2024 H-GAC Lidar Program

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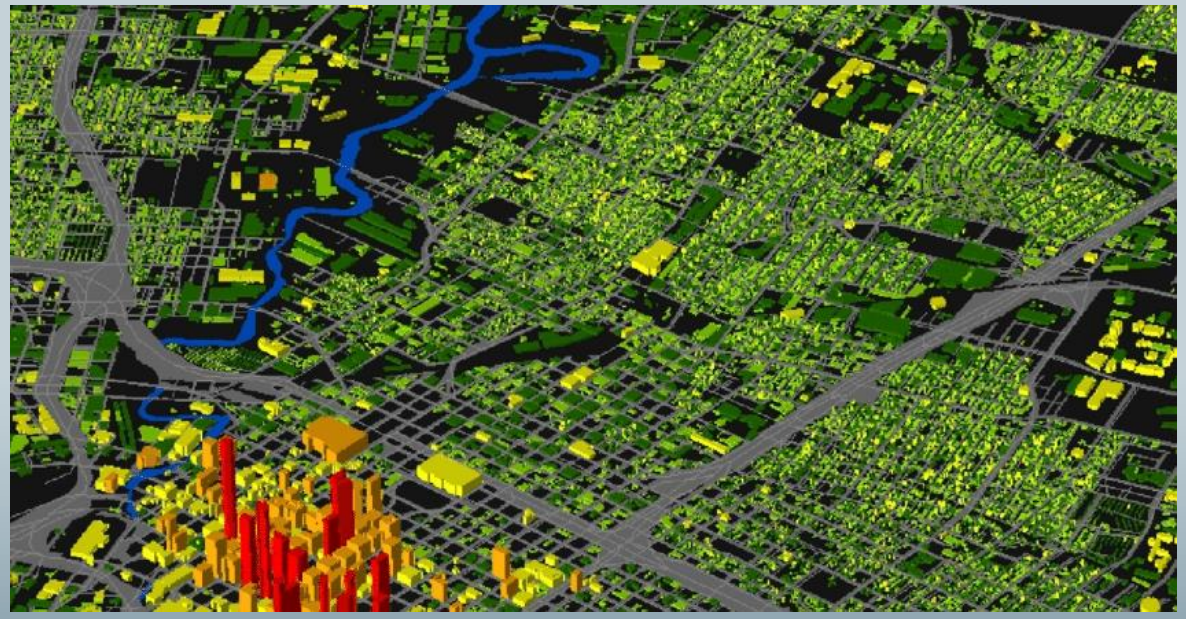
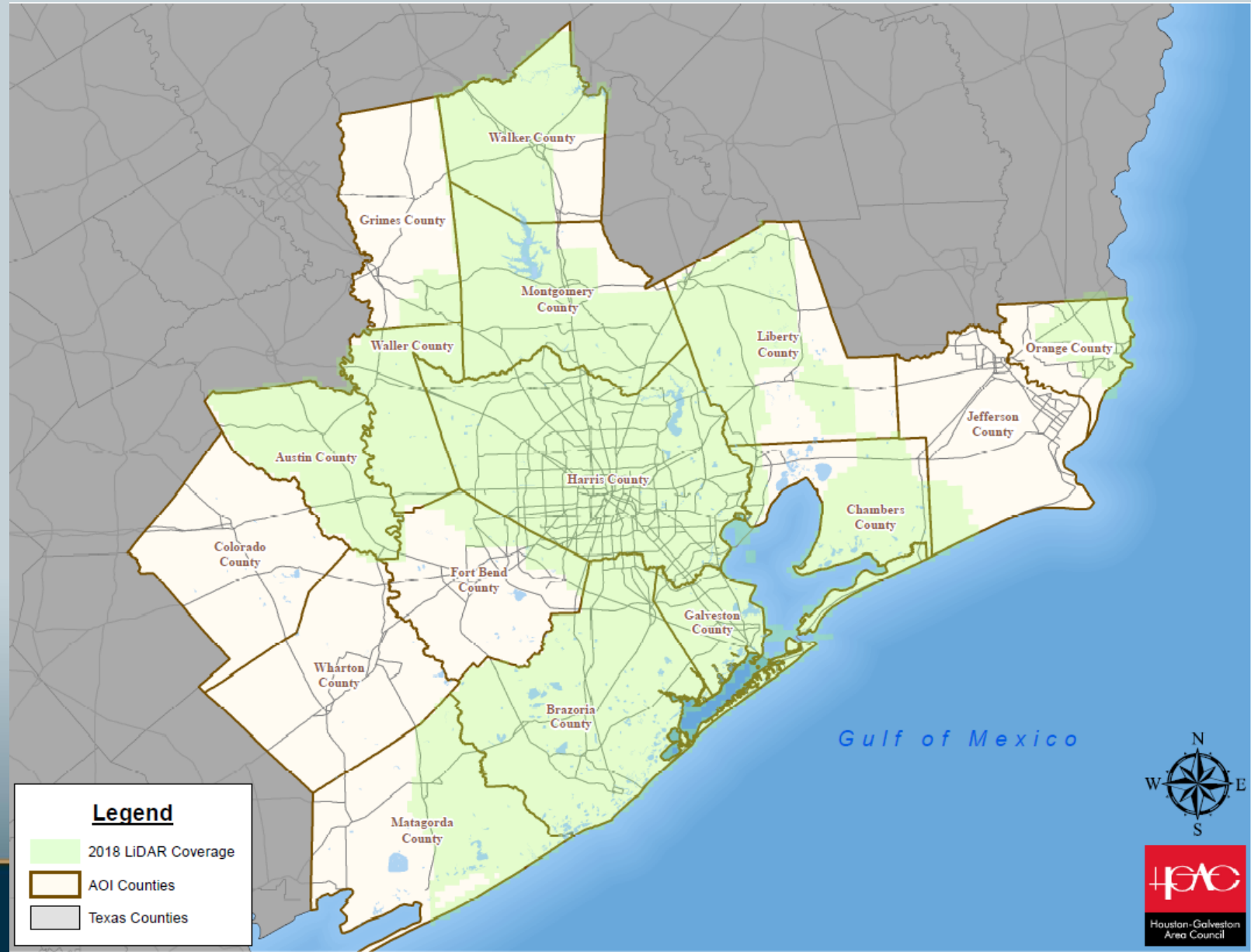
Lidar Uses

- Hazard Assessments
  - Inundation Mapping
  - Flood Mitigation & Resiliency
  - Drainage Analyses & Runoff Modeling - hydro-flattened / hydro-enforced digital elevation models (DEMs)
- Vegetative / Canopy Cover
  - Utility / airport obstructions
- Feature Delineation & Mapping
  - Water bodies / wetlands / shorelines
  - Vegetation & land cover
  - Man-made structures
- Planning & Infrastructure
  - 3-D building / roadway models
- Agriculture, Forestry
- Geology, Mining, Energy



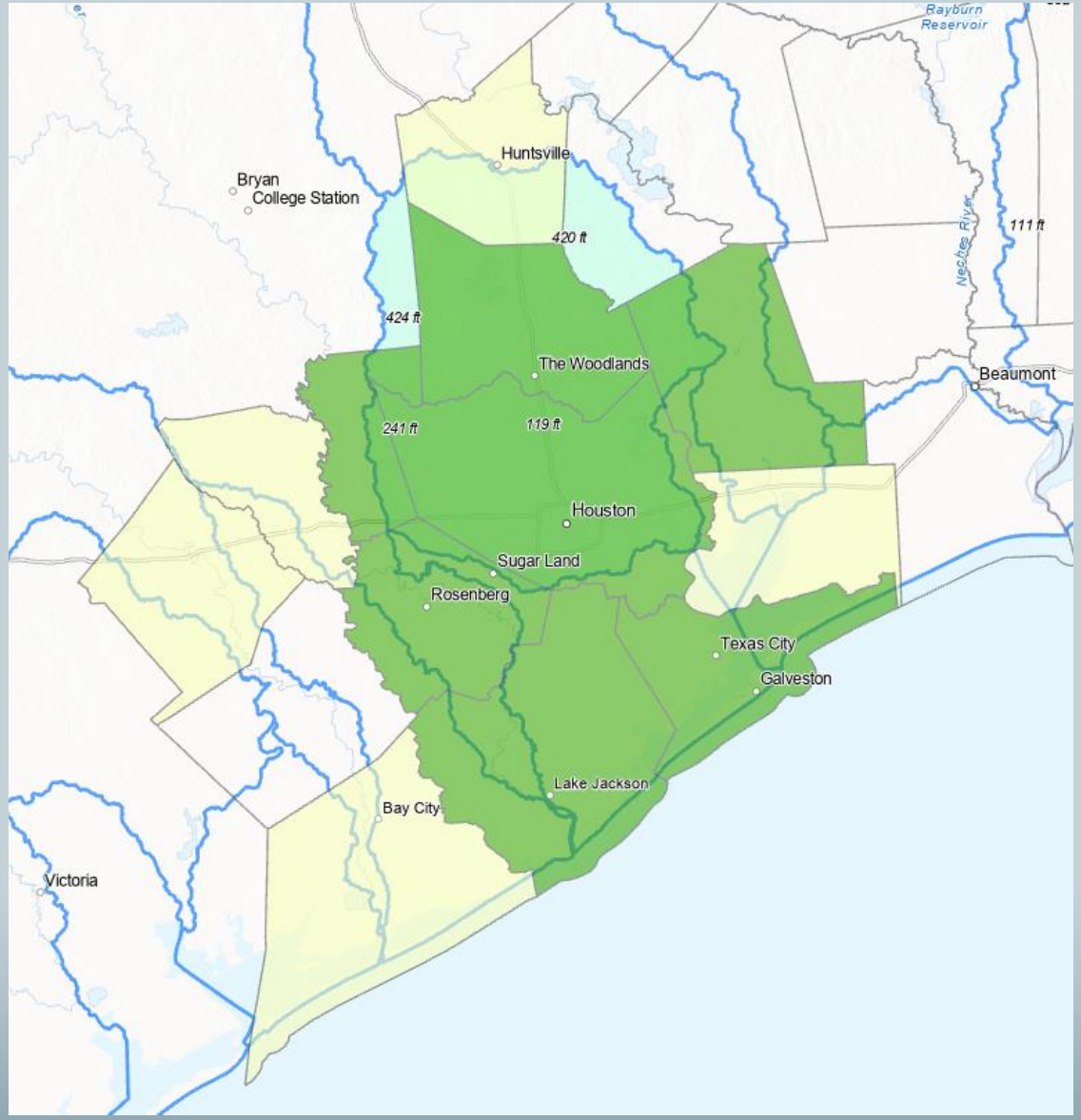
2018 Lidar Project

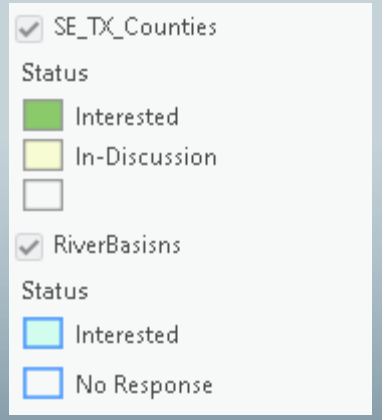
- Project Area
  - 5 full + 7 partial counties
  - ~9,800 square miles
- 4 pts/m^2
- Hydro-flattened Bare-Earth Digital Elevation Models (DEMs)



2024 Potential Partners (as of Feb. '23)

- Local
- Regional
- State ($?)
- Federal ($?)





Stakeholders

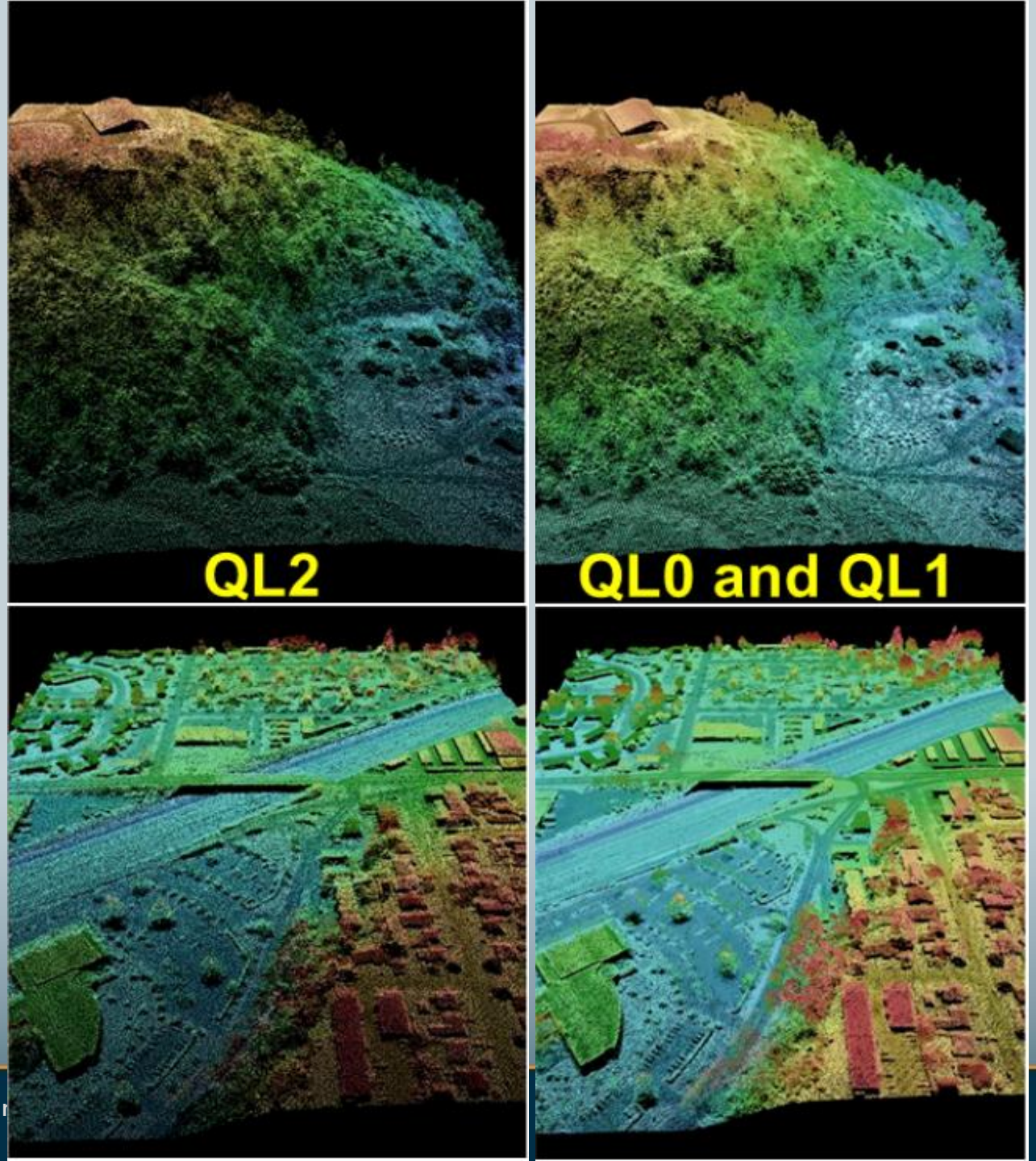
- Local
  - City of Houston, Pearland
  - Harris Co. Flood Control
  - Harris Co. Appraisal District
  - Port of Houston
  - 13 counties: Liberty, Ft. Bend, Harris, Montgomery, Colorado, Waller, …
- State
  - TX Water Board – TX Natural Resources Information System (TNRIS)
  - TX Division of Emergency Mgt. (TDEM)
  - TX Dept. of Transportation (TxDOT)
  - Texas A&M Forest Service
  - General Land Office (GLO)
  - TX Park & Wildlife Dept. (TPWD)
  - TX Commission on Environmental Quality (TCEQ)
- Regional
  - Harris / Galveston / Ft. Bend County Subsidence District
  - San Jacinto, Lower Colorado, Brazos, Trinity River Authorities
- Federal
  - U.S. Geological Survey (USGS)
  - U.S. Army Corps of Engineers - HQ & Galveston (USACE SWG)
  - National Atmospheric & Oceanic Agency (NOAA)
  - Natural Resources Conservation Service (NRCS)
  - Environmental Protection Agency (EPA)
  - Federal Emergency Mgt. Agency (FEMA)
  - U.S. Forest Service

2024 Lidar Scope

- Acquisition timeframe February 2024 ('leaf-off')
- Resolution / Point Density (USGS Quality Levels):

Quality Level	Point Density	DEM Resolution	Vertical Accuracy
QL 2	>= 2 pts/m^2	1 m / 2ft	10 cm $RMSE_z$
QL 2+	>= 4 pts/m^2	0.5 m / 1 ft	10 cm $RMSE_z$
QL 1	>= 8 pts/m^2	0.5 m / 1 ft	10 cm $RMSE_z$
QL 0	>= 8 pts/m^2	0.5 m / 1 ft	5 cm $RMSE_z$

- Products:
  - Classified point cloud: ground, vegetation (high, medium, low), structures, water, other/noise
  - Hydro delineation breaklines
  - Digital elevation models (DEMs)
    - Hydro-flattened – water bodies >2 ac, >100 ft
    - Hydro-enforced? – for drainage modeling
  - Building footprint extraction?
- Cost ~$250-300 / mi^2



Tentative Timeline

- Winter / Spring 2023
  - Initial outreach to stakeholders
  - Form interest group / round-table discussions
  - Secure commitments
- Late Spring / early summer 2023
  - Finalize scope (project area, deliverables, specifications)
  - Decide on funding / business model
  - Finalize partner agreements (cost share)
- Fall 2023
  - Issue RFP or submit application for funding
  - Vendor selection
- Winter 2024 (Feb)
  - Leaf-off acquisition
- Summer / Fall 2024
  - Product delivery

Contact

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