New Mexico 911 Program GIS Data Assessment Overview

NMC 83rd Annual Conference, Clovis

June 20, 2019



New Mexico Department of
Finance & Administration





GIS Data Overview

Contractors for GIS Data Processing starting January 2019

- Earth Data Analysis Center, The University of New Mexico
- Bohannan Huston, Inc.
- EDAC's Role
 - Data acquisition, processing, assessment, reporting, technical support
 - Creating statewide NM911 Master Database
- BHI's Role
 - PSAP Data Clips, and updating PSAP Maps

GIS Data Overview

- Data Upload Status (June 2019)
 - 84 GeoData providers (primary)
 - Counties, Cities, Towns, Villages, and Tribes
 - ► 54 provided data at least once
 - Approx. 23 providers each month
- 41 PSAPs
 - ▶ 34 Local Govt. (counties, cities)
 - 4 Tribal
 - ► 3 DPS
 - 5 Mapping Systems: Airbus MapStar, Airbus Vesta, Motorola CallWorks, WEST MapFlex, WEST PowerMap



GIS Data Model V1.0

- Data Standardization
- Required Data Layers
 - Road Centerlines
 - Address Points
 - Administrative/Addressing Boundary
- Optional Layers
 - ► ESN/ESZ Boundary
 - PSAP Boundary

1 Fiel	А				
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	ld Name	Туре	Length	Maintainance Authority	Fields Description
SEG	GMENT ID	long	9	Program will assign initially	Unique Segment identifier: if used by local data source this can be imported to the master database
520		iong	,	riogram win assign mitiany	Low address left: must be 9 numeric characters or less and must contain the lowest actual or potential address
LA	ADD_LOW	long	9	Local - mandatory	number on the left side of the road segment.
	_	-			High address left; must be 9 numeric characters or less and must contain the highest actual or potential addre
L_A	ADD_HIGH	long	9	Local - mandatory	number on the left side of the road segment.
					Low address left; must be 9 numeric characters or less and must contain the lowest actual or potential address
R_A	ADD_LOW	long	9	Local - mandatory	number on the right side of the road segment.
					High address right; must be 9 numeric characters or less and must contain the highest actual or potential add
R_A	ADD_HIGH	long	9	Local - mandatory	number on the right side of the road segment.
CTO		tout		Less mandates	Street pre-direction; must consist of only postal-standard street direction prefixes, up to two characters with
518	K_DIK	text	2	Local - mandatory	spaces or punctuation, rost direction should not be included here (e.g., "Main St NW"). The only valid entries A word or phrase that precedes the Street Name and identifies a time of therewishers in a second to street and
STP		text	20	local - mandatory	A word of phrase that precedes the street name and identifies a type of thoroughtare in a complete street has (e.g. "County Rd, XV7" "Avenue A" "Calle Aurora")
318		UCAL	20	cocor - manualory	Street name: must be 60 characters or less and must contain a postal-standard road name without abbreviat
STR	R NAME	text	60	Local - mandatory	punctuation. Must not contain any street direction, street suffix or post direction data. Match with MSAG
				,	Street suffix or type; must be 4 characters or less and must contain a postal-standard street suffix (without
STR	R_SUFFIX	text	4	Local - mandatory	punctuation) or no value at all. The following are some common examples: RD, ST, AVE, LOOP, CT, PL, etc. M
					Street post-direction; must be 2 characters or less and must contain a postal-standard post direction (without
PO	ST_DIR	text	2	Local - mandatory	punctuation) or no value at all. The following are the only valid entries: N, NE, E, SE, S, SW, W, NW or blank.
STR	R_ALIAS	text	68	Local - mandatory	Other street name as it appears in the MSAG database. Maintained locally.
col	MNAME_L	text	35	Local - mandatory	Postal community name as identified on the left side of the street.
CO	MNAME_R	text	35	Local - mandatory	Postal community name as identified on the right side of the street.
MS	SAG_COM_L	text	35	Local - mandatory	Master Street Address Guide (MSAG) Community name for the left side of the street segment as it appears in
IVIS.		text	35	Local - mandatory	master street Address Guide (MSAG) community name for the right side of the street segment as it appears in
0		text	5	Local - not mandatory	CountyFIPS ID for the right side of the street segment.
710	CODE I	text	5	Local - mandatory	Five digit 7in code for the left side of the street segment
ZIP	CODE R	text	5	Local - mandatory	Five digit Zip code for the right side of the street segment
		10AL		least manaatory	Process of the right side of the succession of the second se

B PSAP

- RoadCenterline

GIS Data Model V2.0

- User comment period (July 2019)
- Minor modifications to existing layers
- Standardizing ESN, PSAP Schema
- New Layers (NG911 Compliant)
 - Public Facilities
 - Community Boundary
 - Hydrology

Railroads

- Mile Markers
- Bridges

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		11 GIS Database Schema V2 0			
1		II GIS Database Schema v2.0			
2	Changel				
3	Change Lo	Change	Dataset Effected	Peacen	
4	6-May-10	NM 911 is replaced as NM911	All datasets	To maintain consistency	
6	U-IVIAy-15	Dataset definitions are included	All datasets	Provides a brief description of the dataset.	
7		Street Centerline changed to RoadCenterline.	RoadCenterline	To maintain consistency.	
8		Definition of STR_NAME_1 field is updated.	AddressPoint, RoadCenterline	Added STR_PRETYPE to the list of concatenated	fields.
9		SHAPE_LENGTH field is removed.	RoadCenterline	This field is created automatically by the ArcGIS	software and is not a req
		Maintenance authority for DATE_UPD field is changed to NM911			
10		Program.	AddressPoint, RoadCenterline	This field is usually maintained by the NM911 P	rogram (see field descripti
		CREATION_USER', 'CREATION_DATE', 'MODIFY_USER', 'MODIFY_DATE'			
		columns' names were changed to 'created_user', 'created_date',			
11		'last_edited_user', 'last_edited_date' respectively. Also, the	Address Paint, Read Contarling	These fields are created by ArcGIS software to a	manage editor tracking. Th
11		Field lengths for 'sreated user' 'last adited user' shanged to 255	AddressPoint, RoadCenterline	the field names reflect the actual field names.	
12		characters.	AddressPoint BoadCenterline	Default field length added by ArcGIS software.	
			naaressi oint, noaaeenterime	These data are used for validation purposes or	ly and hence specific sche
				been adopted. The NM911 Program created an	updated schema normali:
13		Includes AdministrativeBoundary dataset schema	AdministrativeBoundary	boundary datasets.	
				Previous schema was based on the data provid	led by local agencies. The l
14		Includes ESZ dataset schema	ESZ	Program updated schema to standardize data	providers' data.
				Previous schema was based on the data provid	ed by local agencies. The I
15		Includes PSAP dataset schema	PSAP	Program updated schema to standardize data p	providers' data.
16		Hudrology, Rollroad, MileMarker, and Bridger			
17		Hydrology, Kaliload, WileWarker, and Bridges			
18					
**	ch.	angel ag ReadCenterline AddressReint AdministrativeReundan	EC7 DCAD DublicEncilities	CommunityRoundany Hudrology Railroad	MileMarker ()
1	•	AddressPoint AdministrativeBoundary	ESZ PSAP Publicracilities	communityboundary Hydrology Railroad	
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EDAC GIS Workflow

Geospatial Data Acquisition and Processing



NM911 State Master Database

Data Reporting

•Data Assessment Report and

BHI GIS Workflow

PSAP Map Server Updates



Data Collection

- Data Collection Announcement Email sent to primary GeoData providers each month
- Data are collected through a secure NM911 Data Portal <u>https://portal.nm911.org/</u>
- ► Timeline 1st 15th of each month
- Accepted Formats: Shapefiles and file geodatabases





Download Reports & Data					
Date	Data	Report	Notes		
02-2019	Download Error Geodatabase	Download Error Report	Note		
12-2018	Download Error Geodatabase	Download Error Report			
Supp	ort History		-		
Supp	ort History Support His	story			
Supp	ort History Support His Date	story Description			
Supp tatus	ort History Support His Date 2019-04-17 09:31:35 AM	story Description Request for support.			

\odot Get Support Support Request If you require support as it relates to the NM911 program, fill out the form below, and we will contact you shortly. Who should we contact? Test User (Primary) O Test User 2 (Secondary) O Other Name Address Test User University of New Mexico E-Mail Phone Number hbarrett@edac.unm.edu 505-277-3622 Support description. Select Issue Type Other -Type your request here.

Modify Contacts	
BACK	
	Admin Test Data Provider Contacts
rimary Data Provider	
Primary Title	Primary Contact Name
Primary POC	Test User
Primary Employer	Primary Address
EDAC	University of New Mexico
Primary E-mail	Primary Phone
primarypoc@email.com	505-277-3622
Secondary Data Provider	
Secondary Data Provider Secondary Title	Secondary Contact Name
Secondary Data Provider Secondary Title Secondary POC	Secondary Contact Name Test User 2
Secondary Data Provider Secondary Title Secondary POC Secondary Employer	Secondary Contact Name Test User 2 Secondary Address
Secondary Data Provider Secondary Title Secondary POC Secondary Employer EDAC	Secondary Contact Name Test User 2 Secondary Address University of New Mexico
Secondary Data Provider Secondary Title Secondary POC Secondary Employer EDAC Secondary E-mail	Secondary Contact Name Test User 2 Secondary Address University of New Mexico Secondary Phone



		Frequently Asked Questions	
Но	w can I request s	upport?	
u car	request support		
	rrequest support	by using the "Get Support" button on the left side menu of portal.nm911.org.	
+	What is NM911	by using the "Get Support" button on the left side menu of portal.nm911.org.	
+	What is NM911 How do I submit	Program? data to the NM911 Program?	

Data Conversion

- ► NM911 Data Portal Admin Tools
 - ► NM911 Data Model
 - Field Mapping/Crosswalk between local schema to state schema
 - Data imported to State Schema
 - Error feature classes are created if exists

Address	Schema To	o Repair	Centerline	e Schema To R	epair
Bernalillo County		ع	Bernalillo County		٩
Dona Ana County		ع	Dona Ana County		٩
Rio Arriba County -	Village of Chama	ع	Sandoval County - Cit	y of Rio Rancho	٩
E	Bernalillo County	Road Schema Ma	p		
GMENT_ID nknown	L_ADD_LOW	L_ADD_HIGH	н -		
ADD_LOW ADD_LOW	DD_LOW R_ADD_HIGH DD_LOW v R_ADD_HIGH		STR.DIR • STR.DIR •		
IR_PRETYPE nknown	STR_NAME STR_NAME	STR_SUFFIX STR_SUFFIX			
DST_DIR DST_DIR	STR_ALIAS + ALIAS	Rio Arriba (County - Village of Char	ma Address Schema Ma	p
DMNAME_R Jity_R	MSAG_COM_L	STRUCT_ID Unknown	NUMBER	ADD_SUFFIX Alpha	•
D_ID_L	CO_ID_R	STR.DIR PREFIX	OBJECTID ID	STR_NAME ROAD_NAME	-
PCODE_R	ESN_L SUFFIX		PREFIX	STR_NAME_1 RDNAME	.
IR_NAME_1	ROAD_LABEL	MSAG_COM Unknown	• SUFFIX	ALIAS ALIAS	-
nknown	• FOLL_NAME	ESN Unknown	ALIAS CITY	DPID Unknown	-
		DATE_UPD Unknown	• STATE	CREATION_USER Unknown	
		MODIFY_DATE Unknown	+ RDNAME	CLEXCEPTION Unknown	<u> </u>
		SAVE	NOTE1		

Data Assessment

- QA/QC to ensure data integrity
- Spatial & Tabular Accuracy Checks
- Topology Checks
- Data Reviewer Checks
- Datasets: Road Centerlines, Address Points, Administrative/Addressing Boundary



Data Assessment

DATA REVIEWER CHECKS

- 1 Address Point Address Number Cannot Be 0, Negative, NULL Or Blank
- 2 Address Point Address Number Should Be Within Road Centerline Address Range
- 3 Address Point Full Road Name Must Match Road Centerline Full Road Name
- 4 Address Point Has Invalid Geometry
- 5 Address Point Must Not Have Duplicate Geometry
- 6 Address Point Street Name Cannot Be Blank Or NULL
- 7 NM911 Topology Checks
- 8 Road Centerline Has Invalid Geometry
- 9 Road Centerline Left High Address Must Be Odd
- 10 Road Centerline Left Low Address Is Greater Than Left High Address
- 11 Road Centerline Left Low Address Must Be Odd
- 12 Road Centerline Length Must Not Be Less than 15 ft
- 13 Road Centerline Must Be Broken And Snapped At Road Intersections
- 14 Road Centerline Must Not Have Dangles
- 15 Road Centerline Must Not Have Duplicate Geometry
- 16 Road Centerline Must Not Have Left Side Overlapping Address Range
- 17 Road Centerline Must Not Have Right Side Overlapping Address Range
- 18 Road Centerline Right High Address Must Be Even
- 19 Road Centerline Right Low Address Is Greater Than Right High Address
- 20 Road Centerline Right Low Address Must Be Even
- 21 Road Centerline Should Not Be Multipart

Data Analysis

► NM911 Unique ID Implementation

DPID Sequential Number

- 0 Address Points
- 1 Road Centerlines

Data Analysis - Fishbone

- Visually Compare road centerlines to address points
 - ► Out of numerical order
 - On the wrong side of the street
 - On the wrong block















Address range of the road centerline needs to be flipped odd/even

Data Reporting

3		BE_CO_201905.gdb
		FISHBONE_ANALYSIS
		· Address_GCD
		FISHBONE_LINES
	-	T NM911
		· AddressPoints
		AdministrativeBoundary
		🖾 ESZ
		XI NM911_Topology
		B PSAP
		- RoadCenterline
	-	NM911_ERRORS
		Cannot_Be_0_Negative_NULL_Or_Blank
		Address_Point_Address_Number_Should_Be_Within_Road_Centerline_Address_Range
		Address_Point_Full_Road_Name_Must_Match_Road_Centerline_Full_Road_Name
		Contemporary Address_Point_Has_Invalid_Geometry
		Address_Point_Has_Invalid_Topology
		C Address_Point_Import_Errors
		Address_Point_Must_Not_Have_Duplicate_Geometry
		Address_Point_Street_Name_Cannot_Be_Blank_Or_NULL
		😁 Road_Centerline_Has_Invalid_Geometry
		😁 Road_Centerline_Has_Invalid_Topology
		😁 Road_Centerline_Import_Errors
		🖅 Road_Centerline_Left_High_Address_Must_Be_Odd
		📼 Road_Centerline_Left_Low_Address_ls_Greater_Than_Left_High_Address
		🖅 Road_Centerline_Left_Low_Address_Must_Be_Odd
		🛨 Road_Centerline_Length_Must_Not_Be_Less_than_15_ft
		🖅 Road_Centerline_Must_Be_Broken_And_Snapped_At_Road_Intersections
		😁 Road_Centerline_Must_Not_Have_Dangles
		😁 Road_Centerline_Must_Not_Have_Duplicate_Geometry
		😁 Road_Centerline_Must_Not_Have_Left_Side_Overlapping_Address_Range
		😁 Road_Centerline_Must_Not_Have_Right_Side_Overlapping_Address_Range
		😁 Road_Centerline_Right_High_Address_Must_Be_Even
		😁 Road_Centerline_Right_Low_Address_Is_Greater_Than_Right_High_Address
		😁 Road_Centerline_Right_Low_Address_Must_Be_Even
		😁 Road_Centerline_Should_Not_Be_Multipart

NM911 GIS Monthly Data Upload Assessment Report

Bernalillo County – May, 2019

The Earth Data Analysis Center (EDAC) at the University of New Mexico (UNM) performs data acquisition and processing for the New Mexico 911 (NM911) Program. With efforts from Geodata Providers, EDAC acquires geospatial data for Road Centerlines, Address Points, and Boundary data such as Administrative, ESN, PSAP, ESZ, and so on from the data providers for their respective jurisdiction (city, county, or tribal). These data are processed and converted to NM911 State Schema, which are uploaded to the Public Safety Answering Points (PSAP) to assist dispatch operations. If data are available, EDAC provides a monthly assessment report as an outcome, listing the number of features analyzed, processed, and inaccuracies or discrepancies found in the dataset, to assist the data providers to improve the quality of the geospatial data.

The New Mexico Geodata Providers are required to upload their monthly data to the NM911 Program via NM911 data portal (<u>https://portal.nm911.org</u>) by the 15th of each month. EDAC will perform necessary QA processes/procedures for data verification and validation to prepare data for further processing to create a master state database. The monthly data assessment report will be made available for data providers via the NM911 Data Portal. Data that were uploaded after 15th of each month will not be processed until the next month.

Data Upload Summary

The following table shows the datasets provided by Bernalillo County, date uploaded, total number of features uploaded.

Feature Class	Date Uploaded	Record Count
Addre ssPoints. shp	05/03/2019	237,658
RoadCenterlines.shp	05/03/2019	43,818

Road Centerlines

Schema Mapping Summary: The table below shows the schema mapping (crosswalk) between road centerline data submitted by the data provider and the NM911 state schema. Please note that if you change your schema, EDAC will automatically adjust the crosswalk/ mapping to conform with your data.

State Schema	Local Schema
SEGMENT_ID	Unknown
L_ADD_LOW	L_ADD_LOW
L_ADD_HIGH	L_ADD_HIGH
R_ADD_LOW	R_ADD_LOW
R_ADD_HIGH	R_ADD_HIGH
STR_DIR	STR_DIR
STR_PRETYPE	Unknown
STR_NAME	STR_NAME

Data Correction – Exceptions

- Road Centerline Left Low & High Address Must Be Odd
- Road Centerline Right Low & High Address Must Be Odd
 - Can be marked as **Exceptions** based on ground conditions
 - CI_Exception or C1_Exception data column
 - ► If using MapSAG: It assigns an exception code
 - If not using MapSAG: Please mark "Y" or "1" (based on the field data type: TEXT, INTEGER) if there is an exception and leave the column blank if no exception

Data Correction - Topology

- Roads Must Not Intersect or Touch Interior
 - Similar to Data Reviewer Road Centerline Must Be Broken and Snapped at the Intersection
- Address Point Must Be Properly Inside the Administrative Boundary
 - Administrative Boundary can be replaced with Addressing Boundary of validation, if available.



Data Correction – Address Points Examples

- Address Point Address Number Cannot Be 0, Negative, Null or Blank
 - Ex: 0 JUAN PEREA RD SE



- Address Point Address Number Should Be Within Road Centerline Address Range
 - ► Ex: 922 HILLSIDE DR SW



Data Correction - Road Centerline Examples

- Address Point Full Road Name Must Match Road Centerline Full Road Name
 - Ex: VALLE VISTA RD NW

- Road Centerline Must Not Have Right Side Overlapping Address Range
 - ► Ex: SICHLER RD SW



NM911 Master Database

- Import data submitted by data providers after validation
- Run geometry checks
- Share (road centerlines, address points) with
 - BHI for PSAP Map Updates
 - Public on RGIS Geospatial Data Clearinghouse (shapefiles)



NMDPS CAD GIS Support

- EDAC is under contract with Department of Public Safety (NMDPS) for GIS Support of their Computer Aided Dispatch (CAD) System
- This contract is not related to the New Mexico 911 Program GIS Support
- Routable Road Network Data Available of Request
- For questions regarding their data, workflow, or other inquires, please contact:

Brian Keller

GIS Manager, EDAC

Email: <u>bkeller@edac.unm.edu</u>

Phone: (505) 277-3622 x228



NM911 Program GIS Survey

- Objective: To determine GeoData Provider Training Needs and Overall Program Satisfaction
- Five Focused Areas (26 questions, approx. 5-10 minutes)
 - Identification Information
 - Program Communication
 - GIS Data
 - Technical Support
 - Training Options
- https://forms.gle/6y9QYDPBEz6xJmw87

New Mexico 911 Program GIS Survey

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The objective of this survey is to determine GeoData Provider Training needs and overall satisfaction with the New Mexico 911 (NM911) Program.

The survey consists of twenty six questions divided into five sections. Please provide answers to the best of your knowledge. The survey takes approximately 5 - 10 minutes to complete.

Sections

Identification Information (4 questions)
 Program Communication (3 questions)
 GIS Data (12 questions)
 Technical Support (4 questions)
 Training Options (3 questions)

NEXT

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Questions?

Contact Us

Technical Questions

Sandeep Talasila or Shirley Baros

Earth Data Analysis Center, The University of New Mexico

Email: nm911@edac.unm.edu

Phone: (505) 277-3622 x250; (505) 277-3622 x237

NM911 Data Portal: Submit a support request

General Questions

Gar Clarke

NM Geospatial and Broadband Program Manager

Email: george.clarke@state.nm.us

Phone: (505) 827-1663