



TEXAS DEPARTMENT OF TRANSPORTATION

NEW REPORTING REQUIREMENTS FROM FHWA: TXDOT'S METHODOLOGY

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Maintain Statewide Roadway GIS Assets

- TxDOT Roadways (available from TNRIS)
- Asset Inventory of Roadways
- Both Now Downloadable from TxDOT.gov
 - > <http://www.txdot.gov/inside-txdot/division/transportation-planning.html>
 - > In the 'Maps' section, select 'TxDOT Roadway Inventory'

Develop and Maintain Statewide Planning Map

- TxDOT's Primary Web Map
- New Features: Spring 2013
 - > New Design
 - > Statistics for State, Urban, County, City
 - > Query Tool: Map the Road Attributes
 - > www.txdot.gov/apps/statewide_mapping/statewideplanningmap.html



Federal mandate: MAP 21

- Report Full Extent GIS Transportation Network. (including Local Streets)

Why?

- Requirement for Texas' Annual Submittal to FHWA (2014).
- FHWA requires data to support Highway Safety for all public roads as part of the of the Highway Safety improvement Program (HSIP). This includes a Basemap for the purpose of geolocating all public roads.

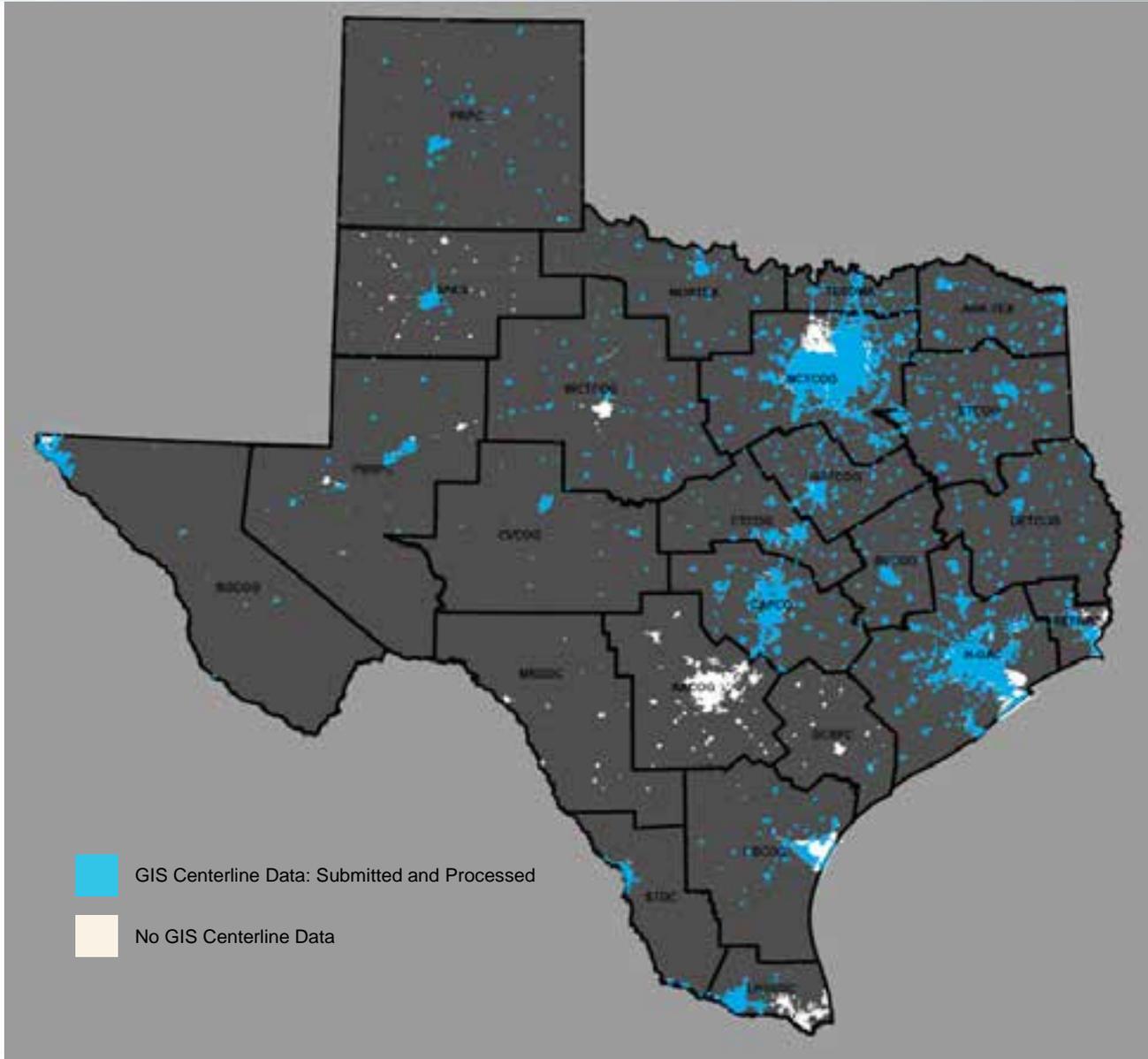


- **TxDOT currently maintains GIS centerline data for:**
 - On System (highways)
 - County Roads
 - Functionally Classified City Streets
- **This is a total of 241,356 miles of roadway data.**
- In the course of this project will be adding an estimated **71854** miles of local city streets to our data.
- This comes out to a grand total of **313209** miles of roadway data maintained by our staff.



- All streets within the bounds of incorporated cities, that are maintained by cities or municipal governments, that are open to the public.

TxDOT Statewide City Street Addressing Layer: CITY COVERAGE





- TxDOT has been working in cooperation with Texas Natural Resources Information Systems (TNRIS) to use the data gathered for this requirement to build a statewide E-911 database.
- TNRIS acts as a clearinghouse of spatial data for the state of Texas



- **Councils of Government (COG)**
 - **County Governments**
 - **City Governments**
 - **E-911 Districts**
-
- **These organizations have already provided TxDOT with spatial data for nearly every city street in the state of Texas.**



- **Starting with the highest level organization, we worked our way down to smaller organizations if sufficient data was not able to be provided.**
- **Preferable data formats:**
 - > ESRI Shapefiles
 - > ESRI Geodatabases
- **Other spatial data types are acceptable as well.**
- **Analysts would contact organizations in their district of responsibility across the state and request existing data.**
- **Most organizations have already responded with their data, with only a handful remaining.**



- **Contains all data from participating organizations**
 - > Reduced number of fields, focused on name and address
 - > Highly segmented
- **Current Addressing Model:**
 - FULL_ST_NM
 - RTE_ID
 - RTE_LEN
 - FLAG
 - RT_FROM
 - RT_TO
 - LT_FROM
 - LT_TO
 - LT_ZIP
 - RT_ZIP
 - ZIP



- **Processed and cleaned data**
- **Routes have been de-segmented where possible**
- **Data cleansing and error correction**
- **Slightly more fields to integrate with TxDOT's existing data model**
- **Unique IDs for routes**
- **Current Local Streets Model:**
 - ST_PRFX
 - ST_NM
 - ST_SFX
 - ST_SFX_DIR
 - FULL_ST_NM



- **Incoming data has to be processed to fit with the two data models.**
- **Processing is a combination of data documentation, manual cleanup, and Python scripts**



- Incoming data is examined by an analyst and the relevant fields are identified that will be used by the Python Scripts.
- Relevant fields are listed in an Excel file and read by the scripts.

StreetNameFields.xls [Compatibility Mode] - Microsoft Excel

	A	B	C	D	E	F	G
1		Ark_TexCOG	BVCOG	BVCOG_BRAZOS	BVCOG_BURLESON	BVCOG	CAPCOG
2	ST_PRFX	RD_PREDIR	PREDIR	PREDIR	PRE_DIR	PRE_DIR	PRD
3	ST_NM	RD_NAME	ROAD	ROAD	STREET	STREET	STN
4	ST_SFX	RD_TYPE	SUFFIX	SUFFIX	SUFFIX	SUFFIX	STS
5	ST_SFX_DIR		SFXDIR	SFXDIR	POST_DIR	POST_DIR	
6	FULL_ST_NM	FULL_NAME	ROAD_NAME	ROAD_NAME	RD_NAME	RD_NAME	STREET



- **Once documented, an analyst will go through the incoming data and identify if there are other corrections needed or data that need to be removed.**
- **Data that is not relevant for reporting is flagged in a designated field.**



- **Several Python scripts have been created to process the data.**
- **The Addressing Layer script does the following:**
 - > Clips each city's data to the corresponding city limits
 - > Creates a geodatabase with the requisite data model
 - > Creates addition fields in the source data, and transfers the corresponding attributes into the new fields from the previously identified fields (Slide 13)
 - > Deletes all old fields that no longer fit the data model
 - > Adds the clipped and processed data to the previously created geodatabase



- **Statewide Local Streets Script**

- > All steps from the previous model with different fields
- > Identify all street segments with the same street name, in the same city, that are spatially coincident.
- > Give the same unique Route ID to each of the street segments that have been identified in the previous step
- > Merge all street segments with the same Route ID
- > Set directionality of the new route by the ascending address range of the segment with the lowest address range
- > Apply linear referencing measures to the route based on the route length



- **2 Statewide data layers for local streets**
 - > Statewide Local Streets Addressing Layer for use by E-911, participating data providers, and the general public
 - > Statewide Local Streets Linear Referencing Layer for use by TxDOT, FHWA, and the general public
- **All data will be available for download from both the TxDOT website, and from TNRIS.**
- **Data will also be viewable on the Texas Statewide Planning Map**



- **All data will be reported to FHWA in 2014**

Questions?





THANK YOU!

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