Attachment A: Scope of Work

Overview

The goal of this scope of work is to facilitate the exchange of geospatial information between CAPCOG and the PUBLIC AGENCY to help ensure that efficient and accurate response to emergency calls and text messages in all areas of the Capital Area Emergency Communications District. In order to accomplish this:

1. Calls and texts must be routed to the correct public safety answering point (PSAP);
2. The correct emergency service provider must be dispatched to the appropriate location; and
3. The emergency responders must be able to know the most efficient route to reach that location.

Definitions

Core 9-1-1 GIS data terminology:

1. 9-1-1 GIS Database: The geospatial database maintained and updated by the PUBLIC AGENCY that includes, at a minimum, all address points, road centerlines, PSAP boundaries, Emergency Service Boundaries (ESBs), and city limit (municipal) boundaries for the PUBLIC AGENCY's provisioning boundary
2. Data Layer: Also known as a Feature Class, is a group of geographic features that reside in a table of information with corresponding locations on the earth (map) represented as either points, lines, or polygons.
3. Address Points: A data layer of points identifying sites or structures associated with a street address, or the location of access to a site or structure, but may also represent landmarks.
4. Road (Street) Centerlines: A data layer of lines estimating the centerline of a roadway that contains information such as road name, road classification, and address range
5. City Limit (Municipal) Boundary: A polygon data layer representing the geographic extent of a city's administrative boundary, not including any extra-territorial jurisdiction

Specialized NG9-1-1 GIS terminology:

1. Provisioning Boundary: The authoritative polygon data layer that defines the PUBLIC AGENCY's geographic area of 9-1-1 GIS responsibility. This should be the entire extent of the PUBLIC AGENCY's administrative boundary, plus any other adjacent areas or minus areas within its administrative boundaries as agreed to between the PUBLIC AGENCY and another city or county. Provisioning boundaries may only be modified with express written concurrence between the PUBLIC AGENCY, adjacent PUBLIC AGENCIES, and CAPCOG.

   Note:
   The provisioning boundary should include the area that the PUBLIC AGENCY assigns address points and road names under its own authority, plus any other areas that the PUBLIC AGENCY does not have such authority, but with which it has entered into an exclusive agreement to obtain this information for the 9-1-1 GIS database. Situations that may warrant a change to a provisioning boundary include (but are not limited to): municipal annexations, consolidation of

two or more municipalities, formation of new municipalities, changes in PSAP service areas, and changes in emergency responder service areas.

2. Public Safety Answering Point (PSAP) boundary: The authoritative polygon data layer representing the geographic area within a provisioning boundary served by a single 9-1-1 call center (a PSAP), to which all emergency requests are initially routed.

3. Emergency Service Boundary (ESB): A polygon data layer that represents the geographic area of responsibility for emergency response providers within the geographic extent of the provisioning boundary. Each 9-1-1 GIS database includes, at a minimum, a law ESB layer, a fire ESB layer, and an EMS ESB layer.

4. Emergency Service Zone (ESZ): A polygon data layer representing the area within a provisioning boundary served by a unique combination of law, fire, and EMS responders. ESZs are optional for inclusion in the NG9-1-1 GIS database.

5. Database Schema: Also known as Data Model, is the database structure with regard to field properties, including data type, field value constraints, etc. Converting one database schema to another involves field-matching (field-mapping) and other compatibility considerations

6. Globally Unique IDs (GUIDs): A unique identifier that is assigned to each record (feature) in an PUBLIC AGENCY's 9-1-1 GIS database; a GUID uniquely identifies a feature both within the PUBLIC AGENCY's 9-1-1 GIS database provisioning boundary and across all 9-1-1 GIS databases.

Quality Control terminology:

1. Enterprise Geospatial Data Management System (EGDMS): A cloud-based quality control platform provided by AT&T/Intrado used for identifying critical errors that will ultimately be used by the PUBLIC AGENCY that provisions (determines acceptable) data for CAPCOG's NG9-1-1 system in the near future

2. Data Hub: a cloud-based quality control platform provided by GeoComm that, in addition to being able to identify critical errors, can also identify "significant" and "other" errors in an PUBLIC AGENCY's 9-1-1 GIS database

3. New Error: Any error present in the PUBLIC AGENCY's 9-1-1 GIS database update for the first time

4. Legacy Error: Any error in the PUBLIC AGENCY's 9-1-1 GIS database update that was also present in a preceding update

5. Error Rate: The ratio of total number of errors to total number of features (records) within a specific data layer, or in aggregate for a defined geographic area

6. Critical Error: Any error in the PUBLIC AGENCY's 9-1-1 GIS database update found by the AT&T/Intrado Enterprise Geospatial Database Management (EGDMS) or GeoComm's DataHub quality-control software that cause, or have a potential of causing, a critical fault in the routing of a 9-1-1 emergency service request call or text to the correct PSAP; the EGDMS system prevents data with critical errors from being uploaded to the NG9-1-1 system. Examples include (but are not limited to) gaps and overlaps between several of the data layers described above.

7. Significant Error: Any error in the PUBLIC AGENCY's 9-1-1 GIS database update found by GeoComm's Data Hub quality control software that cause, or have a potential of causing, a critical fault in Computer-Aided Dispatch (CAD) mapping platforms or other related systems

8. Other Error: Any error in the PUBLIC AGENCY's 9-1-1 GIS database identified by GeoComm's Data Hub quality control software other than a "critical" or "significant" error

Task 1: Basic Work

Task 1 involves information gathering and data preparation needed for the 9-1-1 GIS database but does NOT involve updating the 9-1-1 GIS database directly.

Task 1.A: PUBLIC AGENCY shall submit, at least once a month, a comprehensive record of 9-1-1 related information needed for complete and updated 9-1-1 GIS database records for all areas within the PUBLIC AGENCY's Provisioning Boundary consisting of:

1. Street Addresses
2. Roads
3. City limit boundaries
4. PSAP boundaries
5. Law ESB
6. Fire ESB
7. Emergency Medical Service ESB
8. Other pertinent information

Task 1B: PUBLIC AGENCY shall enter into and maintain agreements with all other local governments with the authority to assign address points, assign road names and address ranges, alter PSAP boundaries, or alter ESB boundaries in order to ensure that these entities provide such data to PUBLIC AGENCY in a timely manner. PUBLIC AGENCY shall provide CAPCOG with adequate advance notice of any substantive changes that could or should affect PSAP boundaries, ESB boundaries, provisioning boundaries, or any sub-contracting in order for an orderly transition as a result of any pending new agreement, amendment, or agreement termination.

Task 1C: PUBLIC AGENCY shall be responsible for conveying any relevant information deriving from CAPCOG regarding 9-1-1 GIS database integrity to other local governments and governmental entities partially or wholly within its provisioning boundary.

Task 1D: PUBLIC AGENCY shall provide to CAPCOG information from any County Commissioners' Court meetings or City Council meetings that would affect PUBLIC AGENCY's performance of this contract, including (but not limited to) changes to PSAPs, ESBs, annexation, or subcontracting. PUBLIC AGENCY's Project Representative is expected to keep track of County Commissioners Court and City Council meeting agendas to determine if an item may affect the performance of this contract, and notify CAPCOG's project representative of any such issues as soon as possible, but no later than 2 days prior to the Commissioners Court or City Council meeting.

Task 1.E: PUBLIC AGENCY shall send at least one representative to each scheduled quarterly 9-1-1 GIS User Group meetings and at least one training workshop hosted by CAPCOG during the performance period of this agreement.

Task 2: GIS Work

Task 2 involves GIS work needed for directly maintaining and updating the 9-1-1 GIS database. This is work that CAPCOG would need to perform if the PUBLIC AGENCY did not do so. CAPCOG's expectation is that this work would by a person, either on staff or subcontracted by the PUBLIC AGENCY, with

responsibilities, knowledge, skills, education, and experience comparable to the state's "Geographic Information Specialist II" job description.[1] Task 2 includes the following sub-tasks:

Task 2.A: PUBLIC AGENCY shall submit all information required under Task 1.A that corresponds to GIS data layers in the 9-1-1 GIS database. This will be provided in ESRI File geodatabase format (.gdb) pursuant to CAPCOG guidance at least once a month to CAPCOG. PUBLIC AGENCY shall first submit data to EGDMS and Data Hub in order to address any "critical" or "significant" errors. These quality control systems require the 9-1-1 GIS database to match the standardized database schema (data model) for these systems through field-matching (field-mapping) procedures and other standards. Based on the recommendations of CAPCOG's GIS Planning Committee, CAPCOG staff will develop performance standards for target error rates, and will communicate these performance standards to PUBLIC AGENCY at a later date through guidance.

Task 2.B: PUBLIC AGENCY shall address any errors identified by EGDMS and Data Hub validation checks (reports) or CAPCOG Quality Control reports from those systems as soon as possible, but no later than the following conventional monthly submission to CAPCOG. This includes coordination with adjacent PUBLIC AGENCIES and CAPCOG where necessary.

Task 2.C: PUBLIC AGENCY shall address any other discrepancies identified by authorized stakeholders including, but not limited to, PSAP 9-1-1 call-takers.

Task 2.D: At least once a month, PUBLIC AGENCY shall back up the 9-1-1 GIS database and store it in a secure place. PUBLIC AGENCY shall include a record of the dates the database was backed up in the activity reports that are required to be submitted with quarterly invoices.

Task 2.E: In addition, PUBLIC AGENCY shall maintain the automatic location information (ALI) database within the PUBLIC AGENCY's provisioning boundary. This includes, but is not limited to, correcting telephone number database errors, maintenance and quality-control of an accurate 9-1-1 call location map, and providing Master Street Address Guide (MSAG) updates and corrections to the database vendor.

Content of Quarterly Reports

Along with each quarterly invoice, PUBLIC AGENCY will submit an activity report that contains all of the following information related to activities that occurred in the quarter:

- For each applicable governmental entity with administrative boundaries within PUBLIC AGENCY's provisioning boundary, PUBLIC AGENCY shall provide a summary of actions taken relevant to the 9-1-1 GIS database or certify that no action was taken relevant to the 9-1-1 GIS database
- If applicable, the date and time of the PUBLIC AGENCY's last backup of its 9-1-1 GIS database
- Dates and basic summaries (such as total number of features) of data submissions to CAPCOG
- A summary of any work that involved resolution of boundary issues with other entities, correction of errors and resolution of any other issues related to this contract
- An explanation for any performance issues in the prior month and corrective action that will be taken to address and prevent such issues in the future, including:

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[1] Available online at: http://www.hr.sao.texas.gov/CompensationSystem/JobDescriptions/

- Late or incomplete data submissions;
- Submission of data with legacy errors;
- Submission of data with new errors;
- Failure to meet performance expectations for critical error rates and significant error rates;
- Any other issue identified by CAPCOG in a performance report.

CAPCOG will provide PUBLIC AGENCY the template to use for activity reports.

CAPCOG Guidance

In addition to the Performance Reports identified in Task 2.B, CAPCOG may issue technical guidance to PUBLIC AGENCY's Project Representative that provides further clarification, interpretation, and details. Failure to follow any such guidance would constitute a performance deficiency for this agreement.

CAPCOG NG9-1-1 Transitional
GIS Data Requirements
Version 2.0 (2017)

1   Summary

The following geospatial data and corresponding attribute specifications are required to be regularly maintained by each county for Mapped Automated Location Information (ALI), Location Validation Function (LVF) and Emergency Call Routing Function (ECRF).

This document is referenced in the Capital Area Emergency Communications District Interlocal Contract for Geographic Information System Data and the Capital Area Emergency Communications District Interlocal Contract for Next Generation 9-1-1 Database Program documents and is commonly called "Attachment B Requirements".

The GIS Data requirements in this document are a condensed version of, and based upon, NENA (National Emergency Number Association) standards as they are developed and evolve over time. We are in a lengthy transitional period to Next Generation 9-1-1 (NG9-1-1). Data model standards should be more thoroughly reviewed in the "NENA Standard for NG9-1-1 GIS Data Model" document. Specifics regarding address point placement methodologies should be reviewed in the "NENA Information Document for Development of Site/Structure Address Point GIS Data for 9-1-1" document. There are other useful resources, as well, and CAPCOG will provide several of these on its own Web Site.

Please provide monthly updates of the 9-1-1 datasets referenced in this document in ESRI file geodatabase format by the 1st business day of each month.   Incomplete datasets or other data abnormalities related to requirements may be returned to the county for correction. To be included in that month's PSAP update, the data must be returned to CAPCOG by the 5th business day of that month.

Regarding database fields and data types, each is very specific and must follow the exact guidelines outlined below. For example, the "L_ESN" field must be Text type with a character width of 5. Remember to keep the field names in your database the same as those listed, and in the same order, and that all entries for every field must be in UPPER CASE. The complete attribute definitions shown in the GIS data tables are described and defined in the "Database Format" sections for each dataset. The data fields shown as **M**andatory and **C**onditional must be present in the data. In the tables below, the column **M/C/O** is to indicate whether the attribute values is Mandatory (**M**), Conditional (**C**), or Optional (**O**).

- **Mandatory** signifies an attribute value must exist
- **Conditional** signifies that if the attribute information exists in the real world, it must be included. If no value exists for the feature, the individual value is left blank without an empty space (if text), or 0 (if numeric)
- **Optional** signifies an attribute value may or may not be included in the data field

In the GIS data tables below, the **TYPE** column indicates the data type used for the data field.

- **TEXT** – string of alphanumeric characters including any combination of alphabetical letters A-Z and numbers 0-9
- **DATE** – Date and **time** using ISO 8601 compliant formats which are in the format of YYYY-MM-DD HH:MM:SS
- **DOUBLE** – double precision floating point numeric values with decimals
- **LONG** – whole numeric values ranging from -2,147,483,648 to 2,147,483,647 without decimals

In the GIS data tables below, the **WIDTH** column indicates the number of allowable characters within each field.

2   Road Centerlines (RCL)

This line data represents road networks in the CAPCOG region. This layer includes the street names and address ranges used to assign an address.

2.1 Graphic (Spatial) Edits

Each named street needs to be represented in the GIS graphically and include attribution for all database fields listed below. All unnamed streets included in the street centerline layer are required to have the designation "DRVW" entered in the 'street name (ST_NAME)' field and have any other relevant attribute information completed, including the 'CLASS' field. When a street centerline is created or edited, several sources and methods can be used, including current aerial imagery, georeferenced survey plats, computer-aided design (CAD) files, parcels, mapping-grade GPS units in the field, or other authoritative sources or methods. The positional accuracy of addressed structures should be within +/- 5 feet of the center of the roadbed (the part on which vehicles travel) noting that when roadways are divided (i.e by a median) the roadbeds on each side should have a centerline drawn. In all cases each new street centerline will need to be split, or checked for gaps, at each jurisdiction and ESN line/boundary intersection. Street segment direction must be correct as well. These items and other geometric relationships are referred to as "topology", and especially important for NG9-1-1 purposes.

2.2 Database Format

FIELD NAME	M/C/O	TYPE	WIDTH	DESCRIPTION/ VALID ENTRIES
SOURCE	M	TEXT	75	Agency that last updated the record, i.e. FAYETTE, TRAVIS
PROVIDER	M	TEXT	75	The name of the regional 911 authority *CAPCOG will populate*
LAST_MOD	M	DATE	26	Date of last update using ISO 8601 format
EFF_DATE	O	DATE	26	Date the new record information goes into effect in ISO 8601 format
SEGMENTID	M	LONG	DEFAULT	Unique segment ID *CAPCOG will populate*
RCL_UNIQID	M	TEXT	100	ID for each road segment - *CAPCOG will populate*
COUNTRY	M	TEXT	2	Country name represented by two capital letters
L_STATE	M	TEXT	2	Left state name by two letters defined by USPS publication 28
R_STATE	M	TEXT	2	Right state name by two letters defined by USPS publication 28
L_COUNTY	M	TEXT	40	Fully spelled county name on the left side of the road
R_COUNTY	M	TEXT	40	Fully spelled county name on the right side of the road
L_MUNI	M	TEXT	100	Name of municipality on Left, if none populate with "UNINCORPORATED"
R_MUNI	M	TEXT	100	Name of municipality on Right, if none populate with "UNINCORPORATED"
L_MUNI_DIV	C	TEXT	100	Name of municipality division on Left, i.e. "WARD 5 FRIENDSHIP DISTRICT"
R_MUNI_DIV	C	TEXT	100	Name of municipality division on Right i.e. "WARD 5 FRIENDSHIP DISTRICT"
L_NBRHOOD	O	TEXT	100	Name of neighborhood or subdivision on Left
R_NBRHOOD	O	TEXT	100	Name of neighborhood or subdivision on Right
L_RNG_PRE	C	TEXT	15	Part of an address preceding the numeric address on Left
R_RNG_PRE	C	TEXT	15	Part of an address preceding the numeric address on Right
LF_ADDR	M	LONG	DEFAULT	Left address number at the FROM node
LT_ADDR	M	LONG	DEFAULT	Left address number at the TO node

RF_ADDR	M	LONG	DEFAULT	Right address number at the FROM node
RT_ADDR	M	LONG	DEFAULT	Right address number at the TO node
L_PARITY	M	TEXT	1	E, O, B, Z for Even, Odd, Both, or Zero (if the range is 0 to 0)
R_PARITY	M	TEXT	1	E, O, B, Z for Even, Odd, Both, or Zero (if the range is 0 to 0)
L_POST_COM	C	TEXT	40	City name for the ZIP of an address, as given in the USPS on Left
R_POST_COM	C	TEXT	40	City name for the ZIP of an address, as given in the USPS on Right
L_ZIP	C	TEXT	5	5-digit numeric postal code area on Left
R_ZIP	C	TEXT	5	5-digit numeric postal code area on Right
L_ESN	M	TEXT	5	5-digit Emergency Service Number as identified by MSAG on Left. If the ESN number only has 2-3 digits, it must be preceded by zeros
R_ESN	M	TEXT	5	Emergency Service Number as identified by MSAG on Right. Must be Preceded by zeros if less than 5 digits, i.e. "00088" for ESN 88
L_MSAG	M	TEXT	30	Valid service community as identified by MSAG on Left
R_MSAG	M	TEXT	30	Valid service community as identified by MSAG on Right
PRE_MOD	O	TEXT	15	Word or phrase separate from type and direction that precedes PRE_DIR i.e. Access, Alternate, Business, Connector, Extension, Scenic, Spur, Ramp Underpass, Overpass
PRE_DIR	C	TEXT	2	Leading directional prefix N, S, E, W, NE, NW, SE, SW
PRE_TYPE	C	TEXT	20	Spelled out word or phrase that precedes and identifies a type of thoroughfare
ST_NAME	M	TEXT	60	**Legal** street name as assigned by local addressing authority
ST_TYPE	C	TEXT	4	Type of street following the street name, valid entries on USPS Pub 28
POST_DIR	C	TEXT	2	Trailing directional suffix N, S, E, W, NE, NW, SE, SW
POST_MOD	C	TEXT	12	Word or phrase separate from type and direction that follows ST_NAME
FULL_NAME	M	TEXT	125	Full street name, should be a concatenation of 4 fields : PRE_DIR, ST_NAME, ST_TYPE and POST_DIR with no trailing or leading spaces
ST_ALIAS	C	TEXT	125	Entire alias street name assigned to street segment
ONE_WAY	O	TEXT	2	**B, FT, TF** for **B**oth, **F**ROM node to **T**O node, **T**O node to **F**ROM node
SP_LIMIT	O	LONG	DEFAULT	Posted speed limit in MPH
CLASS	M	TEXT	4	Street type designation code (See ROC Codes below)
RDCLS_TYP	O	TEXT	15	See valid Road Class Types below
NOTES	O	TEXT	75	Additional information

2.2 ROC Codes ('Street Type' Designation)
IH – Interstate
US – US highways
SH – State highways
FM – Farm to Market, Ranch Road, Ranch to Market
LS – City Street, County Road, Park Road, Recreational, Frontage Road
AC – Access Road, Crossover
PVT- Private Road
TR – Toll Road
RAMP- On-ramp, Off-ramp
DW - Driveways

2.3 Road Class Types
Primary
Secondary
Local (City, Neighborhood, or Rural Road)
Ramp
Service (usually along a limited access highway)
Vehicular Trail (4WD, snowmobiles)
Walkway (Pedestrian Trail, Boardwalk)
Alley
Private (service vehicles, logging, oil fields, ranches, etc.)
Parking Lot
Trail (Ski, Bike, Walking / Hiking Trail)

3 Site / Structure Address Points (AP)

This point data represents addressable sites, structures, or property entrances that exist within the CAPCOG region.

3.1 Graphic (Spatial) Edits

All addressed site/structures must be represented in the address point layer. When a site/structure point is created or edited, several sources and methods can be used, including aerial imagery, georeferenced survey plats, computer-aided design (CAD) files, parcels, mapping-grade GPS units in the field, or other authoritative sources and methods. When the actual structure location is known, the symbol should represent the general center of the structure. In other cases, please refer to the "NENA Information Document for Development of Site/Structure Address Point GIS Data for 9-1-1" document. In any case, the positional accuracy of structures or designated site locations should be within +/- 25 feet of their true location or intended designation.

3.2 Database Format

FIELD NAME	M/C/O	TYPE	WIDTH	DESCRIPTION/ VALID ENTRIES
SOURCE	M	TEXT	75	Agency that last updated the record, i.e. HAYS, WILLIAMSON
PROVIDER	M	TEXT	75	The name of the regional 911 authority *CAPCOG will populate*
LAST_MOD	M	DATE	26	Date of last update using ISO 8601 format
EFF_DATE	O	DATE	26	Date the new record information goes into effect in ISO 8601 format
SITE_ID	M	LONG	DEFAULT	Unique site ID *CAPCOG will populate*
SITEUNQID	M	TEXT	100	Unique ID for each address site - *CAPCOG will populate*
COUNTRY	M	TEXT	2	Country name represented by two capital letters
STATE	M	TEXT	2	State name by two letters defined by USPS publication 28
COUNTY	M	TEXT	40	County name or equivalent fully spelled out
MUNICIPAL	M	TEXT	100	Name of municipality, if none populate with "UNINCORPORATED"
MUNI_DIV	C	TEXT	100	Name of municipality division i.e. "WARD 5 FRIENDSHIP DISTRICT"
NBRHOOD	C	TEXT	100	Name of neighborhood or subdivision where the address is located
ADDNUM_PRE	O	TEXT	15	Part of an address leading the numeric address
ADDR_NUM	M	LONG	DEFAULT	Numeric identifier of a location along a thoroughfare
ADDNUM_SUF	C	TEXT	15	Part of an address following the address number i.e. ½, B
PRE_MOD	O	TEXT	15	Word or phrase separate from type and direction that precedes PRE_DIR i.e. Access, Alternate, Business, Connector, Extension, Scenic, Spur, Ramp Underpass, Overpass

Field	Req	Type	Length	Description
PRE_DIR	C	TEXT	2	Leading directional prefix N, S, E, W, NE, NW, SE, SW
PRE_TYPE	O	TEXT	20	Spelled out word or phrase that precedes and identifies a type of thoroughfare
ST_NAME	M	TEXT	60	**Legal** street name as assigned by local addressing authority
ST_TYPE	C	TEXT	4	Type of street following the street name, valid entries on USPS Pub 28
POST_DIR	C	TEXT	2	Trailing directional suffix N, S, E, W, NE, NW, SE, SW
POST_MOD	O	TEXT	12	Word or phrase separate from type and direction that follows ST_NAME
FULL_NAME	M	TEXT	125	Full street name, must be identical to the site's related road FULL_NAME
ST_ALIAS	C	TEXT	125	Entire alias street name assigned to related street segment
FULL_ADDR	M	TEXT	170	Full address, should be a concatenation of ADDNUM_PRE + ADDR_NUM + ADDNUM_SUF + FULL_NAME with no extra, leading and trailing spaces
ESN	M	TEXT	5	Emergency Service Number associated with the address and community name Precede by '0' if digits are less than 5
MSAG_COM	M	TEXT	30	Valid service community associated with the location of the address
POSTAL_COM	M	TEXT	40	City name for the ZIP of an address, as given in the USPS
ZIP	C	TEXT	5	5-digit numeric postal code area
ZIP4	O	TEXT	4	ZIP plus 4 code without the dash
BLDG	O	TEXT	75	One among a group of buildings that have the same address
FLOOR	O	TEXT	75	A floor, story or level within a building
UNIT	O	TEXT	75	A suite or group of rooms within a building that share the same entrance
ROOM	O	TEXT	75	A single room within a building
SEAT	O	TEXT	75	A place where a person sits within a building i.e. cubicle
LANDMARK	O	TEXT	150	The name by which a prominent feature is publicly known or Vanity address
MILEPOST	C	LONG	DEFAULT	A posted numeric measurement from a given beginning point
SITE_TYPE	C	TEXT	50	Type of feature identified by the address i.e. residential, office, store, school
POINT_X	O	DOUBLE	DEFAULT	Longitude of point in decimal degrees using EPSG: 4326
POINT_Y	O	DOUBLE	DEFAULT	Latitude of point in decimal degrees using EPSG: 4326
NOTES	O	TEXT	254	Additional location information, which is not a building, floor, unit, room or seat
ELEVATION	O	DOUBLE	DEFAULT	Height above Mean Sea Level in meters

4   Emergency Service Zone (ESZ)

This polygon data consists of the intersection of law enforcement, fire district, and emergency medical service and telephone exchange boundaries in the CAPCOG region.

4.1 Graphic (Spatial) Edits

These areas need to accurately reflect the boundaries of each geographically unique combination of fire, law and EMS responder zones. This layer is created and maintained by overlaying with some combination of street centerlines, municipal (i.e. city limit) boundaries, parcels boundaries, or other data to determine each jurisdiction's emergency response service areas. As new emergency response services are added to, or change in an area, this boundary file will need to be modified accordingly. Communications must be regularly preserved with all fire, law, and emergency medical responders to obtain the information required to maintain updated ESZ boundaries. These ESZ boundaries should be within +/- 50 feet of their true location with no gaps or overlaps. These items and other geometric relationships are referred to as "topology", and especially important for NG9-1-1 purposes. **In addition, it is very important that all features with identical attribute information are merged into one multipart polygon.**

4.2 Database Format

FIELD NAME	M/C/O	TYPE	WIDTH	DESCRIPTION/ VALID ENTRIES
SOURCE	M	TEXT	75	Agency that last updated the record, i.e. BASTROP, BURNET
PROVIDER	M	TEXT	75	The name of the regional 911 authority *CAPCOG will populate*
LAST_MOD	M	DATE	26	Date of last update using ISO 8601 format
EFF_DATE	O	DATE	26	Date the new record information goes into effect in ISO 8601 format
ES_UNQID	M	TEXT	100	ID for each emergency service polygon - *CAPCOG will populate*
LAW	M	TEXT	60	Name of law service provider
FIRE	M	TEXT	60	Name of fire service provider
MEDICAL	M	TEXT	60	Name of medical service provider
COUNTRY	M	TEXT	2	Country name represented by two capital letters
STATE	M	TEXT	2	State name by two letters defined by USPS publication 28
COUNTY	M	TEXT	40	County name fully spelled out
URI	M	TEXT	254	URN/URL for routing. Example: sip:sos.law@city.eoc.tx.us
URN	M	TEXT	50	The URN for the Emergency Service or other Well-Known Service*
ESN	M	TEXT	5	ESN of the responding agency preceded by '0' if number of digits < 5
TANDEM	M	TEXT	3	911 Selected Router Code
TANDEM2	C	TEXT	3	911 Selected Router Code
ESSID	M	TEXT	2	Unique tandem routing code *CAPCOG will populate*
ESNGUID	M	TEXT	8	Concatenation of ESN and ESSID separated by a single forward slash "/" CAPCOG will concatenate
AVCARDURI	C	TEXT	254	URI for the vCARD of contact information

* Example: "urn:service:sos" for a PSAP or "urn:service:sos.ambulance" for an ambulance service

5   Municipal Boundary

This polygon data represents municipal boundaries in the CAPCOG region.

5.1 Graphic (Spatial) Edits
When city limits change due to annexations, metes and bounds surveys or other related information must be acquired to update the city limit boundaries. Coordinate geometry (COGO) – is one of the preferred methods for calculating coordinate points from surveys and can be used to update the city limit boundaries in the GIS within + or – 50 feet of their true location with no gaps or overlaps

5.2 Database Format

FIELD NAME	M/C/O	TYPE	WIDTH	DESCRIPTION/ VALID ENTRIES
SOURCE	M	TEXT	75	Agency that last updated the record, i.e. CALDWELL, LLANO
PROVIDER	M	TEXT	75	The name of the regional 911 authority *CAPCOG will populate*
LAST_MOD	M	DATE	26	Date of last update using ISO 8601 format
EFF_DATE	O	DATE	26	Date the new record information goes into effect in ISO 8601 format
POLY_ID	M	LONG	DEFAULT	Numeric Polygon ID *CAPCOG will populate*
MUNIUNQID	M	TEXT	100	Unique ID for each municipality - *CAPCOG will populate*

COUNTRY	M	TEXT	2	Country name represented by two capital letters
STATE	M	TEXT	2	State Name (eg: TX)
COUNTY	M	TEXT	40	County name fully spelled out
MUNI_NM	M	TEXT	100	Name of municipality i.e. "AUSTIN"

Guidance Document for CAPCOG Next-Generation 9-1-1 Geographic Information System (GIS) Data
Version 2: April 2020

Introduction:

As the Transition Workflow Cycle of the Next-Generation 9-1-1 Database Program Interlocal Agreement (ILA) describes, our region is moving closer and closer to deploying a Next-Gen 9-1-1 system that enables emergency calls to route to the correct PSAP based on GIS data. This transition begins the process of moving away from our traditional MSAG-based (tabular database) routing system to one that will be faster, more reliable, and enable multimedia such as pictures and videos to be sent to 9-1-1 call takers. However, in order to move to this new system, several changes need to be made to our workflows and data. Perhaps the biggest change is that we will be utilizing new cloud-based software packages to assist with quality-control (QC). One of these solutions will also ultimately become the mechanism by which 9-1-1 GIS data is supplied to PSAPs, which could ultimately be done at any time throughout the month as opposed to just once.

The intention of this document is to serve as a guide for county coordinators in the preparation of this transition, and to provide detailed technical information regarding how to prepare the 9-1-1 GIS data submission. CAPCOG reserves the right to unilaterally update this guidance document at any time.

Summary of Changes:

Below is a list of items we need to accomplish, as outlined in the Transition Workflow Cycle of the ILA.

- Create globally unique IDs (GUIDs) for all features in all feature classes of the GIS database in order to track changes to data over time
- Utilize the "Last_Modified" date field in order to track new and legacy data
- Incorporate emergency service boundaries into data or determine a process to create and manage them
- Determine if changes to PSAP boundary coverage areas need to be made
- Determine if changes to provisioning boundaries need to be made
- Participate in training opportunities for the EGDMS and Data Hub QC platforms
- Field map and upload data to EGDMS and Data Hub
- Retrieve errors from QC software and correct them
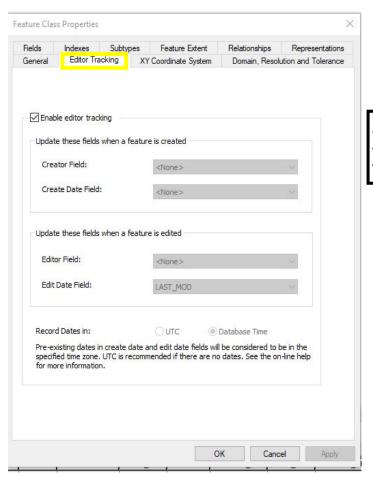
Globally Unique IDs (GUIDs):

In a Next-Gen 9-1-1 system, a new requirement has been set by NENA (National Emergency Number Association) that stipulates data <u>must</u> include Globally Unique IDs, or GUIDs. GUIDs are created by constructing unique feature IDs using a format as described in the associated document provided by CAPCOG.

Each GUID should remain unchanged for the life-span of the GIS data so that it supports the resolution of errors through quality control discrepancy reporting, and allows for us to track changes to data over time.

Using the "LAST_MOD" Field:

Attachment B of the ILA, entitled "*CAPCOG NG9-1-1 Transitional GIS Data Requirements*" describes a "LAST_MOD" or Last Modified date field in each of the GIS data layers and is marked as mandatory for completion. In order for CAPOG to begin tracking what is 'new' data and what is 'legacy' data, we need this field to be completed in each of the data layers. Our goal in differentiating between these two data types is so that we can determine if progress is being made in data error correction. Use of this field will also be monitored and included in the performance reports that CAPCOG will send out each month.

If there is a GIS feature that was created prior to October 1, 2019 and the LAST_MOD field is NULL or otherwise not known, this field should be populate with a date of 10/1/2019 and will be counted as legacy data.One way to have this field updated automatically when editing or creating features is to use 'editor tracking' on the feature class. This can be done by right-clicking the feature class in ArcCatalog and then selecting 'Properties'. When the Feature Class Properties dialog box opens, select the 'Editor Tracking' tab. The below image shows how this can be set up:

- *Check the 'Enable editor tracking' box*
- *Set the 'Edit Date Field' to LAST_MOD*
- *Select 'Database Time' to record dates*

New Quality-Control (QC) Platforms:

The Capital Area Emergency Communications District (CAECD) has purchased two all-new quality-control systems for our counties to use. These will be used as a means to not only quality control GIS data and return the results of errors but, in the case of the Enterprise Geospatial Database Management System (EGDMS), will actually *provide* data to the functional elements of a NG9-1-1 environment. Again, in NG9-1-1, GIS data is the driver of call routing!

Enterprise Geospatial Database Management System (EGDMS)
Vendors: AT&T and Intrado

The Enterprise Geospatial Database Management System (EGDMS) is a web application that serves as the front-end user interface for the NENA Spatial Interface (SI) requirement. GIS data submitted through EGDMS is validated, coalesced, and used for provisioning to NG9-1-1 (sometimes referred to as i3) systems which are called the ECRF and LVF. These stand for Emergency Call Routing Function and the Location Validation Function. Both of these elements are major components in the NG9-1-1 environment

One of the biggest advantages in moving to this system is that it will enable counties the ability to update PSAP map data much more frequently than our current workflow of just once a month.

EGDMS includes the following features:
- Secure 2-factor authentication
- A file-upload user interface that enables customers to identify the contents of the upload
- Acceptance of file geodatabase files and shapefiles (although no one should be using shapefiles!)
- Attribute field mapping configuration that is customer-driven
- Automated schema change detection and error notification
- Automated email notification for upload and processing status
- GIS data validation report retrieval

A note: CAPCOG will provide a spreadsheet that shows the fields used by EGDMS and the corresponding CAPCOG data model fields. This will aid in the field mapping portion of configuring your agency EGDMS account.

As a QC platform, EGDMS will find "critical" errors as outlined in Transition Workflow Cycle of the ILA. Critical errors have the potential to negatively affect the call routing process and, as such, need to be corrected. Please review the EGDMS user guide for detailed information on the error types!

Each coordinator, and in some cases staff, will be provided a username by Intrado in order to login. Previous Entrust tokens can still be used. Those that do not have Entrust tokens will be provided one by CAPCOG. Entrust tokens are key fobs that provide a unique number that is to be used when accessing EGDMS.

After an initial upload of GIS data has been submitted to EGDMS, Intrado will then provide a subsequent training session in which they will discuss how to retrieve errors from the system.

EGDMS also provides the user with the ability to mark features as exceptions, however only in the road centerline Feature Class. This is because EGDMS does not look for critical errors in address point, ESZ, or city limits data

Note: due to technical issues with EGDMS that have not yet been resolved as of February 28, 2020, County will only be required to start using EGDMS after it receives notification from CAPCOG's project representative to do so.

GeoComm GIS Data Hub
Vendor: GeoComm

The GeoComm GIS Data Hub is a robust web-based GIS data management solution that helps transform, quality check (QC), report, aggregate, and provision GIS data using predefined, standardized processes to ensure the timely delivery of GIS data to your 9-1-1 system. Offering virtually unlimited quality-control tools, GIS Data Hub ensures greater accuracy of the data and helps you meet your obligated GIS responsibilities for NG9-1-1. The GIS Data Hub is designed to simplify the user experience. Your system administrator grants access to only content specific to your role, project and/or client. As a System User, your primary role is submitting GIS data for validation.

Data Hub is able to do the following:
- Provide GIS data insights through rigorous quality control and reporting processes
- Transform disparate GIS datasets into a common schema (which is based on the NENA GIS data model)
- Aggregates GIS datasets into a seamless coverage area
- Provides map data packages formatted to meet 9-1-1 mapping and Computer Aided Dispatch (CAD) systems

In addition to also being able to find critical errors like EGDMS, Data Hub will also find "significant" and "other" errors. As described in the Transition Workflow Cycle of the ILA, significant error types are those that negatively impact dispatch systems and other systems used for routing of emergency vehicles. As such, they should be corrected. Other error types are those that, while they may not impact system functionality, are recommended to be corrected to maintain data integrity.

This QC platform also offers users the ability to create an exceptions field in their GIS data that can be used to keep Data Hub from continuously reporting errors that are not actual (or legitimate) errors

Please review the Data Hub user guide to find detailed information about the system and what all it is capable of doing.

New GIS Data:

In addition to the traditional GIS data submitted to CAPCOG, there will be some new Feature Classes that will be required for data submissions to EGDMS, Data Hub, and CAPCOG.

Provisioning Boundary:
This polygon layer defines the area of GIS data provisioning responsibility, with no unintentional gaps or overlaps. It should contain (include) all your agency's data within it. The Provisioning Boundary must be

agreed to by all adjoining data provisioning providers. When submitting GIS data, a 9-1-1 Authority (or 9-1-1 Authority designee) MUST only include GIS data for their geographic area of responsibility (provisioning boundary) and MUST ensure the data includes coverage for the entire extent of that area. CAPCOG will provide Provisioning Boundaries to all counties with the expectation that we will all work together should they need to be altered. These boundaries are continually updated and as they are finalized, CAPCOG will make updated versions available to all partner 9-1-1 authorities to use in the subsequent month's data upload, and quality-checks should be made only against the provisioning boundaries provided by CAPCOG.

Emergency Service Boundaries:
Not to be confused with Emergency Service Zones (ESZs, sometimes referred to as ESNs) which are polygon layers that represent unique combinations of fire, law, and EMS responder zones for a geographic area, Emergency Service Boundaries are **individual** GIS data layers that define the geographic area for **single** response service types. This means that instead of one polygon layer representing all responder types, there are now three separate GIS layers for Law, Fire, and EMS. Each of these layers is used by the NG9-1-1 system to perform a geographic query to determine which Emergency Service Providers are responsible for providing service to a location. Emergency Service Boundaries are used by PSAPs to identify the appropriate entities/first responders to be dispatched. There MUST be a **SEPARATE** Emergency Service Boundary layer for each type of service.

The set of Emergency Service Boundaries MUST include the following:
- Law Enforcement (LAW)
- Fire
- Emergency Medical Services (EMS)

The addition of ESBs does not mean that our traditional ESZ (sometimes referred to as ESN) layer will be discontinued. CAPCOG still expects counties to maintain and submit ESZ layers as they have. Counties MAY maintain the Emergency Service Boundary layers as a combined or single layer for each emergency service, however, when exchanging emergency service boundary information in an NG9-1-1 environment, Emergency Service Boundaries MUST be exchanged as individual layers for each emergency service type (e.g. one for law, one for fire, and one for EMS).

ESB maintenance is described in detail in the CAPCOG document titled "Globally Unique IDs (GUIDs)".

Note, these new layers must be in the correct schema which CAPCOG will also provide. The schema that will be used is also shown in the associated *"EGDMS Field Mapping to CAPCOG"* spreadsheet.

***Expected Field Values**: With the addition of the ESBs to our workflow, there are a couple of new fields that come with these layers that have haven't used before. Please consult the associated field mapping documentation for further information. The new fields are:

- **Service URI**: In the case of ESBs, this field corresponds to the PSAP covering that area and should only be completed if the responding agency is also a PSAP
    - **Ex:** *The Leander PD polygon in the LAW ESB for Williamson County would get the associated Service URI for the Leander PD PSAP. However, the polygon for Granger PD's coverage area would NOT get a Service URI as it is not a PSAP. A list of Service URIs for*

each PSAP can be found in the Transitional Guidance folder CAPCOG uploaded to the FTP site.

- **Discrepancy Agency ID**: This is the name of the data source. It will be the name of the county submitting the upload.
- **Agency ID**: Domain name of the agency (county) uploading. A list of these domains can be found in the *"How to Create Globally Unique IDs (GUIDs)"* document

PSAP Boundaries:

PSAP boundaries are a single GIS layer that is comprised of polygons (in some cases just a single polygon) that show the geographic coverage area for PSAPs within your county. The primary use for this layer is to route and deliver 9-1-1 calls to the correct PSAP, thus making it the **most important layer.** It is critical that there are no **gaps** or **overlaps** between external (at county borders) and internal (borders within the county). This layer will be managed and edited by CAPCOG but it is absolutely imperative that county coordinators work with CAPCOG to ensure things are correct.

CAPCOG will provide to the counties PSAP boundaries we have created and will continually make updates to them as needed and send to county coordinators. Coordinators will need to review this layer and send CAPCOG any suggested edits or questions. CAPCOG created these using the city limits layer submitted by each county. Coordinators should use the latest PSAP boundaries provided by CAPCOG for the subsequent month's data upload. Quality-checks should be made only against the provisioning boundaries provided by CAPCOG.