 County area



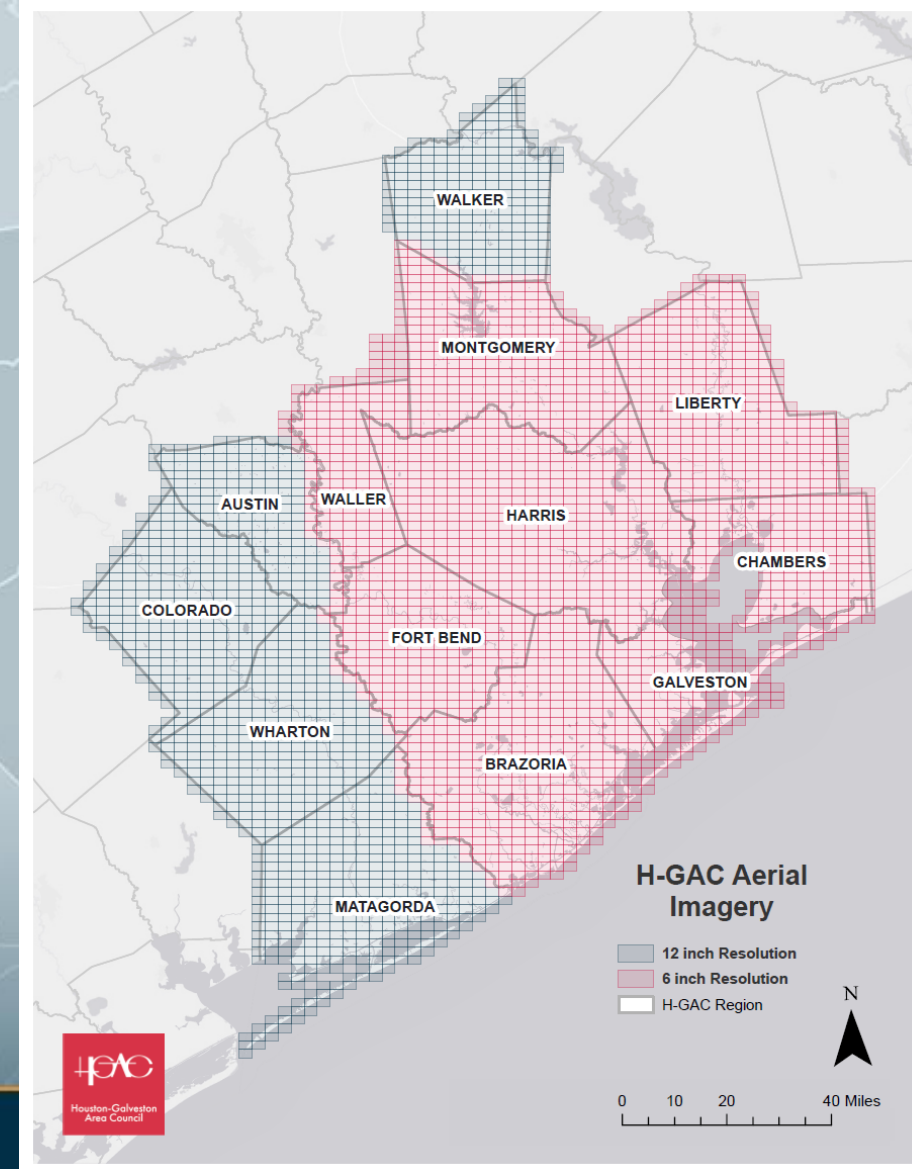
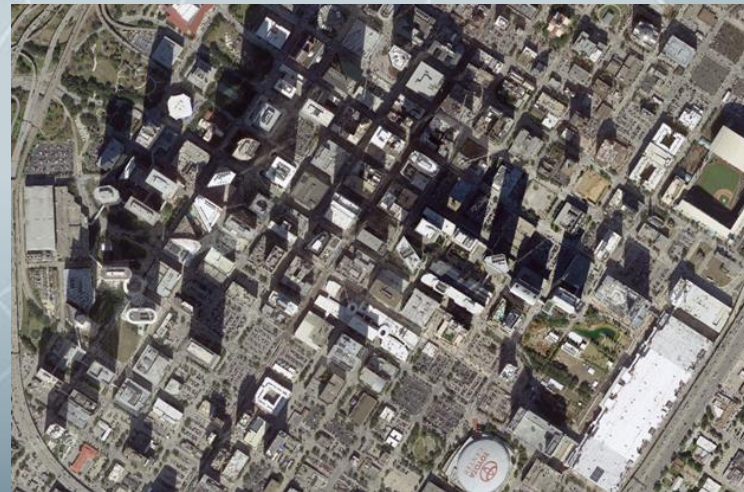
# Regional Aerial Imagery Cost-Share Program – Upcoming 2024

## Option 1:

- Cost-Share Procurement
- On-prem RGB & CIR
- 6 & 12"
- Total cost: ~\$630k
- Cost per tile (4 mi<sup>2</sup>)

2023/24  
planned  
coverage

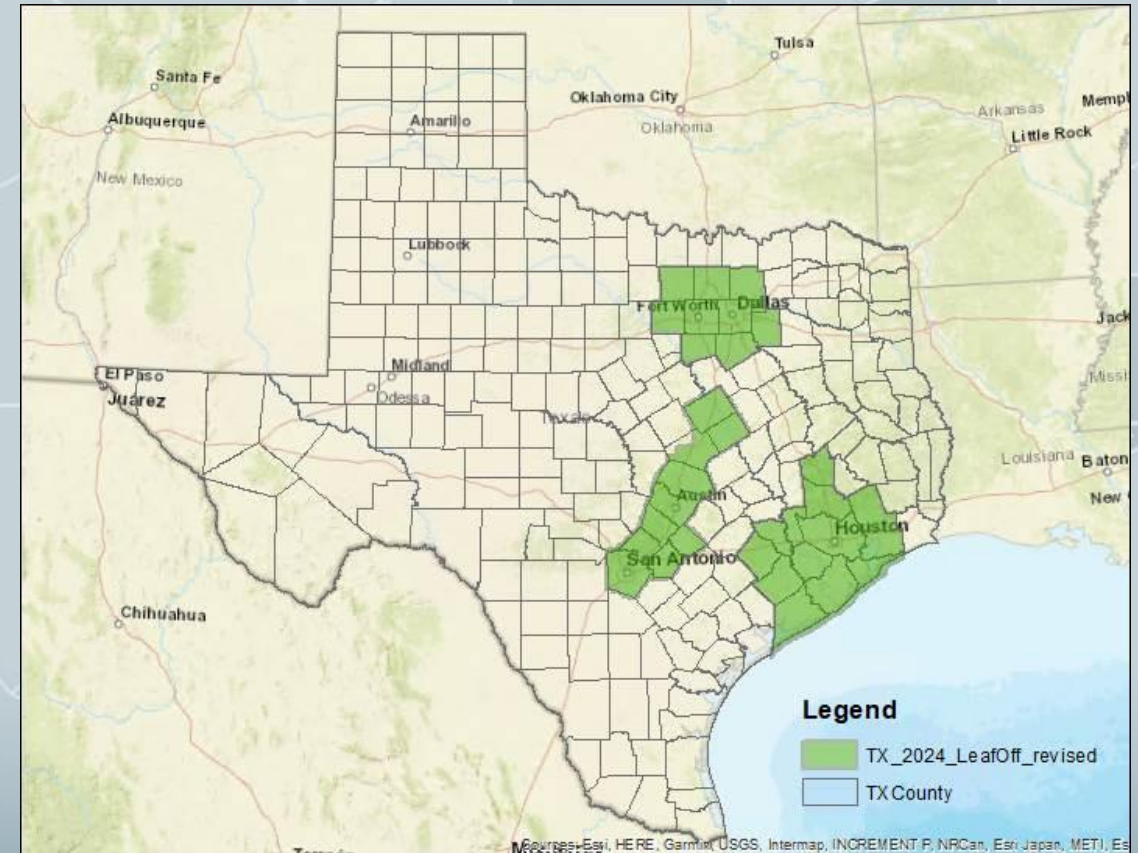
2024 6 Inch CIR & RGB Tiles	2024 6 Inch CIR & RGB Cost
1-15	\$5,000
16-30	\$9,000
31-60	\$15,000
61-250	\$18,000
251-600	\$22,000
601-2,234	\$37,000
2,235-3,473	\$49,000





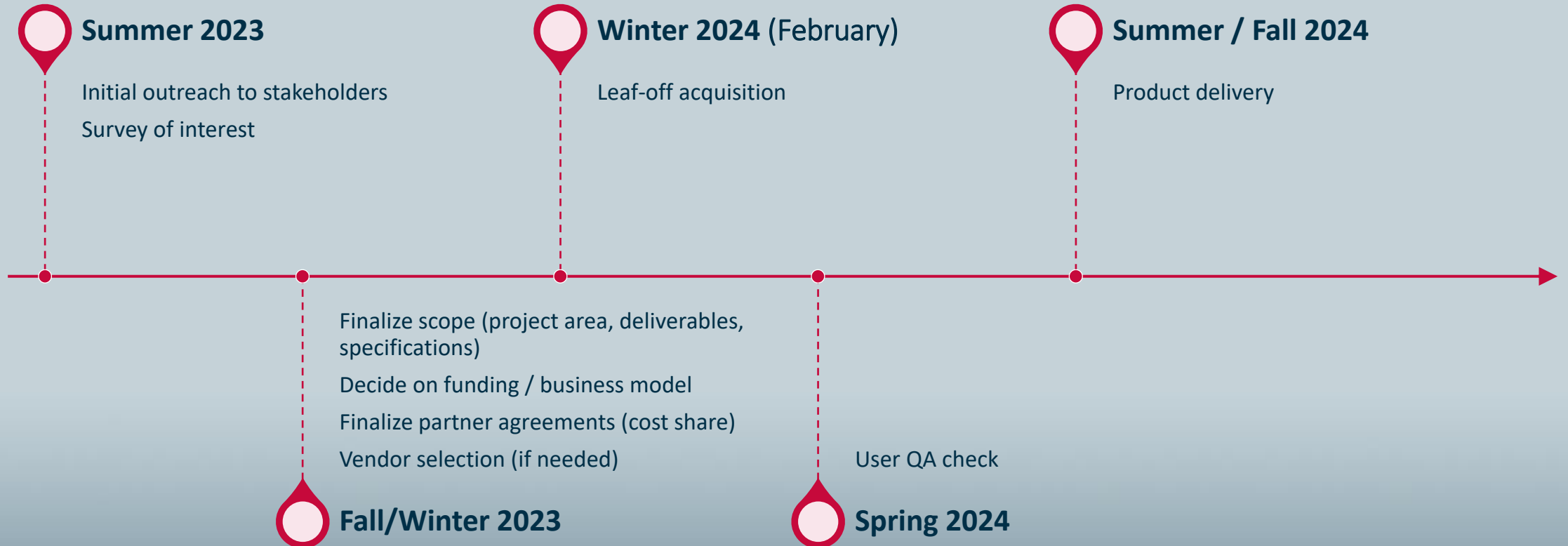
# Regional Aerial Imagery Cost-Share Program – Upcoming 2024

- Option 2:
  - TxGIO Streaming Service
  - Subscription-based
  - Gov't. only
  - \$ 2,000 / County / year
  - \$ 200 - \$1,000 / City / year



2024/25 planned coverage

# Tentative Timeline



## ■ Data Axel - Business and Residential GIS Data Cost-Share Program - 2024

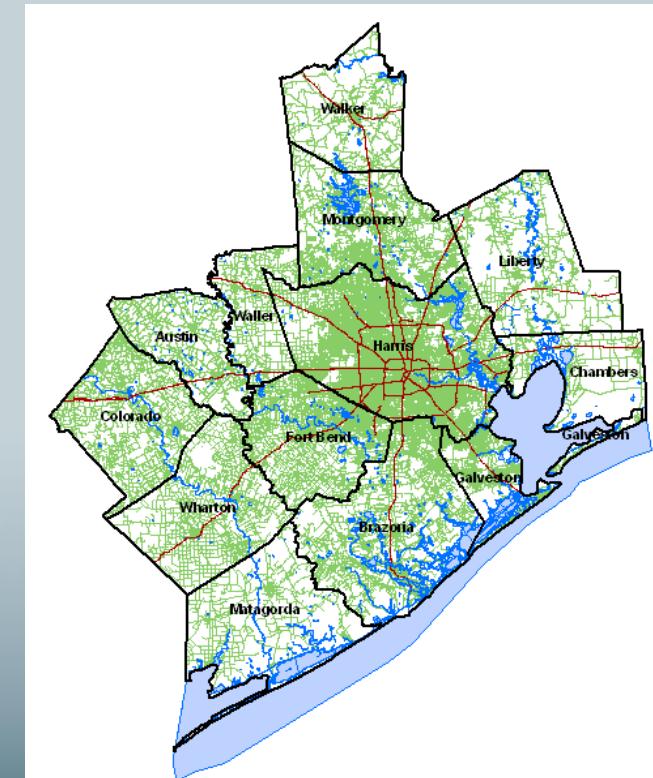
- Ongoing from 2010 to 2023 (current)
- Next-round March 2024



## ■ Southeast Texas Addressing and Referencing Map (STAR\*Map)

- Digital Address point, Street Centerline, Zip code database

- Annual Subscription (\$8,900)
- One time purchase (\$700)
- Since 1990's (30 years)
  - Despite inflation, increase staff salaries, equipment cost, fewer subscribers
- Expect to Increase of cost
  - 3.3% annual inflation
  - Number of participants



# Contact

## ■ Jochen Floesser

- Director Data Analytics & Research
- 346-272-9743 (m)
- [jochen.floesser@h-gac.com](mailto:jochen.floesser@h-gac.com)

## ■ Thushara Ranatunga

- GIS Program Lead
- 832-681-2551
- [thushara.ranatunga@h-gac.com](mailto:thushara.ranatunga@h-gac.com)