

## Idaho Technology Authority (ITA)

### ENTERPRISE STANDARDS – S4000 – INFORMATION AND DATA

**Category: S4274 – Provisioning Boundaries**

#### **CONTENTS:**

- I. [Definitions](#)
- II. [Rationale](#)
- III. [Approved Standard\(s\)](#)
- IV. [Approved Product\(s\)](#)
- V. [Justification](#)
- VI. [Technical and Implementation Considerations](#)
- VII. [Emerging Trends and Architectural Directions](#)
- VIII. [Procedure Reference](#)
- IX. [Review Cycle](#)
- X. [Contact Information](#)
- XI. [Additional Information \(if any\)](#)  
[Revision History](#)

#### **I. DEFINITIONS**

See ITA Guideline [G105](#) (ITA Glossary of Terms) for definitions.

#### **II. RATIONALE**

Data standards are essential for development of statewide geospatial datasets (Framework), in accordance with The Idaho Map vision and plans. More specifically, statewide provisioning boundaries are required to define geographic areas of responsibility to provide GIS data to support Next Generation 911.

#### **III. APPROVED STANDARD(S)**

1. See Attachment

#### **IV. APPROVED PRODUCTS**

All GIS software used in Idaho are capable of generating and using the specified file format.

#### **V. JUSTIFICATION**

Evolving public safety needs, among others, require statewide authoritative spatial data to fuel applications.

#### **VI. TECHNICAL AND IMPLEMENTATION CONSIDERATIONS**

This standard requires a minimum of information in order to share and integrate provisioning boundaries. Very few jurisdictions will have difficulty implementing the standard if they have any GIS capability. Some support will be available through the state partner managing this Framework element.

## **VII. EMERGING TRENDS AND ARCHITECTURAL DIRECTIONS**

Traditional implementation of 911 capability is changing significantly from equipment intensive and telephone provider reliance to Internet-based telecommunications and spatial data. This new approach, which is much less expensive for counties to implement and maintain, requires spatial data. NG9-1-1 requires statewide spatial data.

## **VIII. PROCEDURE REFERENCE**

The format and content of this standard is specified in [ITA P5030 - Framework Standards Development Policy](#).

## **IX. REVIEW CYCLE**

Review will occur at least annually.

## **X. CONTACT INFORMATION**

For more information, contact the ITA Staff at (208) 605-4064.

## **XI. REVISION HISTORY**

09/15/2022 - Standard approved by the IGC-EC

08/24/2022 - Draft standard approved by the Idaho Public Safety Technical Working Group

Effective date: September 15, 2022



STATE OF IDAHO

# Provisioning Boundaries Standard

Part of the Public Safety Theme

Version 1

Effective September 15, 2022

Developed by the Public Safety Technical Working Group

## Revision History

Established by Public Safety Technical Working Group

## Contact

ITA Staff

Office of Information Technology Services

(208) 605-4064

[servicedesk@ita.idaho.gov](mailto:servicedesk@ita.idaho.gov)

## CONTENTS

1. <b>Introduction to the Provisioning Boundary Standard</b> .....	5
1.1. <b>Mission and Goals of the Standard</b> .....	5
1.2. <b>Relationship to Existing Standards</b> .....	6
1.3. <b>Description of the Standard</b> .....	6
1.4. <b>Applicability and Intended Uses</b> .....	6
1.5. <b>Standard Development Process</b> .....	6
1.6. <b>Maintenance of the Standard</b> .....	7
2. <b>Body of the Standard</b> .....	7
2.1. <b>Scope and Content</b> .....	7
2.2. <b>Need</b> .....	7
2.3. <b>Participation in the Standard Development</b> .....	7
2.4. <b>Integration with Other Standards</b> .....	8
2.5. <b>Technical and Operation Context</b> .....	8
2.5.1. <b>Data Environment</b> .....	8
2.5.2. <b>Reference Systems</b> .....	8
2.5.3. <b>Global Positioning Systems (GPS)</b> .....	8
2.5.4. <b>Interdependence of Themes</b> .....	8
2.5.5. <b>Encoding</b> .....	9
2.5.6. <b>Resolution</b> .....	9
2.5.7. <b>Accuracy</b> .....	9
2.5.8. <b>Edge Matching</b> .....	9
2.5.9. <b>Unique Identifier</b> .....	9
2.5.10. <b>Attributes</b> .....	10
2.5.11. <b>Stewardship</b> .....	10
2.5.12. <b>Records Management and Archiving</b> .....	10
2.5.13. <b>Metadata</b> .....	10
3. <b>Data Characteristics</b> .....	10
3.1. <b>Minimum Graphic Data Elements</b> .....	12
3.2. <b>Optional Graphic Data Elements</b> .....	12
3.3. <b>Standard Attribute Schema</b> .....	<b>Error! Bookmark not defined.</b>
3.4. <b>Data Quality</b> .....	13
Appendix A: References .....	13
Appendix B: Glossary .....	14

## 1. **Introduction to the Provisioning Boundaries Standard**

Provisioning Boundaries define geographic areas and the entity responsible for providing GIS data in support of NG9-1-1 in those areas. The GIS data provided by the agency responsible within a Provisioning Boundary including Civic Location layers which represent physical streets and landmarks as well as Service Boundary layers, such as Emergency Service Boundaries and Public Safety Answering Points. Provisioned data are used for the Location Validation Function (LVF) and Emergency Call Routing Function (ECRF) in NG9-1-1.

The Provisioning Boundaries layer is a crucial dataset for NG9-1-1 support since it clearly defines who is responsible for GIS data in a given area. There should be no unintentional overlaps or gaps between polygons in the Provisioning Boundaries layer, and those boundaries must be agreed upon by all adjacent data provisioning providers, and will help determine

- which dataset should be used when there is overlapping GIS data
- coverage for GIS data for a given GIS data provider, as well as identify areas without coverage

As such, the Provisioning Boundaries form an important component of a NG9-1-1 GIS data maintenance workflows designed to provide GIS data efficiently and reliably.

This standard was developed by the Public Safety Technical Working Group, a subgroup of the Idaho Geospatial Council – Executive Committee (IGC-EC). This Standard will be reviewed on a regular basis and updated as needed.

### 1.1. **Mission and Goals of the Standard**

The Provisioning Standard supports a statewide dataset that is consistent with applicable state and national standards. It establishes the minimum attributes and geospatial database schema for the Provisioning Boundary Framework dataset. The standard will communicate with and may have similar attributes to other Idaho Framework data standards. It encourages all Idaho-based agencies with geospatial provisioning datasets to contribute to the Provisioning Boundaries statewide Framework.

The Provisioning Framework dataset will be appropriately shared. The fields in the Provisioning Boundary Data Exchange Standard will be general enough to incorporate basic information without requiring major changes to internal data models. This standard allows for expansion to a more complex data structure and schema.

The Provisioning Boundary dataset must support the NG9-1-1 systems implementation and operation in Idaho and is therefore closely aligned with the 2020 National Emergency Number Association Standard (NENA-STA-006.1.1-2020).

The proposed standard:

- Provides the data needed to determine the correct agency for providing critical GIS data needed for NG9-1-1 systems.

- Promotes the creation of high-quality GIS data in a consistent format for use within NG9-1-1 systems.

## **1.2. Relationship to Existing Standards**

This Provisional Boundary Standard relates to existing standards as follows:

- The Provisional Boundary Standard described is based on the 2020 National Emergency Number Association Standard (NENA-STA-006.1.1-2020).
- The Provisional Boundaries are related to the Public Safety Answering Point (PSAP) and Emergency Service Boundaries (ESB) standards published by the Idaho Public Safety Technical Working Group.
- Both PSAP and ESB GIS datasets are related to County and City Boundaries, as well as boundaries representing ambulance, fire, and hospital taxing districts. Those standards are under the purview of the Idaho Boundaries Technical Working Group.

## **1.3. Description of the Standard**

This standard describes the vision and geospatial data structure of a Provisioning Data Framework in the state of Idaho. This standard is devised to be:

- Simple, easy to understand, and logical
- Uniformly applicable, whenever possible
- Flexible and capable of accommodating future expansions
- Dynamic in terms of continuous review
- Consistent with the requirements of NG9-1-1 systems and implementation

## **1.4. Applicability and Intended Uses**

This standard applies to the Provisioning Boundary element of the Public Safety theme of The Idaho Map (TIM).

When implemented, it will enable access to geometry and attribute information about Idaho Provisional Boundaries. It will increase interoperability between automated geographic information systems and enable sharing and efficient transfer of information for aggregation. Further, because this dataset describes areas of GIS Data provisioning requirements, it will clarify which agency is responsible for GIS data provisioning and encourages neighboring provisioning agencies to work together to resolve gaps and overlaps between boundaries.

This standard does not consider data sharing agreements, contracts, transactions, privacy concerns, or any other issues relating to the acquisition and dissemination of provisioning boundary data.

## **1.5. Standard Development Process**

The Public Safety Technical Workgroup (TWG), a subgroup of the Idaho Geospatial Council Executive Committee (IGC-EC), is a voluntary group of private, city, county, tribal, state, and federal representatives. In 2021, the Public Safety TWG reviewed the NENA Standard and Provisioning Boundary standards implemented in Kansas, Tennessee, Minnesota, and Wisconsin to begin developing the ESB Standard described in this document. The first draft was generated using the standard development automation tools developed by the IGC-EC. This standard was then reviewed by members of the Public Safety TWG. The resulting draft was further shared with the IGC-EC for comments and approval in accordance with the review and approval process described in ITA's Framework Standards Development Policy (P5030).

The standard was presented to the IGC-EC in September 2022 and approved by the IGC-EC in September 15, 2022.

## **1.6. Maintenance of the Standard**

This standard will be revised as needed and in accordance with the [ITA P5030 - Framework Standards Development Policy](#).

## **2. Body of the Standard**

### **2.1. Scope and Content**

The scope of the Provisioning Boundary Standard is to describe a statewide layer which identifies which agency is responsible for provisioning NG9-1-1 related data for a given area.

### **2.2. Need**

Provisioning Boundaries are a key dataset needed for emergency response in Idaho as it identifies which agency is responsible for providing key datasets sets such as street centerlines, Public Safety Answering Point boundaries, Emergency Service Boundaries, etc. needed for the Location Validation and Emergency Service Routing Functions in NG9-1-1.

The standard will help to aggregate all provisioning boundaries into one dataset that can be used to (1) determine which agency is responsible for provisioning NG9-1-1 related data in a given area and (2) identify areas where there is no agency assigned to provision GIS data.

### **2.3. Participation in the Standard Development**

The development of the Provisional Boundary Standard adheres to the ITA's Framework Standards Development Policy (P5030). The Public Safety TWG members tasked with developing this

standard represent private, county, state, and federal organizations. As the standard is reviewed in accordance with Policy P5030 requirements, there will be opportunity for broad participation and input by stakeholders. The process will be equally broad regarding input on updates and enhancements to the standard. As with all Idaho Framework standards, public review, and comment on the Provisioning Boundary Standard is encouraged.

## **2.4. Integration with Other Standards**

The Idaho Provisioning Boundary Standard follows the same format as other Idaho geospatial framework data standards as well as NENA Standards. The Provisioning Boundary Standard may contain some of the same attributes as other framework standards and may adopt the field name, definition, and domain from other standards to promote consistency and strengthen interoperability.

## **2.5. Technical and Operation Context**

### **2.5.1. Data Environment**

The data environment is a digital vector polygon with a specific, standardized set of attributes pertinent to the Provisioning Boundary Framework dataset. Provisioning boundary data shared under this standard must be in a format supporting vector polygons.

### **2.5.2. Reference Systems**

The Emergency Call Routing Function in a NG9-1-1 system requiring the use of the World Geodetic System of 1984 (WGS1984). The number assigned to this reference system by the European Petroleum Survey Group (EPSG) is 4326.

### **2.5.3. Global Positioning Systems (GPS)**

Some data provided might contain geometry from GPS methods. The provided metadata should describe the geometry, if applicable. However, geometry from a GPS is not required to meet this standard.

### **2.5.4. Interdependence of Themes**

Provisioning boundary geometry may be coincident with other framework data, such as City limits, County Boundaries, Ambulance, Fire and Hospital taxing districts, Public Safety Answering Zones, as well as Roads and Parcels. Currently, there is no enforcement of



coincidence or topology relationships between provisioning boundary Framework and other Idaho Framework elements.

The data provisioned within a Provisional Boundary must only include GIS data provisioned by the assigned data provider, and the provisioned GIS data must cover the entire area within a provisional boundary.

#### **2.5.5. Encoding**

When data is imported into and exported from the provisioning boundary Framework, encoding will take place to convert data formats and attributes.

#### **2.5.6. Resolution**

No specific requirements for resolution are specified in this standard. Resolution will be documented in the metadata.

#### **2.5.7. Accuracy**

The horizontal accuracy of GIS layers used for NG9-1-1 must meet the National Spatial Data Infrastructure's (NSDI) accuracy at a scale of 1:5000 which equates to  $\pm 13.89$  feet at 95% confidence.

#### **2.5.8. Edge Matching**

The polygon layer representing provisional boundaries cannot have unintentional gaps and overlaps, and boundaries must be agreed upon by adjacent agencies that provisions GIS data for NG9-1-1 systems.

Boundary synchronization issues must be resolved using road centerlines, address points, or snap-to-point datasets. Clean provisioning boundary edges will ensure that GIS street centerlines and/or address points will be accurately associated with a provisioning boundary's area of responsibility. Edges must be agreed upon by adjacent GIS data providers.

#### **2.5.9. Unique Identifiers**

The Provisioning Boundary Framework data layer has a unique Provisioning Boundary NENA Globally Unique ID (PB\_NGUID). Additionally, the AgencyID is unique within the state, and by adding “id.us” at the end is also unique in the entire United States.

#### **2.5.10. Attributes**

Attributes for public and intergovernmental distribution are described in Section 3 of this standard.

#### **2.5.11. Stewardship**

Perpetual maintenance and other aspects of lifecycle management are essential to the Provisioning Boundary Framework. Details of stewards, their roles and responsibilities, and processes may be set forth in a Provisioning Framework Stewardship Plan and related documents.

#### **2.5.12. Records Management and Archiving**

This dataset is managed at different levels. Data is developed and edited by GIS Data Providers of City and County governments, aggregated at the State Level and distributed via secured REST services using ArcGIS Enterprise. Tools, such as Open Data Portals, will allow users consume the data directly, or download the data in a variety of GIS data models including shapefiles and as a feature class in a file geodatabase.

#### **2.5.13. Metadata**

The Provisioning Boundary Framework metadata will describe the methods used to update and aggregate the individual Provisioning Boundary Framework data contributions, processes or crosswalks performed, definition of attributes, and other required information. This metadata will conform to the metadata standards as set out in S4220 – GEOSPATIAL METADATA.

### **3. Data Characteristics**

The “Field Name” column gives the standardized GIS data field name that **MUST** be used. While local entities **MAY** use their own field names for internal processes, utilization of GIS data within and between the NG9-1-1 system functional elements **MUST** conform to this standard structure.

The “Required” column specifies whether an attribute is required or conditional. Requirement terms are defined as follows (NENA 01-002):

- "Yes" means the data element is required to be present in all records. It will appear as required in the database schema.
- "No" means that the data field is optional in a record. It will not appear as required in the database schema.
- "Conditional" means that the data field is conditional. This value alerts the reader that a business rule is specified that controls the presence of a value in the data field. It will not appear as required in the database schema. The prevailing business rule for all conditional attributes is that if an attribute value exists (e.g., if a Street Name Pre Directional such as "West" is part of the valid street name), it MUST be provided. If no value exists for the attribute (e.g., there is no Street Name Pre Directional as part of the valid street name), the data field is left unpopulated. All attributes that are governed by CLDXF PIDF-LO structure MUST follow the business rules identified in the CLDXF Standard, NENA-STA-004 [3], CLDXF . If no business rule is identified, the prevailing rule will apply.

Locally maintained GIS data layers are REQUIRED to include all data fields specified as "Yes" within this GIS Data Model but are NOT REQUIRED to include data fields that are not specified as "Yes" if no data exists to be populated within the data fields. If there are no records in the entire database for a specific non-required data field, then the data field itself is NOT REQUIRED. Local policy may dictate that all data fields be included in the structure regardless of whether data exists.

"Type" column indicates the type of data used within the data field and attributes.

- **P** – Printable ASCII characters (decimal codes 32 to 126). Case is not important, except in legacy fields which require upper case as per NENA 02-010, NENA Standard for Data Formats for 9-1-1 Data Exchange & GIS Mapping
- **E** – UTF-8 restricted to character sets designated by the 9-1-1 Authority, but not including pictographic characters.
- **U** – A Uniform Resource Identifier (URI)
- **D** – Date and Time
- **F** – Floating (numbers that have a decimal place).
- **N** – Non-negative integer

The "Field Width" column refers to the maximum number of characters a field may contain.

The "Descriptive Name" is provided to clarify the intent of the information contained in the "Field Name."

- **DOM** - Domain. Attributes with domains are noted in the "Descriptive Name" column. Domain names and their values will be identified in a Public Safety GIS best practices document.

### 3.1. Minimum Graphic Data Elements

The geometry of the features in Provisioning Boundary Framework is vector polygon.

### 3.2. Optional Graphic Data Elements

Not applicable.

### 3.3. Standard Attribute Schema

FIELD NAME	REQUIRED	TYPE	FIELD WIDTH	DESCRIPTION
DiscrpAgID	Yes	P	100	Discrepancy Agency ID - Agency that receives discrepancy report and ensures resolution.
DateUpdate	Yes	D	-	Date Updated - The date and time that the record was created or last modified. This value MUST be populated upon modifications to attributes, geometry, or both.
DateEffective	No	D	-	Effective Date - The date and time that the record is scheduled to take effect.
DateExpire	No	D	-	Expiration Date - The date and time when the information in the record is no longer considered valid.
PB_NGUID	Yes	P	254	The NENA Globally Unique ID for each Provisioning Boundary . Each record in the Provisioning Boundary layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority’s domain to the end of the “locally unique ID”

### 3.4 Data Schema (Supplemental Attributes)

These attributes are recommended for Idaho datasets, but are not a part of the NENA standards and are considered supplemental. The additional attributes may meet local or regional requirements for internal workflows or other 911 mapping systems.

FIELD NAME	REQUIRED	TYPE	FIELD WIDTH	DESCRIPTION
GIS_Steward	No	P	75	Data Steward for data set maintenance DOM

Auth_Source	No	P	100	Authoritative Source: display name of authority for the layer
LocalID	No	N	40	Unique Identifier in the local dataset used for tracking Provisioning Boundaries in the local dataset
State	No	P	2	State DOM
AgencyID	No	P	100	The Registered Domain Name System (DNS) of the Agency
UpdatedBy	No	P	50	Person that last updated the record
Submit	No	P	1	Y – Provision Boundary should be included in the statewide dataset. N – Provision Boundary should not be included in the statewide dataset
Comments	No	P	254	Notes about the feature. Used for communication between the local data maintainer and the aggregator. Will NOT appear in state data layer

### 3.5 Data Quality

Data quality considerations for Provisional Boundaries include:

- The Discrepancy Agency needs to be unique in Idaho. The Provisioning Boundary NENA Global Unique ID (PB\_NGUID) and AGENCYID need to be unique for all of the United States.
- All attributes listed in section 3.3. are mandatory except for the Effective Date, Expiration Date and Notes.

Because GIS data provisioned for use in NG9-1-1 system is used in live-or-death situations, quality standards are typically higher than for other datasets and the data should be rigorously validated to for correct names, database integrity, topology issues and correct edge matching.

### Appendix A: References

Idaho Technology Authority (ITA). *Information and Data Policy P5000, Category: P5030 Framework Standards Development Policy.* <https://ita.idaho.gov/psg/p5030.pdf>

Idaho Technology Authority (ITA). *Enterprise Standards S4000 Geographic Information Systems (GIS) Data, Category: S4220 Geospatial Metadata.* <https://ita.idaho.gov/psg/s4220.pdf>

Federal Communications Commission (FCC). *911 Master ESB Registry.* [911 Master ESB Registry | Federal Communications Commission \(fcc.gov\)](https://www.fcc.gov/911-master-esb-registry)

National Emergency Number Association (NENA) Data Structures Committee, NG9-1-1 GIS Data Model Working Group. *NENA standards for NG9-1-1 GIS Data Model*. NENA-STA-006.2-2022. [NG9-1-1 GIS Data Model](#)

Kansas 911 Coordinating Council. *Kansas NG9-1-1 GIS Data Model V2.0* [Kansas NG9-1-1 GIS Data Model \(kansas911.org\)](#)

T. Berners-Lee, R. Fielding, L. Masinter, Internet Engineering Task Force, *Uniform Resource Identifier (URI) Generic Syntax*, RFC 3986. Exhibit X.

## **Appendix B: Glossary**

See ITA Guideline [G105](#) (ITA Glossary of Terms) for definitions.