

2018 Status of Selected Wisconsin Foundational Layers

WLIA Technical Committee



WISCONSIN
LAND INFORMATION
ASSOCIATION

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ABOUT THIS DOCUMENT

This document summarizes the current status of selected Wisconsin foundational layers associated with the Wisconsin Land Information Program (WLIP). Throughout this report, the term **foundational layer** refers to a digital spatial representation of the data that can be used for mapping and analyses in a geographic information system (GIS) or other geospatial tools. The intent of this report is to provide a general overview of the completeness of each of the selected Wisconsin foundational layers at a given point in time.

Specifically, this report provides information about the status of each layer's source data, as well as the status of the corresponding statewide foundational layer created from the source data. It is important to separate information about the source data from the statewide foundational layers because, in all but a few cases:

1. The foundational layer may have separate stewards and contact information
2. The source data and the statewide layer may be created and maintained using different processes
3. The source data and the statewide layer may have different levels of completeness
4. The source data and the statewide layer may have very different associated costs
5. The source data and the statewide layer may be developed to support different business needs or requirements

This report is intended to provide current, to date information, on the status of each of the foundational layers listed. The authors intend to present this status report to the Wisconsin Land Information Council, state geospatial organizations and others. The information on each of the foundational layers has been collected with the intent to fill in the informational gaps about specific layers of geospatial data and be the basis for conversations on completion, contacts and access to each of the datasets. It is also a goal of the WLIA Technical Committee to maintain this document on a yearly basis.

ABOUT WLIP FOUNDATIONAL ELEMENTS

Stakeholders originally identified foundational elements as the most critical Wisconsin geospatial layers for supporting a wide range of business needs and policy decisions. Since 1990, foundational elements have been incorporated into the WLIP requirements for county and state agency land information planning, as well as the WLIP-related funding of county land information activities.

The 12 data-related **foundational element categories** are described below. The current WLIP foundational elements described in the current Uniform Instructions for Preparing County Land Information Plans are slightly more narrow because they specifically focus on County Land Information Plans.

1. Geographic Positioning Reference Frameworks
2. Orthoimagery
3. Elevation and Topographic Data
4. Parcel Data
5. Parcel Administration and Assessment Data
6. Street/Road Centerlines, Address Ranges and Address Points
7. Hydrography, Hydrology and Wetlands Data
8. Soils, Land Cover, and other Natural Resource Data

9. Land Use Data
10. Zoning Data
11. Election and Administrative Boundary Data
12. Critical Infrastructure and Facilities Data

Most WLIP foundational element categories are comprised of several related thematic foundational layers. For example, the *Election and Administrative Boundary Data* category includes voting district, legislative district, utility district, school district, municipal boundaries, and other layers. In addition to having a related subject, some of the layers within a category may also have related geometry (e.g., their boundaries must align). For example, the boundaries of voting districts and legislative districts must align with each other within a county, and legislative district boundaries must join across county boundaries.

Most source data for foundational layers are created at the local level.

From the beginning, one of the main WLIP goals has been to help local government entities create and maintain their source data, which would, in turn, be aggregated into statewide layers. Since 1990, WLIP has invested approximately \$182 million in county land records modernization activities through retained fees (under s. 59.72(5), Wis. Stat.) and grants to counties (under s. 16.967(7), Wis. Stat.). In many cases, modernization at the local level has literally meant updating from 19th Century methods, such as original survey markers located by metes and bounds, to 21st Century technologies dominated by GIS tools, data and applications. Modern, digital land information, searchable databases, and mapping applications enable decision-makers, investors, government entities, private land owners, developers, and others to access accurate and timely information.

Some source data for statewide foundational layers are created at the state or federal level.

Some Wisconsin state agencies have clear statutory authority and responsibility to create and maintain the source data and corresponding statewide foundational layers on behalf of the state. The state agency programs responsible for source data and corresponding statewide foundational layers have never had access to WLIP grants to help with these activities and rely, instead, on other funding sources where available. Federal agencies are also responsible for creating and maintaining source data used to create a few statewide foundational layers, and like state agencies, they have never been eligible for WLIP grants to fund their activities – *with one exception*. From 2000 to 2006, WLIP grants helped fund completion of soil survey field mapping in Wisconsin as the first step toward creation of the statewide foundational soils layer.

Foundational layers are also maintained by local municipalities (cities, villages, and towns).

In many cases foundational data is maintained separately or in collaboration with the county or counties municipalities are within. In most cases WLIP funds are not directly used by these municipalities.

Counties that accept a land information grant and/or that retain fees for land information purposes must submit an annual report to the Wisconsin Department of Administration (DOA) that categorize how they spent their WLIP funding and cite how the spending was consistent with the county land information plan. In addition, DOA and the State Cartographer's Office (SCO) produced the *2009 Report on County GIS Data Systems* describing the status of county foundational element source data (see page 6 of ftp://ftp.wi.gov/DOA/public/comprehensiveplans/2009_GIS_Report/FINAL_County_GIS_Inv_Report_May2009.pdf). Per

s. 16.967(6), Wis. Stat., eleven state agencies are also required to submit annual plans that describes their land information integration and modernization activities, including those associated with WLIP statewide foundational layers (<https://doa.wi.gov/Pages/LocalGovtsGrants/WLIP-Land-Info-Plans.aspx>).

FOUNDATIONAL ELEMENT SUCCESSES

As mentioned above, WLIP has helped support resources for counties to modernize land information related infrastructure. Retained fees and WLIP grants support county Land Information Offices ongoing operations as well as strategic initiatives such as the Statewide Parcel Map Initiative, Open Data, and PLSS remonumentation/maintenance. In addition many non-WLIP funded efforts are being worked on by all levels of government in Wisconsin. In recent years these efforts have help to make substantial progress to refine foundational elements. This progress includes source data creation and maintenance, aggregation, standardization, and accessibility.

The Wisconsin Regional Orthophotography Consortium project is an example of such an initiative (<http://www.ncwrpc.org/WROC/>). Led by the North Central Regional Planning Commission, WROC coordinated the 2010 acquisition of statewide orthoimagery, which was used to produce a publicly available statewide orthoimagery layer (18" pixel resolution, leaf-off), as well as additional "buy up" products for municipalities, counties, and other entities to support their specific business needs.

The Statewide Parcel Map Initiative came out of a statutory directive in Wisconsin Act 20, the biennial state budget for 2013-2015. This collaborative effort propelled the state from having no regularly aggregated statewide GIS parcel dataset to having one which is aggregated and published annually. For the 2018 V4 submission an estimated 99% of Wisconsin's approximately 3.5 million parcels are completed in digital and spatial format. Four counties have gaps that will be completed by 2022.

In January 2016, there was a state statute change to the method of how municipal ward and boundaries are tracked. The change requires local municipalities to notify the County Clerk within 5 days of any municipal boundary change, GIS ward boundaries must be submitted to the Legislative Technology Services Bureau (LTSB) by January 15th and July 15th each year. The LTSB in turn publishes a number of statewide GIS layers (municipal wards, municipalities, and county supervisory districts). This single source of data allows the LTSB to participate on behalf of the state in Census Bureau's Redistricting Data Program (RDP) and Boundary and Annexation Survey (BAS). <http://data-ltsb.opendata.arcgis.com/>

Several foundational layer milestones were accomplished in 2018 in Wisconsin: For the first time all Wisconsin counties have acquired county-wide LiDAR datasets meeting FEMA or USGS specifications with a data collection spanning from 2002-2018. Some counties have started to update their LiDAR to account for elevation changes and to take advantage of technology advancements. Another major accomplishment in 2018 was the Department of Public Instruction's publication of statewide school district GIS boundary layers, including Technical College regions, Cooperative Educational Service Agencies, Elementary School Districts, Secondary School Districts, and Unified School Districts.

FOUNDATIONAL ELEMENT CHALLENGES

Most stakeholders support the WLIP goal of completing the source data at their appropriate level and creating statewide foundational layers from the source data. Some challenges continue to hinder the full realization of this goal. The Wisconsin Geospatial community has made great strides in the last several years; however, there are some challenges that need to be overcome to achieve complete success.

- Identifying and fixing gaps in source data
- Identifying standards for statewide aggregation of data
- The need for a Centralized Geospatial Repository and Portal for integrating, maintaining and disseminating statewide foundational layers.
- Governance structure for statewide foundational layers
- Identifying strategies to address data sharing challenges
- Identifying opportunities to reduce duplicate effort

GAPS IN LOCAL SOURCE DATA

Some counties have yet to complete source data at the county level. Several issues contribute to these gaps.

- Municipalities within a county may not receive any WLIP-related funding to help them complete municipal data for aggregation into the county data.
- The county may have difficulty acquiring and/or integrating municipal data into their county data. Vast differences in WLIP related retained fees among counties support different levels of resources, timelines, priorities, and levels of data completeness within counties. Wisconsin counties with larger and/or more rural land areas often have smaller populations and, as a result, fewer real estate transactions and less retained fees to fund work on foundational layers.

WLIP “base budget” grants are intended to address disparities in retained fees as described in the bullet above.

Currently, Base Budget grants cap at \$100,000. Base Budget eligibility is the difference between what a county retains in fees for land info and \$100k.

Aggregating source data into statewide foundational layers

While significant gains in the completion and maintenance of county data have been made, the aggregation of local data into statewide foundational layers has only just began.

Over the last few years, legislation has been passed to collect and maintain two key datasets, statewide parcels and statewide municipal wards. There is now a platform to collect statewide data (WISE-Decade) and two state entities are now required to collect data from counties’, aggregate the data into statewide layers and, disseminate the data to the public (Wisconsin State Legislature (LTSB), and the Division of Intergovernmental Relations (DIR) within the Department of Administration). Other state entities are also collecting and disseminating county datasets, The Department of Public Instruction (DPI) and the University of Wisconsin Robinson Map Library (RML) have requested data from counties through WISE-Decade platform and have or are planning to make the data from these collections available online. The RML has made all data collected available online using their GeoData@Wisconsin application (<http://maps.sco.wisc.edu/opengeoportal/>). Although we have made significant progress in this area, there is still much work to do.

Governance structure for statewide foundational layers

Wisconsin lacks an entity with true authority and adequate resources to address statewide foundational layer governance issues. Data governance is especially critical where data from multiple sources needs to be aggregated into statewide layers.

A robust structure must exist for identifying priorities, coordinating resources, adopting standards and models, resolving conflicts, and maintenance and distribution of statewide foundational layers.

The WLIP model works with 72 federated counties that are using funds from the program to improve land records within each of their counties. A missing piece to the puzzle is the creation of or the identification of a state entity that would be responsible for providing the coordination needed to fully utilize the state's investment in geospatial data.

Strategies to address data sharing challenges

Over the last several years significant efforts have been made to clarify and address data sharing challenges. The results of these efforts can be directly seen in the increased statewide coverage in the Statewide Parcel Map Database. The V3 parcel layer represents statewide parcel coverage of 99.1 percent (V3 Change Log - V3.0.0). While participating in this data sharing effort is very good some jurisdictions have limitations on how they can participate. A number of jurisdictions have resolutions restricting them from sharing details such as owner names.

In some cases there are also inherent structural challenges to aggregation of foundational layers. One of the best examples of this is zoning data. This was described in section 3.3 of the Final Report – Version 2 Statewide Parcel Map Database Project document (https://doa.wi.gov/DIR/V2_Final_Report.pdf). “It was determined that zoning types do not conflate, as zoning types vary by definition. Zoning classes also vary by definition. Therefore, no two zoning layers are compatible across county boundaries.” “... G1 may mean something completely or slightly different in two different counties, and thus these classes are not compatible across county lines...”. For the Parcel Initiative the collection of zoning data targeted county-administered zoning types: Airport Protection; County General Zoning; Floodplain; Farmland Preservation; and Shoreland. When looking more broadly to look at municipal zoning there are an even greater number of zoning types (i.e. Critical Areas Overlay, Highway Corridor Overlay, Municipal Well Recharge Area Overlay, Natural Area Overlay, etc). While some level of data aggregation is likely possible in such cases, it may provide a better return on investment to provide a tool to directly access to the source data when it cannot be aggregated. The University of Wisconsin - Madison geospatial data repository, GeoData@Wisconsin (<http://maps.sco.wisc.edu/opengeoport/>), is a good example of this type of tool.

Reduction in duplicate effort

As the Wisconsin geospatial community has had success finding strategies to assemble and maintain statewide foundational layers, opportunities to reduce duplicate effort have also been emerging. One such opportunity is the collections and distribution of parcel tabular data. Currently counties assemble the required data for submission to the Department of Administration for GIS parcels. Local assessors also compile much of the same tabular data for submission to the Department of Revenue. If this process were streamlined in the future it could reduce resources needed to compile the information and increase the versatility of the final dataset.

STATUS OF SELECTED WISCONSIN FOUNDATIONAL LAYERS

The following tables describe the status of 17 selected WLIP Wisconsin foundational layers. It should be noted that many other critical statewide layers have been identified by stakeholders, not all of which are directly associated with existing WLIP foundational elements or identified WLIP statewide foundational layers.

In order to understand the status of the 17 selected statewide foundational layers, it is first critical to understand what is meant by:

- **STATEWIDE LAYER:** The name or theme of the statewide foundational layer described in the table.
- **FOUNDATIONAL ELEMENT:** The name of the WLIP foundational element category in which the statewide foundational layer is classified.
- **LAYER DESCRIPTION:** General description of the statewide foundational layer.
- **RELATED STATEWIDE LAYERS:** Other statewide foundational layers associated with the described layer. Related statewide layers may be categorized in the same or different foundational element category, and have a direct relationship with the creation or representation of the described layer. For example, statewide parcel boundaries would need to be coincident with statewide city/village/town boundaries, zoning boundaries, and special utility district boundaries.
- **BUSINESS NEEDS/STAKEHOLDERS:** General description of stakeholders and their business needs that are/would be supported by the statewide foundational layer, and especially by 100% completion of the source data and the corresponding statewide foundational layer.
- **SOURCE DATA STEWARD(S):** Officially recognized or *de facto* steward of the source data used to create the statewide foundational layer. In most cases, local entities are the stewards of local source data and state agencies are the stewards of state level source data and corresponding statewide foundational layers. When a state agency is the steward of state level source data, that source data is usually (but not always) the same as the statewide layer.
- **SOURCE DATA CONTACT(S):** Name, affiliation and email of the organizational contact who is coordinating the collection of program/business area information from internal contacts for this report. NOTE: The source data contact(s) in this report are not necessarily responsible for responding to requests for the source data within the organization, so this contact information should not be used for data requests.
- **SOURCE DATA STATUS:** Description of the status of the source data. For example, source data may not exist in any format, may not exist in a spatial format, may be under development in a spatial format, may be completely developed and under routine maintenance in a spatial format, etc. Status must also include an explanation/rationale about how that status was determined.
- **STATEWIDE LAYER STEWARD:** Officially recognized or *de facto* steward of the described statewide foundational layer. In most (but not all) cases, a state level entity will be the steward of a statewide foundational layer.

- **STATEWIDE LAYER CONTACT(S):** Name, affiliation and email of the organizational contact who is coordinating the collection of program/business area information from internal contacts for this report. NOTE: The statewide foundational layer contact(s) in this report are not necessarily responsible for responding to requests for the statewide layer within the organization, so this contact information should not be used for data requests.
- **STATEWIDE LAYER STATUS & ACCESS METHOD(S):** Description of the status of the statewide foundational layer. For example, the statewide layer may not exist in any format, may not exist in a spatial format, may be under development in a spatial format, may be completely developed and under routine maintenance in a spatial format, etc. Status must also include an explanation/rationale about how that status was determined. In addition, a description about the method(s) by which the statewide foundational layer may be accessed. NOTE: There are several ways to access a statewide layer, and different business needs may require different access methods. For example, some users may require a copy of the actual layer itself for analyses and other purposes. Copies of the layer may be accessible via website download, FTP site, mailing a DVD, etc. A “view” of a statewide layer may be provided via a web map service or web feature service. In this case, a copy of the layer itself cannot be downloaded, but it can be viewed and manipulated using GIS desktop software, via web mapping applications, etc. Another option is to load individual source layers together via the sources’ web map or feature services (e.g., load 72 web services) into one “view”. A statewide foundational layer that is 100% complete and accessible via a web service may not support the activities of a business program that needs an actual copy of the layer itself.
- **STATEWIDE LAYER COMPATIBLE:** A general assessment of the foundational elements compatibility for being a layer that is regularly updated and compiled for the entire state. This is distinct from data which can be made publicly available for the entire state but not in a continuous layer, in a common data structure or on the same update cycle.
The options include...
 - Yes** - This foundational element can likely be standardized, aggregated, and routinely updated for the entire state.
 - Varied** - Only some of the parts of this foundational element can likely be standardized, aggregated, and routinely updated for the entire state.
 - No** - This foundational element can’t likely be standardized, aggregated, and routinely updated for the entire state. This could be based on current funding structures or structural incompatibility (i.e. zoning overlay districts).
- **NOTES:** General notes about any of the components described above.

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Parcels	Parcel Data	Yes

LAYER DESCRIPTION

Parcels represent land ownership.

RELATED STATEWIDE LAYERS

Administrative Boundaries, Zoning, Land Use Mapping, School Districts, Geodetic Control and Control Network, Public Lands

BUSINESS NEEDS/STAKEHOLDERS

Parcel layers and related tabular attributes are used by a wide range of municipal, county, regional, and state government entities, as well as a wide variety of stakeholders in the private sector, including engineers, real estate developers, tax assessors, public and private utility services, and homeowners. Parcels support many applications, such as for real estate commerce, land use planning and development, tax assessment, engineering, utilities, emergency planning and response, and identifying land owners eligible for tax credits.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
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Municipal entities; County entities	stewards
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SOURCE DATA STATUS

An estimated 99% of Wisconsin’s approximately 3.5 million parcels are completed in digital and spatial format. Four counties have gaps yet to be completed by 2022.

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
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Department of Administration and State Cartographer’s Office	Peter Herreid, DOA peter.herreid@wisconsin.gov; Howard Veregin, SCO veregin@wisc.edu
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STATEWIDE LAYER STATUS & ACCESS METHOD(S)

The Version 4 Statewide Parcel Map Database Project (V4 Project) is the most current version of a public statewide parcel layer and was made available on July 31, 2018. It was a joint effort between the Wisconsin Department of Administration and the Wisconsin State Cartographer’s Office.

The V4 Project successfully aggregated all known digital parcel datasets within the state, resulting in a statewide GIS parcel layer of 3.49 million parcels. Four counties are still working to complete their parcel layers in GIS. The V4 statewide parcel layer has a standardized attribute set that includes owner name, assessed value, property tax, site address, owner mailing address, school district, and property, as required by State Statute 59.72. For more information, see <https://doa.wi.gov/Pages/LocalGovtsGrants/Parcel-Initiative.aspx>

NOTES

Public Land Survey System (geodetic control) completion and integration into the parcel fabric is a priority for DOA’s Wisconsin Land Information Program. About 50 counties report that their PLSS has yet to be completed and integrated. As a county’s PLSS is completed, the new, more accurate PLSS points are integrated into the existing parcel fabric to make the parcel boundary line work more accurate. Sometimes this requires redoing some of the parcel mapping. Even when the PLSS is completed in a county, maintenance activities are necessary that require continual investment.

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Digital Orthoimagery	Orthoimagery	Varied

LAYER DESCRIPTION	
<p>Orthoimagery is created from aerial photographs that are geometrically corrected using terrain data. It is used to measure true distances and areas and to map base features without distortion. Statewide leaf-off orthoimagery coverage was achieved in 2010 under the Wisconsin Regional Orthoimagery Consortium (WROC). www.ncwrpc.org/WROC WROC has operated on 5-year update cycles since 1995 and moved to 3-5 year cycles starting in 2015. WROC orthoimagery is best-suited for users who require high resolution, high accuracy, leaf-off datasets. WROC members are participating in the next cycle from 2018-2020. Leaf-on imagery is collected on 2 or 3 year update cycles by the federal USDA-FSA National Agriculture Imagery Program (NAIP). The NAIP imagery is flown leaf-on for agricultural, vegetative, and environmental applications at lower resolution and accuracy.</p>	
RELATED STATEWIDE LAYERS	
Parcels, Administrative Boundaries, Street Centerlines, Address Points, Hydrography, Wetlands, Soils, Land Use, Zoning, Critical Infrastructure	
BUSINESS NEEDS/STAKEHOLDERS	
<p>Orthoimagery is used as the base map when creating and maintaining most other foundational elements. County-level departments rely on regular orthoimagery updates as a base for parcel mapping, tax listing, zoning enforcement, preliminary engineering, and emergency management, among many other applications. Municipal public works use orthoimagery for more efficient and accurate project planning. Orthoimagery provides a general picture of natural features, infrastructure, and change over time for county and state agency staff. DOT uses orthoimagery to plan for new transportation projects. Emergency managers use orthoimagery for response to wildfires, floods, tornados, storms, and other events. Stakeholders: Counties, municipalities, state and federal agencies, utilities, tribes, private sector, and many others.</p>	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Counties Municipalities State Agencies	stewards
SOURCE DATA STATUS	
see below	
STATEWIDE LAYER STEWARDS	STATEWIDE LAYER CONTACT(S)
WROC (North Central Wisconsin RPC) NAIP (FSA)	Andy Faust, NCWRPC, afaust@ncwrpc.org (WROC) Brandon Soldner, FSA/USDA, Brandon.Soldner@wi.usda.gov Kent Peña, NRCS/USDA, kent.pena@wi.usda.gov (NAIP)
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
<p>Statewide 18" from WROC 2010 is available for download via WisconsinView (www.wisconsinview.org). High resolution (12" or 6") from WROC 2015 is available from counties. Statewide 1-meter, 4-band, leaf-on NAIP imagery from 2010, 2013, and 2015 is available via WisconsinView. NAIP imagery from 2017 available USDA - Geospatial Data Gateway (https://gdg.sc.egov.usda.gov/) NAIP imagery 60cm imagery will be collected in 2018.</p>	
NOTES	
Orthoimagery needs updating at least every five years. Some organizations require more frequent updates.	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Street Centerlines with Address Ranges	Street/Road Centerlines, Address Ranges and Address Points	Yes

LAYER DESCRIPTION

Many municipalities and counties maintain road centerlines with address ranges. These road centerline files support a variety of applications such as address management, vehicle routing, and 911 dispatch. There are currently not a data standard being used across the Wisconsin. This layer will be essential for Next Generation 911 (NG911) where address points are used to pinpoint the incident scene. Creation of this layer will also help the accuracy of any other routing or geospatial searches. A advisory publication standard is currently being reviewed by the Wisconsin Land Information Association Technical Committee. **Stakeholders:** State agencies, Counties, Municipalities, and neighboring state jurisdictions.

RELATED STATEWIDE LAYERS

Orthoimagery, Administrative Boundaries, Parcels, Address Points

BUSINESS NEEDS/STAKEHOLDERS

Most Wisconsin counties and many municipalities maintain address data for their own business needs. Less information is known about how many counties and municipalities maintain street/road centerlines with address ranges.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Municipalities, counties (local data) WisDOT (state data)	stewards

SOURCE DATA STATUS

76.2% Road centerlines with address ranges (48/63 counties reported the presence of address ranges as an attributes of road centerlines data. Wisconsin GIS Inventory 2009 Report on County GIS Data Systems)

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
Being evaluated as part of the statewide interoperable system and Next Generation 911 reorganization.	Being evaluated as part of the statewide interoperable system and Next Generation 911 reorganization.

STATEWIDE LAYER STATUS & ACCESS METHOD(S)

Status -0% Road centerlines with address ranges
Data Access - Not available

NOTES

A statewide street centerline standard was proposed in late 2017, and is currently being evaluated by Wisconsin's land information community. A survey about the standard from the point of view of both data producers and consumers, was sent to WLIA membership and all identifiable potentially vested players in Wisconsin, or utilizing Wisconsin data. Survey results are still pending.

The standard is intended for data exchange and statewide layers. There is no intent to mandate the format in which data custodians maintain their own datasets. Ideally, the standard should simultaneously fill multiple needs including NextGen911. A simple comparison of the National Emergency Number Association (NENA) standard to the proposed standard shows how the standard could be used in a NG911 system.

Proposed Address Point Standard:

https://www.wlia.org/wp-content/uploads/2018/09/ProposedAddressPointDataStandard_8-30-2018.pdf

Compared to NENA Standard:

https://www.wlia.org/wp-content/uploads/2018/09/Proposed_vs_NENA_AddressPoints_8-30-2018.pdf

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Street Centerlines without Address Ranges	Street/Road Centerlines, Address Ranges and Address Points	Yes

The Wisconsin Department of Transportation (WisDOT) maintains two separate but-related statewide GIS road network layers, including inventory attribute data: the State Trunk Network (STN) that focuses on State, US, and Interstate highways, and the Wisconsin Information System for Local Roads (WISLR) that focuses on local roads.

- STN is a GIS database of centerline files, shapefiles and tables for approximately 12,000 miles. Location along the STN is defined by two linear reference methods—roadway links and reference sites (primary system), and reference points (secondary system). The STN linear reference system has 1/100 mile precision .
- WISLR is a GIS database of centerline files, shapefiles and tables for approximately 100,000+ miles of local roads, streets and highways. New roads/streets, annexations, incorporations, jurisdictional transfers, abandonments, and construction changes affecting local roads are annually reported to the WisDOT via certified survey map, subdivision plat or legal descriptions by the local units of government to certify roads for transportation aids. Key roadway attribute data can be updated to the nearest foot using an on/at intersection linear reference method.

Both STN and WISLR contain physical inventory, administrative, and classification attribute data about the roadway infrastructure. Since 2016, enhancements to WISLR centerlines (spatial update only, not attributes) include updating STN dual carriageways, interchanges and ramps. UW System centerlines were added to assist safety partners using the WISLR base map for the Badger TraCS TLT location application.

STN and WISLR do not include address range or address point data.

RELATED STATEWIDE LAYERS

Orthoimagery, Administrative Boundaries, Parcels

BUSINESS NEEDS/STAKEHOLDERS

These layers are essential to delivering the state’s \$2 billion annual transportation program. WisDOT uses the STN data to primarily support the Highway Performance Monitoring System (HPMS) and FAST Act requirements by the Federal Highway Administration (FHWA), DOTs highway program, performance management, safety, freight planning, and highway investment planning. The STN inventory system is required under the Department of Transportation’s administrative code and Federal law. WISLR is a shared state and local resource. The primary purpose of the physical and administrative local road inventory attribute data and line work is to comply with Wisconsin S86.302 inventory and certification of local roads and federal reporting requirements under HPMS.

This database is used to determine the distribution of over \$400+ million in general transportation aides (GTA) to local governments.

Stakeholders: Federal Highway Administration, Congress; DOT programming and planning and transportation aids distribution; local and county units of government; DOT construction management, operations, and transportation asset management; state, regional, and local safety program support including Badger TraCS Locator Tool (TLT) and the WisTransportal Statewide Crash Mapping System; DOT traffic monitoring and forecasting; metropolitan planning organizations, regional planning commissions; utilities, oversize/overweight vehicle routing, State agencies (DNR, DATCP, DOT, DOA, WEM), etc.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
WisDOT (state data)	stewards

SOURCE DATA STATUS

Status 100% STN (Updated on an annual cycle) 100% WISLR (Updated on an annual cycle)

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
STN and WISLR - WisDOT	John Tyson, GIS Data Broker (WISLR and STN) - WisDOT

STATEWIDE LAYER STATUS & ACCESS METHOD(S)

Status - 100% STN (Updated on an annual cycle) 100% WISLR (Updated on an annual cycle)
Data Access - STN/WISLR - Available upon request from WisDOT

NOTES
n/a

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Geodetic Control & Control Network	Geographic Positioning Reference Frameworks	Yes

LAYER DESCRIPTION

Established survey control and high-precision survey networks form the foundation for well-positioned GIS data of all kinds. The underlying quality of the location-based information is due in large part to the horizontal (geodetic control/PLSS) and vertical (elevation data) frameworks to which this information is registered. A systematic network of high quality positions/monuments exists across the state, including the Wisconsin Height Modernization Program (**WI-HMP**) which improves the density of geodetic control stations listed in the National Spatial Reference System managed by the National Geodetic Survey (**NGS**) with accurate orthometric heights (elevations); and the Wisconsin Continuously Operating Reference Stations (**WISCORS**) Network managed by WisDOT consisting of permanent Global Navigation Satellite System (GNSS) sites that provide accuracy to properly equipped mobile users in the field to the 2-cm accuracy level in real-time.

Access to quality in-ground survey control and evolving GPS positioning technology has facilitated much work across the state in recovering, remonumenting and/or collecting highly accurate local coordinates on corners of the Public Land Survey System (**PLSS**) that, by and large covers the entire state and creates the fabric in which parcel information is situated. The PLSS is the foundation for determining the location of nearly every property description in Wisconsin.

RELATED STATEWIDE LAYERS

Parcels, Orthoimagery, Administrative Boundaries

BUSINESS NEEDS/STAKEHOLDERS

Through its Strategic Initiative Grant Program, the Wisconsin Land Information Program (WLIP) recognizes that quality PLSS data/accurate coordinates would improve the quality of other land tenure and boundary layers (e.g., parcels and administrative boundaries) as well as provide a quality measure for accurate parcel mapping. Without a properly maintained network of PLSS corner monuments, there is an increased risk of property disputes, inequitable taxation, disagreements about resource rights, confusion over easement locations, and unnecessary expenditures by private citizens and local governments. PLSS and geodetic control networks reduce survey costs for highway projects, improve accuracy of flood insurance rate maps, provide public and private agencies with a uniform survey system, etc. **Stakeholders:** Surveying community (private, county, state, and federal), Counties, Utilities, WisDOT (highway/bridge projects), WisDNR (land management), FEMA (flood maps), Forest Service, Bureau of Land Management, Corps of Engineers, Property Owners, Realtors, Lawyers, Assessors, Municipalities, etc.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Counties/County Surveyors, WisDOT, NGS/Federal Agencies, WisDNR, Municipalities/Utilities, RPCs/Engineering Firms, etc	County Surveyors/LIOs, WisDOT (Jacob Rockweiler/Elliot Smith) NGS (John Ellingson), WisDNR (John Laedlein), State Cartographer's Office (Howard Veregin/Brenda Hemstead)

SOURCE DATA STATUS

Statewide coverage exists for WI-HMP & WISCORS; PLSS framework is statewide (except for non-PLSS areas); PLSS remonumentation & coordinate accuracy varies for each county, with some counties complete and some in progress; With Version 5 of the Statewide Parcel Map Database Project, the WLIP is investing in the creation of a statewide PLSS layer derived from best-available county coordinates

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
State Cartographer's Office (SCO) de facto WisDOT (Surveying & Mapping Section)	Howard Veregin/Brenda Hemstead, State Cartographer's Office Jacob Rockweiler/Elliot Smith, WisDOT

STATEWIDE LAYER STATUS & ACCESS METHOD(S)

Web-based SurveyControlFinder application: <https://maps.sco.wisc.edu/surveycontrolfinder>
WISCORS Network Web Server: <https://wiscorsweb.dot.wi.gov/trimblepivotweb/>
Web-based National Geodetic Survey Data Explorer: <https://www.ngs.noaa.gov/NGSDataExplorer/>

NOTES

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Minor Civil Division Boundaries (City, Village, Town)	Election and Administrative Boundary System	Yes

LAYER DESCRIPTION

Minor civil divisions (MCDs) are the primary governmental or administrative division of a county. MCDs represent many different kinds of legal entities with a wide variety of governmental and/or administrative functions.

RELATED STATEWIDE LAYERS

Parcels, Orthoimagery, Zoning, Land Use, Planned Land use, Election Boundaries

BUSINESS NEEDS/STAKEHOLDERS

Accurate MCD boundaries are important in the redistricting process and the delineation of election-related boundaries (e.g., school districts, state legislative districts, special districts). The general management of elections is very difficult without accurate MCD boundaries. Stakeholders: Those with a need to know where city, village and town boundaries are, such as municipalities, counties, state agencies (DNR, DATCP, DOT, DOA, WEM), realtors, utilities, legislators, elected officials, the Wisconsin Elections Board (WEC), regional planning commissions, US Census Bureau, and many others.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
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Cities, Villages, Towns, Counties	stewards
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SOURCE DATA STATUS

100% Complete

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
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Legislative Technology Services Bureau	LTSB GIS Team gis@legis.wisconsin.gov 608-283-1830
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STATEWIDE LAYER STATUS & ACCESS METHOD(S)

This statewide layer is 100% complete, and updated every 6 months by state statute
Data can be accessed via <https://data-ltsb.opendata.arcgis.com/>
REST endpoints may be found here: <https://mapservices.legis.wisconsin.gov>

NOTES

State statutes were changed in 2015 to start a process of statewide collection of municipal wards boundaries in Wisconsin. Starting in January 2016, The statutes now direct each county clerk, or board of election commissioners, no later than January 15 and July 15 of each year, to transmit to the LTSB, in an electronic format approved by LTSB, a report confirming the boundaries of each municipality, ward and supervisory district within the county as of the preceding "snapshot" date of January 1 or July 1 respectively. Upon receipt of the information from each county clerk or board of election commissioners at each semi-annual reporting interval, LTSB must reconcile and compile the information received into a statewide database consisting of municipal boundary information for the entire state. The statutes also directs LTSB to participate, on behalf of the state, in geographic boundary information programs when offered by the U.S. Bureau of the Census.

<http://docs.legis.wisconsin.gov/statutes/statutes/5/1/15/4/br/1>
<http://docs.legis.wisconsin.gov/statutes/statutes/5/1/15/4/b>
<http://docs.legis.wisconsin.gov/statutes/statutes/5/1/15/4/b>
<http://docs.legis.wisconsin.gov/statutes/statutes/13/IV/96/1/c>

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Address Points	Street/Road Centerlines, Address Ranges, and Address Points	Yes

LAYER DESCRIPTION
Address locations

RELATED STATEWIDE LAYERS
Parcels, Street/Road Centerlines

BUSINESS NEEDS/STAKEHOLDERS
Address points are the basic descriptor needed to identify people and places in our state. In urban areas they are needed to differentiate between units in multi-tenant buildings. In rural areas they are needed to pinpoint a building (home, shed, etc.) on very large tracts of land. This layer will be essential for Next Generation 911 (NG911) where address points are used to pinpoint the incident scene. Creation of this layer will also help the accuracy of any other routing or geospatial searches. Stakeholders: State agencies, Counties, Municipalities, and neighboring state jurisdictions.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Municipal entities (local data); county entities (county data)	stewards

SOURCE DATA STATUS
94% of Wisconsin Counties (68 of 72) submitted their address point data with the V4 Parcel Collection of 2018. Schema and geometric standards varied wildly from county to county. Most Wisconsin counties and many municipalities maintain address data for their own business needs. The 2014 LinkWISCONSIN Address Point and Parcel Mapping Project Final Report indicated 68 or 72 counties submitted address point data. However, “Gaps in county address point and parcel datasets were identified, and municipalities were called upon to fill gaps wherever possible. Parcel centroids were substituted for address points when that was the only option. However, there are some places where neither address point nor parcel data exist in digital form and thus remain as holes in the statewide address point layer.”

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
Being evaluated as part of the statewide interoperable system and Next Generation 911 reorganization.	Being evaluated as part of the statewide interoperable system and Next Generation 911 reorganization.

STATEWIDE LAYER STATUS & ACCESS METHOD(S)
0% Publically Available as Statewide Layer

NOTES
<p>A statewide address point standard was proposed in late 2017, and is currently being evaluated by Wisconsin’s land information community. A survey about the standard from the point of view of both data producers and consumers, was sent to WLIA membership and all identifiable potentially vested players in Wisconsin, or utilizing Wisconsin data. Survey results are still pending. The standard is intended for data exchange and statewide layers. There is no intent to mandate the format in which data custodians maintain their own datasets. Ideally, the standard should simultaneously fill multiple needs including NextGen911. A simple comparison of the National Emergency Number Association (NENA) standard to the proposed standard shows how the standard could be used in a NG911 system.</p> <p>Proposed Address Point Standard: https://www.wlia.org/wp-content/uploads/2018/09/ProposedAddressPointDataStandard_8-30-2018.pdf</p> <p>Compared to NENA Standard: https://www.wlia.org/wp-content/uploads/2018/09/Proposed_vs_NENA_AddressPoints_8-30-2018.pdf</p>

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
LiDAR	Elevation Data and Topographic Base Data	Varied

LAYER DESCRIPTION

Aerial LiDAR (Light Detection and Ranging) instruments are used to capture highly accurate measurements on the earth's surface to create a point cloud of elevation values for surveying and mapping purposes. The calibrated point cloud is used to process out topographic datasets including bare earth points, hydro flattening breaklines, digital elevation models, and contours. The point cloud can also be used to extract above ground datasets such as building and vegetation classifications, first return surface models, building outlines, and more.

RELATED STATEWIDE LAYERS

Orthoimagery, Hydrography, Wetlands, Soils, Zoning, Critical Infrastructure

BUSINESS NEEDS/STAKEHOLDERS

LiDAR data is used for projects that require accurate elevation data. This includes floodplain mapping, topographic mapping, preliminary engineering, highway construction planning, drainage modeling, shoreland zoning, and surveying. LiDAR data reduces costs for these types of projects compared to previous mapping methods. Stakeholders: Counties, Municipalities, State and Federal agencies (DOT, DNR, NRCS), tribes, and private sector.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
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Counties, Municipalities, State Agencies, Federal Agencies

Stewards

SOURCE DATA STATUS

72 of 72 counties have countywide LiDAR datasets collected between 2002 and 2018 with standards meeting FEMA or USGS specifications. Some counties have started to update their LiDAR to account for change and to take advantage of technology advancements. Counties collecting LiDAR with funding from the USGS-3DEP (2015+) have data that adheres to current Quality Level 2 standards.

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
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WROC (North Central Wisconsin RPC)
State GIO

Andy Faust, NCWRPC (WROC) afaust@ncwrpc.org
Jim Giglierano, State GIO Jim.Giglierano@wisconsin.gov

STATEWIDE LAYER STATUS & ACCESS METHOD(S)

No statewide LiDAR dataset currently exists, however WDNR continues to populate their lidar derived DEM and hillshade REST services available here: https://dnrmaps.wi.gov/arcgis_image/rest/services/DW_Image. These are based on a mosaic of 62 county WTM DEMs, with resolutions ranging from 1 meter to 3 meters. As new projects become available the mosaic should be completed in the summer of 2019. WDNR also offers REST services from the older 10 meter NED data sets.

The WisconsinView imagery and lidar archive www.wisconsinview.org had its server replaced in 2018 with funding from a Wisconsin Coastal Management Grant. The lidar archive <ftp://ftp.ssec.wisc.edu/pub/wisconsinview/lidar/> is undergoing major updates as new county projects with federal support (USGS 3DEP, FEMA, NRCS and others) are released. The WV lidar archive currently has various data from 41 counties, usually in county coordinates. WV partners have a goal of representing all counties by summer of 2019 with available LAS, break lines, DEMs and metadata. Older data sets will be collected and archived if available from the county. Individual city and non-county projects will be added as time allows. WTM DEMs used in the DNR REST service will be available separately from the original county deliveries. Searchable metadata will be added to the Robinson Map Library Geodata system in 2019.

Other data distribution sites include NOAA Digital Coast <https://coast.noaa.gov/digitalcoast/data/> which in addition to a small number of county lidar projects, has all the Corps of Engineer topobathy collections along the Great Lakes coastal areas. The next JBLTCX collection (<http://shoals.sam.usace.army.mil/>) is slated for 2019 on the Lake Michigan and Superior coasts.

Lidar data acquired with support from the USGS 3DEP will be available from (<https://viewer.nationalmap.gov/>). Plans are for major updates by the end of 2018. Point cloud data from all 3DEP projects will be in the LAZ format.

SCO's Elevation/lidar page is here: <https://www.sco.wisc.edu/data/elevationlidar/>. SCO periodically offers basic lidar workshops.

NOTES

All counties in Wisconsin have acquired at least one countywide LiDAR dataset. The update cycle for countywide LiDAR is 8-12 years. Developed regions needing more regular updates and rural regions needing less regular updates (with the exception of

major flood events). Construction, urban development, agricultural practices, flood events change topography and resulting drainage.

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Hydrography	Hydrography, Hydrology, and Wetlands Mapping	Yes

LAYER DESCRIPTION

Surface Water Delineation

RELATED STATEWIDE LAYERS

Parcels, Orthoimagery, Administrative Boundaries, Zoning, Wetlands

BUSINESS NEEDS/STAKEHOLDERS

Supports hydrologic modeling and analysis, drainage basin and watershed planning, engineering studies, flood zone mapping, shoreland zoning and water quality monitoring. Provides the framework for integrating a wide variety of surface water-related data. **Stakeholders:** Those with a need for general picture of surface water, such as municipalities, counties, state agencies (DNR, DATCP, DOT, WEM), utilities, and many others.

SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
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see below	see below
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SOURCE DATA STATUS

see below

STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
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Wisconsin Department of Natural Resources	John Laedlein Wisconsin DNR John.Laedlein@dnr.state.wi.us
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STATEWIDE LAYER STATUS & ACCESS METHOD(S)

100% (but in need of additional enhancements – see notes below). Layer available for download via DNR Open Data website (<https://data-wi-dnr.opendata.arcgis.com/>). Layer also available to view via the *Surface Water Data Viewer* (<https://dnrmaps.wi.gov/H5/?Viewer=SWDV>).

NOTES

24K Hydro File Geodatabase, including bank lines, flow lines, junction points, hydro lines, water bodies, hydro points, and a network.

The DNR Hydrography database was developed statewide using several 1:24,000-scale sources. This data layer includes information about surface water features represented on the USGS 1:24,000-scale topographic map series such as perennial and intermittent streams, lakes, etc. Because the sources of the Hydrography data span many years and originate from several sources, the data may reflect areas of transition from one source to another. As a result, the water features as represented in the Hydrography data may not always match what you see on a particular USGS quad or Digital Raster Graphic (DRG). General source information is presented on this map: [Wisconsin Hydrography Source Information](#).

Note: Wetlands delineations are not included in the DNR Hydrography data layer. For information about DNR Wetlands data, see the [Wisconsin Wetland Inventory](#) web page.

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Floodplains and Floodways	Zoning	Yes
LAYER DESCRIPTION		
Layer delineates areas of flood risk.		
RELATED STATEWIDE LAYERS		
Parcels, Orthoimagery, Zoning, Land Use, LiDAR, Planned Land Use		
BUSINESS NEEDS/STAKEHOLDERS		
High quality flood insurance rate maps are an important tool in the effort to protect lives and properties in Wisconsin. Over time water flow and drainage patterns change dramatically due to surface erosion and other natural forces. This layer will allow community planners, local officials, engineers, builders and others to make important determinations about where and how new structures and developments should be built. Stakeholders: Counties, DOT, Municipalities, Economic Development Authorities, Realtors, WEDC		
SOURCE DATA STEWARD(S)		SOURCE DATA CONTACT(S)
Federal Emergency Management Agency (FEMA)		unknown
SOURCE DATA STATUS		
86.11% Floodplain (62 of 72 counties have NFHL through FEMA.)		
STATEWIDE LAYER STEWARD		STATEWIDE LAYER CONTACT(S)
Wisconsin Department of Natural Resources		John Laedlein, Wisconsin DNR John.Laedlein@dnr.state.wi.us
STATEWIDE LAYER STATUS & ACCESS METHOD(S)		
Status		
86.11% Floodplain (62 of 72 counties have NFHL through FEMA.)		
Data Access		
Floodplain Zoning Data - https://www.floodmaps.fema.gov/NFHL/status.shtml		
WI DNR Surface Water Data Viewer - https://dnrmaps.wi.gov/H5/?viewer=SWDV&layerTheme=1		
NOTES		
n/a		

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Wetlands	Hydrography, Hydrology, and Wetlands Mapping	Yes

LAYER DESCRIPTION	
Wetlands delineation	
RELATED STATEWIDE LAYERS	
Parcels, Orthoimagery, Administrative Boundaries, Zoning	
BUSINESS NEEDS/STAKEHOLDERS	
Used for development of resource management plans; wetlands inventory maps to administer wetland zoning programs and as a resource for wetland protection, monitoring and management; environmental impact assessments; for property buyers to determine proximity of wetlands. Stakeholders: Counties, State agencies, and municipalities.	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
see below	see below
SOURCE DATA STATUS	
see below	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
Wisconsin Department of Natural Resources	Calvin Lawrence, WI DNR, Calvin.Lawrence@wi.gov
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
100% of statewide digital Wisconsin Wetland Inventory (WWI) data have been interpreted from orthorectified aerial photography, with periodic updates also performed – see notes below.	
NOTES	
<p>The Wisconsin Wetland Inventory (WWI) was completed for the state in 1985. Based on aerial photography from 1978-79. This does not include wetlands less than 2 or 5 acres in size (minimum mapping unit varies by county) which are depicted as point symbols on the maps. Because the original WWI utilized aerial photographs taken in the summer some wetlands were missed, especially in the northern counties since interpretation was difficult due to leaf cover. Also, wetlands that were farmed as of the date of photography used and then later abandoned due to wet conditions were not captured as part of the WWI.</p> <p>Improvements have been made to the WWI update program. Aerial photography is now flown in the spring when leaves are off the trees. This allows for much more accurate wetland delineations. Any wetland large enough to be delineated is captured on the maps to provide for more accurate acreage information. County wetland acreage information is available for those updated counties that have been digitized. See WWI Digital Status Map (https://dnr.wi.gov/topic/wetlands/documents/DigitalWetlandStatusMap.pdf).</p> <p><u>Digital WWI Data Access Issues</u></p> <p>Under Wisconsin law, DNR Digital WWI data is exempt from state Open Records Law. State statute [ss. 23.32(3)(a), Wis. Stats.] specifically allows for DNR sale of digital wetlands data. The order form can be found on the WWI website (http://dnr.wi.gov/topic/wetlands/inventory.html).</p> <p>DNR policy is to share digital WWI data upon request and at no cost with WI counties and municipalities that have made provisions for the state's Shoreland Wetland Zoning program in their ordinances (administrative rules in Chapters NR115 & NR117, Wisconsin Administrative Code, set minimum state standards for shoreland-wetland ordinances).</p> <p>The DNR Wetland Inventory program also has an agreement with the federal government under which all the digital WWI data available for WI can be viewed and downloaded using the USFWS National Wetlands Inventory (NWI) "Wetlands Mapper" application: http://www.fws.gov/wetlands/Data/Mapper.html. <u>Use cautioning as updates to NWI can reportedly take months, and in some cases years. Users requiring wetland data are strongly encouraged to start with the WWI data.</u></p>	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Zoning Districts	Zoning Data	Varied

LAYER DESCRIPTION	
Zoning districts delineating land use regulations for permitted use in specific locations.	
RELATED STATEWIDE LAYERS	
Parcels, Orthoimagery, Administrative Boundaries	
BUSINESS NEEDS/STAKEHOLDERS	
Zoning regulates land use. Changes to municipal or county general and shoreland/wetland zoning ordinances made after Jan. 1, 2010 need to be consistent with a comprehensive plan. Zoning information is important to real estate commerce because land value is linked to allowable uses. Wisconsin counties are now asked for GIS data for county administered zoning as part of the Statewide Parcel Map Database Project. Business needs include general, farmland preservation, shoreland, floodplain and airport protection zoning. Stakeholders: Counties, DOT, DNR, RPCs, Municipalities, Economic Development, Realtors, WEDC	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Municipalities, Counties	Stewards
SOURCE DATA STATUS	
57 counties have county zoning. Municipal Town zoning occurs in most of the other counties. Many counties administer zoning for only a portion of their county.	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
Airport, General and Shoreland Zoning - Peter Herreid, WI DOA Peter.Herreid@Wisconsin.gov Farmland Preservation - Cody Cook, WI DATCP	Airport, General and Shoreland Zoning Peter Herreid, WI DOA Peter.Herreid@Wisconsin.gov Farmland Preservation - Cody Cook, WI DATCP cody.cook@wi.gov
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
<p>Status</p> <p>County-Administered General Zoning: 54 counties submitted GIS layers to WI DOA in 2018 County-Administered Shoreland Zoning: 24 counties submitted GIS layers to WI DOA in 2018 County-Administered Airport Zoning: 12 counties submitted GIS layers to WI DOA in 2018 Following two years of aggregating zoning layers, beginning in 2018 DOA is no longer aggregating zoning layers, instead simply making the unaggregated county GIS layers available through Geodata. County Farmland Zoning: No longer collected by WI DOA – see DATCP link below Floodplain Zoning: No longer collected by WI DOA – see FEMA link below Municipal Administered General Zoning: Not collected by WI DOA</p> <p>Data Access</p> <p>Geodata - http://geodata.wisc.edu/opengeoportal/ Statewide Parcel Database Project Data - http://www.sco.wisc.edu/parcels/data/ Floodplain Zoning Data - http://www.floodmaps.fema.gov/NFHL/status.shtml DATCP Farmland Preservation Data - https://datcp.wi.gov/Pages/Programs_Services/GISData.aspx</p>	
NOTES	
For the Parcel Initiative, county-administered zoning types were targeted: Airport Protection; County General Zoning; Floodplain; Farmland Preservation; and Shoreland. When looking more broadly at municipal zoning there are an even greater number of zoning types (i.e. Critical Areas Overlay, Highway Corridor Overlay, Well Recharge Area Overlay, Natural Area Overlay, etc). While some level of data aggregation is likely possible in such cases, it may provide a better return on investment to provide a tool to directly access to the source data when it can't be aggregated.	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Existing Land Use	Land Use	Varied

LAYER DESCRIPTION	
Existing land use maps delineate land uses typically by common zoning designations, such as residential, commercial, agriculture, industrial, but also other designations, such as public conservation/parks, public institutions, woodlands, and environmental corridors.	
RELATED STATEWIDE LAYERS	
Parcels, Orthoimagery, Zoning, Future land Use Map	
BUSINESS NEEDS/STAKEHOLDERS	
These maps are a requirement for comprehensive plans and used for planning purposes. Stakeholders: Counties, DOT, DNR, RPCs, DATCP	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Municipal, county, state, federal, RPCs and tribal entities	stewards
SOURCE DATA STATUS	
Of the 72 counties, 66 have adopted a comprehensive plan. It is unknown how many counties actually have existing land use source data that could be used in GIS. Some land use layers are available at Geodata@wisconsin.gov. Some of the maps are available only in PDF format. Various land use categorization schemas would make integration of land use maps into a statewide layer difficult. Also, the county existing land use maps may not cover incorporated municipalities (villages and cities). For these areas, the city or village comprehensive plans are a better source.	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
unknown	Peter Herreid Wisconsin DOA Peter.Herreid@Wisconsin.gov
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
unknown	
NOTES	
n/a	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
School Districts	Election and Administrative Boundary System	Yes

LAYER DESCRIPTION	
Boundaries of all school districts in the state.	
RELATED STATEWIDE LAYERS	
Zoning, Land Use, Planned Land Use, Election Boundaries	
BUSINESS NEEDS/STAKEHOLDERS	
Accurate school district boundaries are important for realtors, homebuyers, state and federal aids, taxation, and voting purposes. Stakeholders: Counties, DPI, DOT, Municipalities, Wisconsin Elections Commission (WEC), RPC, School Districts	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Counties, Department of Public Instruction	Counties, Department of Public Instruction
SOURCE DATA STATUS	
Statewide coverage exists. The Department of Public Instruction uses geographic information system (GIS) mapping to display the various boundaries that impact schools. The layers are intended for reference use only. It contains the best information the department has to date, but cannot guarantee its accuracy. It should not be used for any land transactions, financial decisions, taxation, surveying, or other similar uses.	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
Wisconsin Department of Public Instruction (DPI)	Janice Zmrazek (DPI) School Administration Consultant Shelley Witte (DPI) GIS Technician
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
New statewide collection is planned for October of 2018 from County Land Information Offices. Statewide coverage exists for:	
1. Technical Colleges: https://wi-dpi.maps.arcgis.com/home/item.html?id=146f3e0247194d019d81defb099b7e46	
2. Cooperative Educations: https://wi-dpi.maps.arcgis.com/home/item.html?id=8c7961c25a45464a80af4d78b3669548	
3. Elementary School Districts: https://wi-dpi.maps.arcgis.com/home/item.html?id=a913f762f554423bb7c53eb9d67bbdca	
4. Secondary School Districts: https://wi-dpi.maps.arcgis.com/home/item.html?id=f05dd559a9e84d17b7497a10b432c0ca	
5. Unified School Districts: https://wi-dpi.maps.arcgis.com/home/item.html?id=256cc512391f4ef38a151f44bbac9801	
NOTES	
The Department of Public Instruction (DPI) has authority and responsibility to issue boundary change or reorganization orders to county and municipal clerks and to inform the US Census of district boundary changes. DPI is also working to collect and analyze school district boundaries received from counties to verify completeness as it relates to their boundary change or reorganization orders.	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Land Cover	Soils Mapping, Land Cover and other Natural Resource Data	Yes

LAYER DESCRIPTION	
Land Cover classifications	
RELATED STATEWIDE LAYERS	
Parcels, Orthoimagery, Administrative Boundaries	
BUSINESS NEEDS/STAKEHOLDERS	
State and local agencies, non-governmental organizations, researchers, and students all rely on accurate and current land-cover data to protect and manage Wisconsin's natural resources. Management of renewable resources such as agriculture and forestry is ever more important as pressure from anthropogenic factors reduces available land and natural resources. Accurate and current land-cover data is critical to accurately assess what is occurring, predict future impacts on the state, and generate informed policy decisions. Stakeholders: Counties, DOT, RPCs, DNR, DATCP	
SOURCE DATA STEWARD	SOURCE DATA CONTACT(S)
see below	see below
SOURCE DATA STATUS	
Beginning in 2014, the University of Wisconsin-Madison and DNR partnered on a project to map the current land cover of Wisconsin. The resulting dataset, known as Wiscland 2.0, was completed and delivered to the DNR in August 2016. The Wiscland 2.0 digital database is a complete update to the previous statewide Wisconsin land cover map. The Wiscland 2.0 data, Accuracy Assessment, User Guide, and other related files are available for download via the DNR GIS Open Data Portal (enter keyword "Wiscland"). The "readme" file provides an overview of the Wiscland 2.0 files.	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
WI Department of Natural Resources	John Laedlein, WI DNR GIS Section John.Laedlein@Wisconsin.gov Nina Rihn, WI DNR GIS Section Antoinette.Rihn@Wisconsin.gov
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
100%	
NOTES	
n/a	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Soils	Soils Mapping, Land Cover and other Natural Resource Data	Yes
LAYER DESCRIPTION		
Delineation of soil map units and associated attributes.		
RELATED STATEWIDE LAYERS		
Hydrography, Wetlands, Land Use		
BUSINESS NEEDS/STAKEHOLDERS		
<p>The information in a soil survey can be used by farmers and ranchers to help determine whether a particular soil type is suited for crops or livestock and what type of soil management might be required. An architect or engineer might use the engineering properties of a soil to determine whether or not it was suitable for a certain type of construction. A homeowner may even use the information for maintaining or constructing their garden, yard, or home. Stakeholders: Counties, DNR, NRCS, DATCP, DOT</p>		
SOURCE DATA STEWARD(S)		SOURCE DATA CONTACT(S)
see below		see below
SOURCE DATA STATUS		
<p>NRCS currently maintains and updates county-based digital soils data as part of its business functions. The Wisconsin statewide NRCS soils data (SSURGO, aka gSSURGO) is available for download from the National Geospatial Data Gateway: https://datagateway.nrcs.usda.gov/</p> <p>Here is the NRCS Direct Download page: https://datagateway.nrcs.usda.gov/GDGHome_DirectDownload.aspx</p> <p>WLIP funds were used to help complete statewide soil survey field mapping in Wisconsin (soils must be field mapped before a digital layer of soil map units can be created). In addition to WLIP funds, NRCS, and DATCP contributed funding for this effort. To date, this has been the only statewide initiative funded, in part, with WLIP funds.</p>		
STATEWIDE LAYER STEWARD		STATEWIDE LAYER CONTACT(S)
USDA Natural Resource Conservation Service (NRCS)		NRCS Wisconsin State Office Jason Nemecek jason.nemecek@wi.usda.gov Kent Peña kent.pena@wi.usda.gov
STATEWIDE LAYER STATUS & ACCESS METHOD(S)		
100%		
NOTES		
n/a		

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Planned Land Use	Land Use Mapping	Varied

LAYER DESCRIPTION	
Delineating areas based on planned future land use.	
RELATED STATEWIDE LAYERS	
Parcels, Orthoimagery, Zoning, Existing Land Use	
BUSINESS NEEDS/STAKEHOLDERS	
These maps are required as part of a comprehensive plan and are developed through the comprehensive planning process. This layer provides a vision for land use over the next 20-year timeline. It is to guide land use regulations, such as zoning. Stakeholders: Counties, DOT, DNR, RPCs, Municipalities, landowners, developers	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Municipalities, Counties, RPCs	stewards
SOURCE DATA STATUS	
Of the 72 counties, 66 have adopted a comprehensive plan. It is unknown how many counties actually have future land use source data that could be used in GIS. Some land use layers are available at Geodata@wisconsin.gov. Some of the maps are available only in PDF format. Various land use categorization schemas would make integration of land use maps into a statewide layer difficult. Also, the county future land use maps do not cover incorporated municipalities (villages and cities). For these areas, the city or village comprehensive plans are a better source.	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
unknown	Peter Herreid Wisconsin DOA Peter.Herreid@Wisconsin.gov
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
0%	
NOTES	
n/a	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Public Lands	Parcels	Varied

LAYER DESCRIPTION	
Location of all the Federal, State, and Local Public Conservation and Recreation Lands in Wisconsin.	
RELATED STATEWIDE LAYERS	
Parcels, Orthoimagery, Administrative Boundaries	
BUSINESS NEEDS/STAKEHOLDERS	
This data can provide a framework for communities and government agency decision makers to prioritize their recreation and conservation goals and implement land protection strategies. This data would also support the need for citizens to have information about the location of Public Lands in order to identify recreational opportunities and plan visits. Stakeholders: Counties, DOT, DNR, RPCs, Municipalities, DATCP	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
see below	see below
SOURCE DATA STATUS	
see below	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
None	None
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
see below	
NOTES	
<p>Wisconsin currently lacks a statewide integrated Public Lands GIS data layer, as well as lacking a data steward with the responsibility to develop or manage such a layer. Some subsets of public lands are represented in separate data sets, such as DNR-Managed Lands, County Forests, lands enrolled in the Managed Forest Law or Forest Crop Law programs, and the Protected Areas Database of the US (PADUS). Statewide GIS data layers do not exist for several important categories of public lands, including Recreational Trails and Local Parks.</p> <p>In general, subsets of Public Lands data managed by the Wisconsin Dept. of Natural Resources (e.g., DNR-Managed Lands, DNR Forestry Data) are available for download via the DNR GIS Open Data Portal (enter an appropriate keyword such as “land” or “forestry”). Point of Contact: John Laedlein, Wisconsin DNR, John.Laedlein@dnr.state.wi.us</p> <p>A pilot framework for extracting such a Public Lands data layer was developed for Wisconsin’s fifteen (15) coastal counties by Wisconsin Coastal Management Program. The initial extraction of parcels was dependent on the “AuxClass” designation within the attribute table however, this method was not enough to completely capture public lands. This was mainly due to standardization inconsistencies and lack of clarity among how the counties used the “AuxClass” designation and other attribute fields to describe public lands. Implementing more direct and comprehensive guidelines for public land classification would be beneficial in future iterations. This framework is in the process of being finalized and can be made available upon request. Point of Contact: Peter Herreid, Wisconsin DOA, Peter.Herreid@Wisconsin.gov</p>	

STATEWIDE LAYER	FOUNDATIONAL ELEMENT	STATEWIDE LAYER COMPATIBLE
Wards (Election Districts)	Election and Administrative Boundaries	Yes

LAYER DESCRIPTION	
All area within Wisconsin is designated a single voting precinct (aka 'ward' in Wisconsin) that will nest completely within one, and only one: municipality, county supervisory district, state Legislative district, and federal Congressional district, and therefore, these election boundaries may be derived from the wards.	
RELATED STATEWIDE LAYERS	
Election Boundaries, Administrative Boundaries	
BUSINESS NEEDS/STAKEHOLDERS	
Essential for legislative and congressional redistricting. Required to properly administer elections locally and at the Wisconsin Elections Commission. Stakeholders: Counties, Municipalities, Wisconsin Elections Commission, Wisconsin Legislature, US Census Bureau, Dept of Administration, Department of Public Instruction	
SOURCE DATA STEWARD(S)	SOURCE DATA CONTACT(S)
Cities, Towns, Villages, Counties	Stewards
SOURCE DATA STATUS	
100% Complete	
STATEWIDE LAYER STEWARD	STATEWIDE LAYER CONTACT(S)
Legislative Technology Services Bureau (LTSB)	LTSB GIS Team gis@legis.wisconsin.gov (608) 283-1830
STATEWIDE LAYER STATUS & ACCESS METHOD(S)	
Statewide layer is 100% complete and updated every 6 months by state statute Data may be accessed on LTSB's Open Data Page: https://data-ltsb.opendata.arcgis.com/ REST Endpoints may accessed here: https://mapservices.legis.wisconsin.gov	
NOTES	
<p>State statutes were changed in 2015 to start a process of statewide collection of municipal wards boundaries in Wisconsin. Starting in January 2016, The statutes now direct each county clerk, or board of election commissioners, no later than January 15 and July 15 of each year, to transmit to the LTSB, in an electronic format approved by LTSB, a report confirming the boundaries of each municipality, ward and supervisory district within the county as of the preceding "snapshot" date of January 1 or July 1 respectively. Upon receipt of the information from each county clerk or board of election commissioners at each semi-annual reporting interval, LTSB must reconcile and compile the information received into a statewide database for the entire state. The statutes also directs LTSB to participate, on behalf of the state, in geographic boundary information programs when offered by the U.S. Bureau of the Census.</p> <p>http://docs.legis.wisconsin.gov/statutes/statutes/5/1/15/4/br/1 http://docs.legis.wisconsin.gov/statutes/statutes/5/1/15/4/b http://docs.legis.wisconsin.gov/statutes/statutes/5/1/15/4/b http://docs.legis.wisconsin.gov/statutes/statutes/13/IV/96/1/c</p>	

APPENDIX A - ABOUT WLIA

Founded in 1987, the Wisconsin Land Information Association (WLIA) is a grassroots organization representing a collection of concerned professionals working to develop, maintain, and apply a network of statewide land information systems. We are united by an interest in land records modernization, GIS, and related technologies, and by the need for government policies and programs that support their efficient and effective application. WLIA is open to individual, non-profit and corporate members. WLIA is a registered 501(c)(6) non-profit organization.

The purpose of WLIA is to foster the understanding, development, operation and maintenance of a network of statewide land information systems. These multipurpose land information systems require the spatial registration of various layers of land data that are maintained independently in various offices, agencies and organizations in both the private and public sectors. The registration of data from separate, but coordinated, information systems will provide the opportunity for all cooperating parties to access and use these valuable land data. Specifically, WLIA's mission is focused on promoting sound policy, promoting interaction and cooperation, technical research and education.

Since 1987, WLIA has made some significant steps to enhance the understanding, development and use of land information systems. Some of the greatest accomplishments have been done through its support of the Wisconsin Land Information Program (WLIP). The items below summarize what has been accomplished through both the support of the WLIP and accomplishments beyond the WLIP.

- Work with the Legislature and local units of government for the continued support of the WLIP.
- Educate both our members and, more importantly, our non-members about the benefits of the WLIP.
- Support statewide initiatives, which enhanced the development of statewide foundational elements.
- Provide a forum in which the concepts of the WLIP were further enhanced.

Since 1987, the WLIA has been successful in aligning its organization and budget structure within the organizational priorities, missions, and objectives. This alignment has allowed the Association to:

- Conduct an annual conference.
- Conduct annual regional meetings and educational seminars.
- Provide a forum for interaction between land information professionals.
- Develop a stable and diverse membership base.
- Promote the importance of land information.
- Develop standards, which promote cost effective information.
- Expand the cooperation between different levels of government.
- Expand the cooperation between the public and private sectors
- Provide educational programs for both members and nonmembers.