2024–2025

Annual Update of the Connecticut Geospatial Strategic Plan

Connecticut GIS Office

CONNECTICUT
Policy and Management

DOCUMENT INFORMATION AND ACKNOWLEDGEMENTS

This document is the first Annual Update of the Connecticut Geospatial Strategic Plan 2023-2028. The focus of this work is to evaluate the progress being made on strategic objectives and activities; check for any needed adjustments; and identify implementation goals for the coming year. The Connecticut GIS Office (GISO) would like to thank the stakeholders and respondents in Connecticut's GIS, data, and geospatial communities who participated in the Geospatial Strategic Planning Process.

The document was compiled and written by Carl Zimmerman, PhD, GIS Coordinator at the GISO[1]. To discuss additional policy or governance issues, contact Alfredo Herrera, Connecticut's Geographic Information Officer (GIO)[2]. The GIS Office sits within the Connecticut Office of Policy and Management, Data and Policy Analytics group (DAPA).

EXECUTIVE SUMMARY

Pursuant to Connecticut General Statutes Sections 4d-90-92, the GISO is tasked with the coordination, procurement, and management of GIS data and geospatial technologies for the community of users in the State of Connecticut. To carry out this mandate, a plan is produced annually. The CT Geospatial Strategic Plan (2023-2028) (Strategic Plan) was the first of its kind in Connecticut and completed last year. It included a heavy emphasis on stakeholder input, outreach, and engagement history. This document is the first **Annual Update of the Geospatial Strategic Plan (2024-2025**)(Annual Update) in the five-year cycle. The document's emphasis is on defining progress in meeting strategic goals set in the five-year plan and identifying new operational goals; stakeholder, staff, and GIS community needs; and changes in the social and political environment.

After an initial review by Geographic Information Systems Advisory Council (GAC), the five core Strategic Goals and related objectives will remain unchanged in the Strategic Plan. Minor modifications in the related Activities and Outputs were implemented to improve specificity and clarity.

The Annual Update document contains a list of achievements for the GISO in the past year, a progress and status report, emerging topics and opportunities, and updated operational priorities. The GISO has made substantial progress in the past year to increase access to a variety data and services, improve the statewide parcel data system, conduct outreach to a wide variety of stakeholders and users, and learn more about the training needs of GIS users.

Some key achievements include:

1. The GISO completed acquisition of the 2023 Connecticut Imagery and Elevation Data, and other derivative data. The data now can be downloaded or accessed as web services in a variety forms and locations.[3]
2. The Connecticut Parcel and CAMA data are updated and improved for 2024. A new data collection and submission process and Hub site are available for the Council of Governments (COGs). In addition, a grant program for data improvement called the 2024 to 2026 Parcel and CAMA Data Improvements Grants is underway.
3. A new and updated housing dashboard is complete. The Connecticut Housing Data Hub provides users the ability to explore several categories of state- and town-wide housing data.
4. Connecticut has water resource and hydrography data needing modernization. The GISO and the CT Department of Energy and Environmental Protection collaborated with four other New England States (Rhode Island, Massachusetts, Vermont, and Maine) to submit a joint United States Geological

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[3] See GIS and Geospatial Data Sites list.

Service 3D Hydrography Program ([3DHP](#)) Data Collaboration Announcement (DCA) grant application to acquire updated region-wide water resource data. It is a model for other regions.

5. The GISO now produces a well-received GISO [newsletter](#) several times a year which provides updates on policy, GAC meetings, and technical issues.
6. The GISO received national recognition through the ESRI [SAG award](#) (Special Achievement in GIS) and staff were appointed to national leadership positions on national geospatial organizations

The operational goals for the next year are intended to address gaps and unresolved objectives found during the data collection phase of this plan [Table 1-5]. Important priorities for 2025 include:

1. Create a Master Address Data index and provide a geocoder to GIS users.
2. Start Emergency Management and Water Resources working groups to support climate change, flood resiliency and flood hazard mapping.
3. Make a public GitHub site which provides access to Python and R automation and scripting for GIS processing done by other users.
4. Plan for, and provide, additional access to GIS software tools for State Agency staff (ESRI and open source).
5. Create a white paper on the Return on Investment for geospatial data and imagery acquisition and funding alternatives.
6. Continue implementation of the Parcel Improvement Grant program and improvement in the processing of parcels and CAMA data.
7. Complete a Parcel Drafting Standard.
8. Acquire, evaluate, and distribute new impervious cover data sets derived from the 2023 data sets for all of Connecticut. Create viewers and services for buildings (e.g. 2d and 3d)

VISION AND MISSION STATEMENT

The Vision and Mission Statement remain unchanged for this Annual Update. The **Vision Statement** describes the aspirational goals and desired future state of the GISO:

> *"The CT GIS Office will be the leader in data collection, analysis, and dissemination for the Connecticut geospatial community. We will serve as a center for collaboration, innovation, and excellence in GIS and will improve the quality and quantity of geospatial data to enable better decision-making."*

The **Mission Statement** describes the operational values of the organization and how the GISO plans to use them to achieve its established vision.

> *"The mission of the CT GIS Office is to effectively coordinate and promote the development and sharing of geospatial information for Connecticut stakeholders. We support the geospatial community by facilitating capacity-building, providing expertise, and establishing policies for the collection, management, and distribution of geospatial information."*

THE STRATEGIC GOALS FOR 2023-2028

The Strategic Goals were determined in the **Connecticut Geospatial Strategic Plan (2023-2028).** The five Goals remain unchanged for this Annual Update.

Goal 1: Use effective governance, policies, and standards to manage geospatial data.

Goal 2: Implement a sustainable funding model for imagery acquisition, GIS data, and geospatial technologies.

Goal 3: Increase access to data, spatial analysis, web services, and visualization capabilities for local and regional governments, community organizations, the private sector, and other stakeholders.

Goal 4: Provide direct analytic support and enhance capacity building for State Agencies.

Goal 5: Broaden communication and engagement across different levels of government and other organizations.

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INTRODUCTION

What is a GIS?

People think of "maps" when they hear the term "GIS", but GIS (Geographic Information Systems) is much more. At its simplest, a GIS is a system for processing and visualizing location data stored in spatially enabled databases. GIS systems also function as an enabling software environment to create digital models of physical reality that are intuitive, interoperable, and scalable. These systems allow scalable analyses and visualizations of complex systems like traffic modeling, fire planning, urban planning, self-driving systems, precision agriculture, crime, and climate resiliency.

The utility of GIS in specific domains

Geographic Information Systems can be used as a system of record to track information in time and space for critical government records. For instance, GIS data is extensively and comprehensively used in cadastral and property tax systems across Connecticut. The City of Groton, for instance, has used GIS data in property assessment for over 30 years. Base imagery further helps identify property and environmental changes within and around property.

GIS tools can help track, manage, and analyze impacts for extreme weather events like the dramatic flash flooding event that occurred last August 2024 in western Connecticut. Flood risk and hazard mapping can be conducted using elevation data and hydrologic models in GIS systems to assess and predict future risks.

GIS can be applied to emergency management applications such as the long duration Hawthorne fire in fall 2024 that occurred on Lamentation Mountain in Berlin, Connecticut. Emergency management personnel and fire fighters worked in rugged areas, and they relied on GIS data for day-to-day planning and operations. Site-level mapping helps professionals conduct operations in difficult terrain.

Background

The GISO, formed in 2021, is responsible for acquiring and collecting data, creating standards, and analyzing geographic and location data to facilitate the effective use of geographic information systems (GIS) in Connecticut. The GISO sits within the State of Connecticut, Office of Policy and Management, DAPA, headed by the Chief Data Officer. The GISO, managed by the Geographic Information Officer (GIO), works with the GIS Advisory Council (GAC). The GAC consults and advises the GIO on effective policy and priorities. Its responsibilities are guided by statute.

Staff

The GISO office currently consists of five staff: the GIO, two GIS Coordinators, and two GIS Analysts. The GISO seeks to create quality statewide GIS datasets, scalable services and

geospatial technologies, credible standards, and interoperable data to maximize value and utility for CT stakeholders while reducing inefficient data management practices.

Infrastructure

The GISO seeks to utilize the latest software, hardware, and management techniques for administration and processing of GIS data and utilization of geospatial technologies to serve and inform our stakeholders. The GISO uses a variety of commercial (e.g. ESRI products, remote sensing software, FME) and open-source software (e.g. Python and R). We have servers for data processing and have acquired about 200 TB of internal storage to hold Lidar, imagery, and derivative products on premises. We can conceptualize technical solutions, create mapping projects, conduct geospatial research, and perform analysis.

Goals of this document

The Connecticut Geospatial Strategic Plan and this Annual Update are intended to be consistent with Connecticut Data Plan (2025-2026) and follow the spirit of the National Spatial Data Infrastructure Strategic Plan (2025-2035) from the FGDC that provides oversite to federal geospatial policy and management.

 The goals of the Annual Update document include:

- Assessing the current progress towards the five-year plan and achieving the stated Strategic Goals and Objectives.
- Proposing new operational goals to rectify deficiencies and gaps identified during the data collection phase for the coming year and improve the maturity of the GIS system in Connecticut.
- Identify new environmental factors such as recent impactful changes in technology, society, and data that might influence the plan.

PROGRESS TOWARDS THE STRATEGIC PLANNING GOALS

This is the first year of the Annual Update cycle. As part of the five-year Strategic Planning process (2023-2028), the GAC reviews progress made towards the five strategic goals, and related objectives in the Annual Update for 2024-2025. From an external evaluation of the Connecticut's NSDI[4] data sets, a data specific approach, Connecticut received an overall score of **"B+"** from NSGIC for the recently published 2023 Geospatial Maturity Assessment. In addition, the GISO received the prestigious SAG Award from the major geospatial software vendor, ESRI.

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[4] The National Spatial Data Infrastructure is from federal planning process.

Summary of internal review

The GISO staff conducted a detailed internal evaluation of where we stand on our progress toward the five-year goals, objectives, activities, and outputs for the Geospatial Strategic Plan. Progress has been achieved on most objectives. Of the 44 outputs listed in the Geospatial Strategic Plan, 16 were completed, 14 were more than 50% complete, and 12 had some work completed. We rate ourselves as having achieved an overall score of **"B"** on our current progress towards the goals of the five-year plan. The aggregated ranking[5] of the five goals are:

1. Goal 5 (engagement): **A-**
2. Goal 3 (access): **B+**
3. Goal 2(funding): **B-**
4. Goal 1 (governance): **C+**
5. Goal 4 (support Agencies): **C+**

The objectives with the greatest progress are:

- Communication and outreach (obj 2.2, obj 5.1)
- Data acquisition, access, development and acquisition (obj 3.1, 3.2)
- Improvements in the parcel and CAMA data system / operations (obj 1.2)

The objectives with the least progress include:

- Providing wider access to GIS software for state agencies (obj 4.5)
- Giving access to automation tools and solution to stakeholders (obj 1.2)
- Planning and development of a data architecture for addressing (obj 1.2)
- Creation of an intake process for projects (obj 4.2)
- Inventory of GIS data and related users (obj 1.3)
- A sustainable funding plan for data acquisition and programs (obj 2.3)

Specific progress on Goals and Objective

Table 1 through Table 5 shows the specific achievements, progress, and grade for each objective. The most important achievements and the objectives with the greatest progress are placed in bold. Objectives and activities that are incomplete, unfinished, or unaddressed are noted. A few items are marked with a grade of incomplete (e.g. **"In"**) because they are not started or are waiting for other activities

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[5] Note: The grades for each objective and related activities are based on completion of their specific outputs. Some objectives, like 1.1, have significant outputs but not the correct ones to completely finish all activities and outputs.

to be completed. Appendix 1 describes the justification behind implementation goals for the coming year.

Goal 1

Use effective governance, policies, and standards to manage geospatial data.
Overall Grade: ***C+***

Table 1: Progress and objectives for Goal 1

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
Obj (1.1) Implement and strengthen data standards and governance to facilitate reliable access to authoritative versions of the Spatial Data Infrastructure (SDI) core data sets	**B–**	**Parcel Grant Improvement Program** provides one-time grant support for towns and COGs to improve cadastral data quality. Program underway for COGs. Regular meetings with COGs to discuss grant and policies.	The GISO and CT DEEP collaborated with four other New England states to submit **a joint USGS 3D Hydrography Program (3DHP) Data Collaboration Announcement (DCA) grant application.**	Continue working on parcel creation guidelines document. Partially finished draft. Limited progress on other standards and guidelines through prioritization and stakeholder outreach.
Obj (1.2) Develop data management and analytic capacities including automated data checks and validation within the GIS Office	**B–**	Staff attend 2024 ESRI development conference and regional conferences to learn about latest software technologies and relevant geospatial topics. Publish standardized parcel geometry and assessment data for all 169 towns of CT. **Created Parcel upload and tracking hub site.**	Staff using Python and R to automate pull of data from external sources for applications.	GitHub site for making processing scripts available to stakeholders is being built. Reviewing addressing automation solutions, either internal or external for addressing and geocoding.
Obj (1.3) Maintain an inventory of key data sets (existing and desired) that identify data producers, stewards, and consumers.	**D**	Surveyed stakeholders about critical data sets and use cases for Annual Update of Strategic Plan.		Not currently maintaining an inventory.

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
Obj (1.4) Conform to principles and guidance laid out in the State Data Plan	B	GIS staff member worked on committee for update of State Data Plan (2025-2026)	Chief Data Officer reviewed Annual Update of Strategic Plan.	Improve interoperability of data, perform outreach and trainings for Agencies, extend analytic capacities, and maintain privacy.

Goal 2:

Implement a sustainable funding model for imagery acquisition, GIS data, and geospatial technologies. ***Overall Grade: B-***

Table 2: Progress and objectives for Goal 2

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
Obj (2.1) Evaluate the social and economic benefits of geospatial data.	B-	Surveyed stakeholders about critical data sets and use cases for Annual Update of Strategic Plan. Presentation on ROI given at NEARC.	Track in GIS Office report provided annually. Collecting number of hits to web services (over 20k hits/day for the parcel service).	Return on investment white paper is planned but not started. No annual tracking so far on benefits.
Obj (2.2) Facilitate outreach opportunities to improve the visibility of GIS Office and educate decision-makers on the benefits of geospatial technologies and GIS data.	B-	Participated in numerous outreach events and conferences like NEARC, CCM, Data Collaborative, ESRI UC, NSGIC at local, regional, and national levels.	Staff spoke at a variety of professional events, conferences, and leadership activities.	Limited engagement with legislature.
Obj (2.3) Understand options for sustainably implementing periodic capture of imagery and other data products	C+	Stakeholder survey and Annual Geospatial Stakeholder event inquired about options for implementing imagery capture.	Created New England Partnership on 3DEP and 3DHP for acquisition of update hydrography data through USGS.	Starting work groups on emergency management and hydrography.

Goal 3:

*Increase access to data, spatial analysis, web services, and visualization capabilities for local and regional governments, community organizations, the private sector, and other stakeholders. **Overall Grade: B+***

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
Obj (3.1) Provide access to foundational social, cadastral, administrative, and environmental data and services for communities and partnerships.	A−	**Release of the 2023 Connecticut Imagery and Elevation Data.** **New 2024 Update of CT Parcel and CAMA Data.**	**Updated CT Housing Data Hub** Many new data set are accessible through download or web services through CT Geodata, CT ECO, and NOAA for download. Broadband data and distribution continue to be supported.	CT impervious cover data set is being built by vendor. Data sent to ESRI Community Maps for wider distribution. Master address data set not ready. Culvert collection for FY28. Statewide flood and resiliency mapping in FY26. New imagery and Lidar capture in 2026.
Obj (3.2) Create a baseline inventory of data and analytic requirements for communities.	B+	Completed associated Activities. Had Annual Outreach event to discuss data needs for stakeholders, public and private sector.	Updated 2024 Parcel data is in new Statewide Parcel Viewer.	Waiting on impervious data delivery to build community base map for smaller towns in CT. No baseline document.
Obj (3.3) Expand data outputs from geospatial data	B	Acquired remote sensing software.	Provided training on CT Eco for Open-source GIS software.	Creating GitHub repository for derivative products and related automation. 3d data has not yet been released.

Goal 4:

Provide direct analytic support and enhance capacity building for State Agencies.
Overall Grade: C+

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
Obj (4.1) Improve and expand	B+	Activities completed. Resources section created on	Completed webinars on	Started Interagency User group meetings.

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
geospatial literacy and ethical use of geospatial data across state agencies.		Geodata Portal with curated training materials.	geospatial topics and training through CT ECO. More planned.	Not a regular cadence yet.
Obj (4.2) Enhance access to geospatial analytic services and improve the analytic capacities of Agencies.	**C**	**CT ECO data download site is now available.** Supported GreenerGov project by scoping visualization and prototyping web maps. Support creation and maintenance of broadband data for other Agencies.	Published Newsletter for external communication consistently over past year.	No office hours available yet. A Project Intake process to track requests is unfinished.
Obj (4.3) Enable access to templates and automation for standard geospatial workflows.	**In**	Providing agency guidelines for the publishing of geospatial data. Provided training on open-source GIS.	Presentation on geocoding data from the Open Data Portal.	GitHub site is not open yet. Needs to be advertised and promoted.
Obj (4.4) Initiate, develop, and maintain business and Agency relationships to understand mandates, processes, and operational needs	**A-**	Provided direct support to agencies like DCP, DEEP and departments like OPM-IGGP. Query agencies on use cases for interagency GIS group.	Built and updated CT Housing Data Hub in partnership with several agencies.	Structured introduction and curriculum for training is not finished yet.
Obj (4.5) Support increased access to GIS desktop software and open-source scientific computing tools	**In**	Provide direct training for specific user tasks such as geocoding.		Working on feasibility of enterprise licensing. Some limited Geoportal resources and training but not a complete and coherent curriculum.

Goal 5:

Broaden communication and engagement across different levels of government and other organizations. ***Overall Grade: A-***

Objective	Grade	Progress	Progress	Incomplete and Unfinished Objectives
Obj (5.1) Provide consistent communication and facilitate stakeholder	**A**	**CT GIS Office Newsletter is now produced at regular**	Conducted survey of users for annual update Geospatial Strategic Plan.	Conducting training webinars and trainings for Agencies but just getting underway.

		intervals with Geospatial Advisory Council notes and additional materials.		
cooperation on policy, data, and technologies and improve access to best practices and new techniques.				
Obj (5.2) Make the GIS Office the recognizable face of GIS data and geospatial capacity in CT.	**B**	**Staff participation in national geospatial policy organizations** Presented at GIS Network and participated in management of event.	GIS logo is now available. Geodata Portal continues to mature and change including new imagery and resources sections.	Continue to expand hub sites, elevation site is next.
Obj (5.3) Collaborate with CT institutions of higher education, including community colleges, to utilize their skill sets to solve community problems, provide technological leadership, and support geospatial literacy.	**In**	Working with UCONN Data Science Program on methods to analyze and process address data.		No progress on vocational and professional program cooperation.

Notable partner achievements

1. The Connecticut Cultural Resources Information System (ConnCRIS) application was created by the CT State Historic Preservation Office (SHPO) to share Connecticut's cultural resources inventory, which includes data about documented historic properties, districts, and archaeological sites with a single mapping site. It took an outdated manual permitting system and created a fully digital one embedded in a mapping environment with significant labor savings and improvements in data access/quality.
2. The CT ECO Aerial Imagery and Lidar Elevation Download site allows for downloads of imagery, elevation, and Lidar data by town and tile.
3. CT ECO Map Services holds image and elevation services for the 2023 data accessible through URLs that preclude keeping data locally.

STAKEHOLDER OUTREACH AND DATA COLLECTION

External Survey

In the Winter of 2024-2025, a survey was created to learn more about the attitudes and needs of the GIS community in Connecticut using the Survey 123 cloud-based survey

platform from ESRI. The 13-question survey was intended to identify barriers to the usage of GIS data for the Annual Update of the Strategic Plan and find priority data sets for operational improvements. The survey was distributed through email, websites, listservs, and professional user groups to ensure a wide reach. The responses were limited (n=37) compared to the original five-year plan survey (n=105). A few open-ended responses were provided and summarized. Only eight open-ended questions were answered.

Most respondents were Operational and Supervisory staff and were from Government at all three levels (e.g. municipalities, COGs, and State Agencies). About 2/3rd of respondents self-reported "High" or "Very High" skill levels in GIS and geospatial technologies and most respondents were geographically focused on the central part of the state. The Southwestern and Eastern sections of the Connecticut were poorly represented.

The results showed that the visibility of the CT Geodata portal, the CT GISO, and the Geospatial Advisory Council have all increased between 2023 and 2024. Interestingly, most respondents did not have issues with finding geospatial data while a survey for the CT State Data plan identified that as a user problem. In addition, respondents were not worried about data being in a web service though GISO staff believe that this should be a point of emphasis for our yearly goals.[6]

The most important data sets (e.g. imagery, government boundaries, cadastral) remained essentially unchanged in importance from the previous year with the one exception that Elevation data sets were now more important.

The CT GISO does not have a permanent funding mandate for imagery and other data acquisitions. We decided to test the waters by exploring the financial value of State data. The following question was asked to determine what if any monetary value data from the State of CT has: "Consider the data your organization utilizes from the State of CT. How much would your organization be willing to pay a month to access this data?" About 30% of respondent were willing to pay more than 40 dollars per month and 60% were willing to pay some money for access.

External stakeholder meeting

A stakeholder outreach meeting was held on March 20th, 2025, at the UCONN Middlesex County Extension Office in Haddam, CT. The program included a presentation on annual progress by the GISO, a review of Strategic Goals and Activities, a discussion of new hardware and software capabilities for the GISO, and results from the stakeholder survey. A small group of 18 attendees participated with representatives from the State Agencies, municipalities, COGs, federal agencies, and consultancies. Minimal new information surfaced from this conversation that has not been discovered elsewhere. Much of the open discussion focused on improving parcel and CAMA quality and how they can be further integrated as a coherent

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[6] Web services facilitate usage to a far greater degree than downloads

statewide whole. There were discussions on alternatives to the current approach to funding of imagery and other data sets focused on finding partners at different levels of government using an acquisition and procurement model for Imagery and Lidar collection in 2016.

Training survey

On March 18-19th, 2025, the GIS Office conducted a survey (n=52) of the 300 members of the Interagency GIS group for the State of Connecticut using a cloud version of Microsoft Forms to learn more about their software usage and needs. 81% of the respondents had access to GIS software. The two most common visualization or GIS tools used were ESRI products (ArcGIS Pro and ArcGIS Online) and these same tools were deemed important for effectiveness and critical use cases. The most desired learning method is "Tutorial that walks you through specific solutions" but there were limited differences between the five categories. Desired trainings included a wide variety of specific use cases.

EXTERNAL RISKS AND TRENDS

The Changing Funding Landscape

The underlying assumption for the GISO is that the coordination, acquisition, and centralized management of GIS data and geospatial technology are worthwhile public investments and that the return on investment (ROI) benefits citizens and GIS data users. The GISO provides these data as a public good which will reduce the barrier of entry to geographic analysis and applications for citizens and businesses.

Since its inception in 2022, the GISO has relied on funding from the American Rescue Plan Act (ARPA) to fund several critical initiatives that have modernized and moved the CT GIS community forward including the collection of new statewide imagery, Lidar, and GIS data sets in 2023 and 2026 and investments in training for staff and digital infrastructure tools.

Investment in geospatial data, governance, and geospatial technologies by the GISO is critical to the betterment of public goods[7] and will exceed several million dollars from 2022 to 2026. With the end of ARPA, future data acquisition must rely on new resources and funding to continue procurement of new data like ortho-imagery. Reoccurring funding for geospatial data does not exist in Connecticut. One option is that grant applications could be tied to other environmental, transportation, and human services programs that have larger budgets and constituencies if federal budget restrictions are severe or other funding is unavailable.

Data interoperability and accessibility for users and stakeholders drive the ROIs of geospatial data acquisition. Funding and governance changes from federal agencies represent another unknown impact on the GIS Community. Some users (e.g. health and environmental workers

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[7] Public goods are defined as a product or service given to the public for their benefit and well-being without profit motives, often for unmet needs.

and groups) and some federal partners (e.g. FGDC, Dept. of Interior) may face travel restrictions, funding changes, and layoffs.

Other Trends

Topic	Future Responses	Notes
Rapid technological change continues in geospatial and data science domains with rapidly increasing volumes of data at finer resolutions. Processing and visualization challenges remain.	Continue to upskill workforce with training in open-source computing and upgrade technology stacks. Goal in State Data Plan to evaluate state job classes.	Ongoing
AI is becoming increasingly ubiquitous as an analysis and visualization generation tool. Much of the processing is black box. Access to data from AI bots will become increasingly important.	Provide guidance and standards for interaction with AI bots. Work with State governance to minimize risks to users. Evaluate impact on digital and GIS workforces.	Ongoing
Climate change and resiliency: flooding, fires, and tropical storms are increasing in intensity and are occurring more frequently in CT. The state has dated physical and digital infrastructure.	To address these issues, create data inventories, improve interoperability and keep consistent refresh rates for data. Improve communication with impacted stakeholders and emergency management professionals.	Work with domain experts to build geospatial capabilities across Agencies.
Digital twinning capabilities are increasing with higher resolution data set (especially 3d) and more coverage. AI is allowing additional forms of processing to convert data into usable forms.	Build 3d mapping capabilities and scalable visualizations. Investigate guidelines, technologies and standards for visualizations.	

CONCLUSION

The GISO had a productive year and addressed many of the core Objectives and Activities in the Geospatial Strategic Plan. Several new individual data sets are now available. However, the GISO needs to further extend these capabilities by making groups of data centered around domains (e.g. emergency management(and utilizing web services to extend the utility, usage, and interoperability of our data sets.

Putting groups of data sets within domain areas like water resources, emergency management, and climate resiliency in formats that are more familiar to domain users will

facilitate greater use among smaller towns and organizations. The GISO also needs to continue to improve and broaden the number of guidelines / standards to make it simpler to integrate data sets across town and COG boundaries and improve interoperability

The GISO has had a wide variety of outreach and interactions with many stakeholders at local, regional, and national events, but small towns and non-profits continue to be hard to reach and more creative methods need to be found to encourage engagement including conducting direct outreach in smaller communities and a wide variety of community organizations. Continued trainings and improved access for low-cost software and web tools allow for easier access to GIS and geospatial technologies.

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GIS AND GEOSPATIAL DATA SITES

CT GIS Office Overview

CT Geodata Portal

CT Geodata Portal – Newsletter Example

CT ECO Aerial Imagery and Lidar Elevation Download

CT ECO – Advanced Viewer v2

CT ECO – Map and Imager Services

NOAA – Digital Coast: Data Access Viewer (Lidar Clip and Ship)

NOAA- Coastal Lidar Bulk Download

APPENDICES

Appendix 1: Implementation gaps and goal selection

Table 6: Justification for annual goals

Issues / Gaps	Proposed Goals	Source
Significant staff time spent on annual improvements to Parcel and CAMA data. Increase interactions with Assessors.	Continue to increase and improve automation of parcel and data cleaning using Python coding. Review quality of CAMA data. Present at Assessor "University" in June 2025.	Staff
Lack of a permanent funding source for imagery, Lidar, and other data acquisition. Uncertain federal and state funding levels over the next few years.	Create a Return on Investment and funding alternatives White Paper to understand issues related to funding of imagery, parcels, and ancillary data sets.	Objectives / Activities and Staff
Limited data usage and data framework for emergencies. Uncovered during Oxford flood and Hawthorne fire.	Complete a set of framework data sets for emergency management and resiliency with packages and printing templates.	Staff
Dated water resource information and new 3DHP goals. Unidentified flooding risks outside of major rivers.	Kick off water resources data working group and create outline of strategic plan for CT Water Resources.	Staff
Limited interaction with smaller towns, and non-profits.	Conduct and meet with all eight COGs and the municipalities.	Staff
Demand for geocoding from State Agencies and high cost of private sector geocoding.	Update master address data sets, establish workflows, and provide an authoritative geocoder (2026). Establish maintenance/update process.	Objectives / Activities and Staff
Enable access to templates and automation for standard geospatial	Provide access to Python and R automation scripting on new and public GitHub site and access to templates.	Objectives / Activities and Staff

workflows especially regarding CT Geodata Portal.		
Collaborate with CT institutions of higher education, including community colleges, to utilize their skill sets to solve community problems, provide technological leadership, and support geospatial literacy.	Continue to enhance and develop relationships with higher education centers including MAGIC and UCONN CLEAR to cooperate on programs for internships and professional development opportunities, shared data, collaborate on data production. Participate in at least one annual event.	Objectives / Activities
Conform to principles and guidance laid out in the State Data Plan.	Create intake process with a digital form.	Objectives / Activities
Support increased access to GIS desktop software and open-source scientific computing tools.	Provide statewide ELA plan and/or access to open-source GIS tools. Provide trainings such as Interagency GIS User groups and GIS themed webinars.	Objectives / Activities
Improve data access and quality.	Create a 3d bldg. web service, complete acquisition of impervious data sets, create a hub site for elevation data.	Objectives / Activities
Improve access to foundational data sets.	Complete acquisition of IC data sets and create services to access data. Create 3d building service and determine use cases to best utilize it. Provide training on usage of 3d GIS.	Objectives / Activities and staff

Appendix 2: Summary of open-ended survey responses

The stakeholder survey sent to users include opportunities for open-end response on issues that were important to respondents. The following summarizes that list.

- Put the CT GeoData Portal in Snowflake or Big Query so we can connect to the cloud (Accessibility)
- Public data should be mandated to host an API. the GIS data on the open portal is good, but so many other state agencies have data that is cumbersome to use in an efficient manner (Accessibility)
- Continue to do exactly what you are doing. You are growing fast and helping all GIS users. Great to see the results of your efforts, Thank You! (Praise)

- Meet with academics and institutional stakeholders, focus more on policy and sustainable practices instead of just buying data. Leverage your state partners instead of using vendors. (Collaboration)
- We gave our parcel data to the state. Would be disingenuous for you to then charge us to access our data (Policy and transparency)
- Agencies need more communication/data sharing/workgroups at the Bureau level to address duplicative work efforts for GIS projects. (Collaboration)
- Objective 4.1; create an online learning area (Training)
- Fund the COGs who don't have enough resources for GIS database services on a regional scale (Funding)

Appendix 3: Summary of discussion topics and survey responses[8]

A stakeholder event for GIS users was held at UConn-Middlesex County Extension. Open-ended, group questions, and small-groups discussions were used to identify current issues and areas of concern for the participants. The following is a summary of the topics discussed and covered.

Attendees
- 18 participants from private, municipal, state, federal government, and universities.

Key Issues Identified
- Boundary and Parcel Issues: Town boundaries, especially near water; Right-of-Ways (ROWs); wetlands; property accessibility; parcel data inconsistencies and standards.
- Data Problems: Outdated data, lack of standards, poor interagency collaboration, and misinformation about GIS capabilities.
- Project Coordination: Conflicting and duplicative efforts across agencies (e.g., DEEP, DOT, DoAG); need for unified standards and better communication.
- Infrastructure Gaps: Incomplete data on bridges, culverts, impervious surfaces.
- Technology Challenges: Inconsistent elevation and imagery data; outdated technologies; opportunity for advanced tools like digital twins, HD maps, and flood simulations.

Collaboration and Outreach
- Need for better collaboration among agencies and with vendors.
- Increased interest from assessors and planners.
- Suggestions for themed events and broader engagement with professionals and town planners.
- Meet with universities

Funding Opportunities
- Leverage past models like CRCOG's coordination of year-end funds.

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[8] Summary created by ChatGPT. Found at https://chatgpt.com/ .

- Encourage shared project funding across agencies, utilities, and towns.
- Develop mechanisms for agencies and land trusts to contribute to data costs.

Open-ended Discussion Highlights
- Use and promotion of GIS resources and web services.
- Reviving emergency GIS portals for disasters using community-sourced data.
- Emphasis on mission-critical datasets like roads, geocoding, and centerlines.

Data Visualization & Communication
- Use GIS to create clear, interactive visuals for storytelling, reports, public awareness, and decision-making.
- StoryMaps and ArcGIS Online for public engagement
- Maps for health (chronic disease, maternal/child, radon)
- Town/rate comparisons, clean-up sites, DCF services
- Visuals for annual reports, land use changes, habitat shifts
- Reverse geocoding and address-based presentation

Spatial Analysis & Decision Support
- Analyze patterns, risks, and priorities using spatial tools, statistics, and modeling.
- Healthcare access (service areas, drive-times)
- Environmental risk (climate impact, flood zones)
- Weighted priority mapping
- Water quality (3D interpolation, dissolved oxygen)
- Fisheries, emissions, and land use analysis

Environmental & Resource Management
- Track, assess, and manage natural resources, infrastructure, and conservation areas.
- Mapping DEEP lands and infrastructure
- Monitoring aquatic/coastal habitat changes
- Dam locations, hazard classification, and inundation mapping
- Invasives, plantings, and habitat management
- Water quality assessments by watershed segment

Regulatory & Permitting Support
- Support compliance and regulatory workflows with accurate, up-to-date spatial data.
- Wetlands and floodplain permitting
- Voting district boundaries (e.g., for Secretary of State)
- DEEP property boundaries for land management
- Project site screening for regulatory review

Data Management & Integration
- Improve data consistency, access, and sharing across agencies and systems.
- Synchronizing shared local/state datasets
- Updating and cleaning feature classes and symbology

- Integrating unstructured data and municipal/tribal data
- Keeping parcel, infrastructure, and state land boundaries current

Technology & Automation
- Adopt modern tools, automate workflows, and enhance capabilities.
- Transitioning from ArcMap to ArcGIS Pro
- Using Python scripts in ArcGIS Online
- Integrating R with GIS for analysis
- Leveraging drone data for mapping/monitoring
- Exploring 3D visualization and volumetric tools

Training, Outreach & Collaboration
- Expand GIS knowledge, improve communication, and foster partnerships.
- GIS training for linking data (e.g., well reports)
- Collaboration between DEEP divisions on shared datasets
- Broad engagement with planners, vendors, and professionals
- Promoting GIS resources (e.g., CT Open Data, emergency portals)

Appendix 4: New or updated GIS data

Type	Description	Capture/Delivery Date	Notes
Imagery	4-band	2024	
Imagery	True Ortho	2024	
Lidar	Point Cloud	2024	
Elevation	DEM-Hydroconditioned	2024	
Raster	Intensity raster	2024	
Vector	Buildings-2d	2025	
Vector	Buildings-3d	2025	
Vector	Lakes, Ponds, Rivers	2025	
Vector	Annual parcel update (2024)	2025	
Raster	Vegetation and forest structure rasters	2025 (coming)	Processing being completed by Summer of 2025.
Vector	IC components	2025	Includes sidewalks, driveways, streets and transportation markings
Vector	Hydrologic data for the 3DHP program	Planning stage	