Review Report: P.L. 2023, Ch. 471:
An Act to Improve Geographic Information System Data Acquisition and Maintenance

Department of Administrative and Financial Services

Office of Information Technology | MEGIS | GeoLibrary

Table of Contents

Introduction

This report provides a comprehensive report on the mission, duties, powers, organizational structure, benefits, future goals, and staffing of the Office of Geographic Information Systems and the Maine Library of Geographic Information as established in the Maine Revised Statutes, Title 5, ch. 163: Office of Information Technology.[1] This report was compiled in response to P.L. 2023, ch. 471 (LD1687) An Act to Improve Geographic Information System Data Acquisition and Maintenance.[2]

Summary

A Geographic Information System (GIS) is a computer system for capturing, storing, analyzing and displaying data related to a geographic surface, in this case, the State of Maine. Geographic data (also called spatial or geospatial data) identifies the geographic location of features within Maine and is captured through a combination of on the ground and aerial imagery. Geographic features captured include elevation, vegetation, rivers, lakes, streams, flood plains, buildings and structures, roadways, bridges, islands, coastal areas, etc. Different geographical data sets are also gathered throughout the state, for example wild animal habitats, population density, economic factors, legal boundaries, etc. GIS can then selectively layer this data on top of the geographic surface and provide a visual surface map of the State of Maine that highlights whatever information the user is searching for. Agencies within the State of Maine work with the GIS system to construct visual maps of Maine to showcase information relevant to their departments. For example, Maine's Department of Transportation uses maps that show roadways, highways, and bridges throughout Maine, the Secretary of State uses maps that show voting districts; and the Department of Inland Fisheries and Wildlife uses maps that show hunting areas and habitats for certain wild animals.

Three entities work together on Geographic Information System data acquisition and maintenance for the State of Maine: The Maine Office of GIS, the GeoLibrary Board, and the positions within the Office of Information Technology. The Office of Information Technology and the Maine Office of GIS primarily support GIS services to State agencies through State funding, while the GeoLibrary Board focuses on organizations and groups outside of the State. Together they provide GIS services statewide that are used to disseminate geospatial data to the greater GIS community and the public. The greater GIS community includes relevant organizations representing the full spectrum of Maine GIS stakeholders, which includes local, state, federal and tribal government agencies; governing bodies such as the Governor's office and state legislature; regional planning organizations; Maine colleges and universities; private businesses; and other relevant professional organizations.

They coordinate aerial flights and various other GIS acquisitions to enhance the state data, work with various municipalities and unorganized territories who may be running their own GIS programs, and help those communities create GIS content that dovetails with the state. They

[1] http://legislature.maine.gov/statutes/5/title5ch163sec0.html
[2] https://legislature.maine.gov/bills/display_ps.asp?snum=131&paper=SP0674&PID=1456

work with stakeholders to gather important regional, economic, business and educational data. They share data internally with Agencies through an established portal (Arcisportal) and help develop and publish maps online that will benefit the public.

In some cases, the geographic data for a given part of the state is well established, up-to-date and rich in detail for all data sets, but that level of detail is not consistent throughout the state and large gaps exist particularly in Piscataquis, Washington, and Franklin counties.

The two positions added in P.L.2023, ch. 412, within the Office of Information Technology for the GIS program will ensure coordination of these activities for best efficiency with the resources we have, to maximize efforts, fill in the gaps where they exist within those underrepresented counties, enhance our ability to coordinate efforts among the GIS entities, allow for more proactive rather than reactive engagement, and to ensure that all GIS efforts remain connected while building off each other and eliminating duplication.

Mission

The Maine Office of Geographic Information Systems was established through Title 5, Part 4, ch. 163 § 1991 through § 1996. The mission of the **Maine Office of Geographic Information Systems** is to provide baseline geospatial data, services, and support to users of geospatial technology in state government and the public, with the ultimate goal to increase and ease the use of geospatial technologies. Currently, the budget for the Maine Office of GIS is $1,186,893 for FY24/FY25.

The **Maine Library of Geographic Information Board (GeoLibrary Board)** was established by the Legislature in State Statute; Title 5, Part 4, ch. 163, § 2001 through § 2006. The mission of the Maine GeoLibrary Board is to expand and promote the value of geographic spatial data through widespread distribution and innovative use for the benefit of Maine's citizens. Currently, the budget for staff and infrastructure for the GeoLibrary Board is $282,594 for FY24/FY25.

Per statute (Title 5, Part 4, ch. 163, § 1981), the mission of the **Office of Information Technology** includes providing high-quality, responsive, cost-effective information technology services to the agencies, instrumentalities, and political subdivisions of State Government. These services include, but are not limited to, voice and data computer and networking services, applications development and maintenance and desktop support, centralized geographic information systems, and data and security advice to customers.

In 2021 Office of Information Technology staff engaged in exercises to rebrand and personalize the agency's mission, which resulted in the following statement: "MaineIT, also known as the Office of Information Technology, strives to be a client-centric organization cultivating positive relationships and growth to better serve State of Maine agencies and Maine citizens."

The budget totals provided above do not include supplemental funds that are leveraged to support GIS programs and services.

Powers and Duties

The powers and duties of the **Office of Information Technology** as set by Statute (Title 5, Part 4, ch. 163, § 1982[3]) are as follows:

1. Maintain central telecommunications service: The Chief Information Officer shall maintain and operate central telecommunications services.
2. Staff and technical assistance: The Chief Information Officer shall provide staff and technical assistance in data processing to other state agencies.
3. Maintain central data processing services: The Chief Information Officer shall maintain and operate central data processing and geographic information systems.
4. InforME responsibilities: The Chief Information Officer shall serve as the contracting authority under Title 1, ch. 14[4] and shall provide staff to the InforME Board established in Title 1, ch. 14.
5. Charges: The Chief Information Officer may levy appropriate charges against all state agencies using services provided by the office and for operations of the office of the Chief Information Officer.
6. Budget: The Chief Information Officer shall submit a budget of estimated revenues and costs to be incurred by the office.
7. Professional and technical services: The Chief Information Officer may employ or engage, within funds available, outside technical or professional personnel and services as necessary for carrying out the purposes of this chapter, subject to the approval of the commissioner.
8. Rules: The Chief Information Officer may make rules, subject to the approval of the commissioner, for carrying out the purposes of this chapter.
9. Protection of information files: The Chief Information Officer shall develop rules regarding the safeguarding, maintenance, and use of information files relating to data processing, subject to the approval of the commissioner. The office is responsible for the enforcement of those rules.

The powers and duties of the **Maine Office of Geographic Information Systems** as set by Statute (Title 5, Part 4, ch. 163, § 1993[5]) are as follows:

1. Geographic information system: Establish, maintain, and operate a geographic data base information center, develop, and administer standards, subject to the approval of the Chief Information Officer, and provide geographic information system services to the public.
2. GIS data repository: Create a GIS data repository for the proper management of GIS data and ensure the GIS data are documented, including ownership. Data must be

[3] https://legislature.maine.gov/statutes/5/title5sec1982.html
[4] https://legislature.maine.gov/statutes/1/title1ch14sec0.html
[5] https://legislature.maine.gov/statutes/5/title5sec1993.html

stored and managed in a manner that facilitates the evolution of a distributed agency GIS network.

3. Data ownership: Maintain GIS base map data and other multipurpose data not specific to any state agency. All other GIS data are owned by the agency originally compiling the mapped data that were digitized for the GIS.
4. Accuracy level: Ensure that GIS data added on the GIS data repository are developed and maintained at an accuracy level and in a format that meets the GIS data standards, kept in a format that is compatible with the GIS and, upon request of a potential user, made available to the user.
5. Charges: Levy appropriate charges on those using the services provided by the office, except that charges may not be levied on the Legislature for existing information. The charges must be fixed in a schedule or schedules.
6. Consultation with Chief Information Officer: Consult with the Chief Information Officer on all major policy issues, including fee schedules, related to the management of GIS data and development of GIS data standards.

The powers and duties of the **Maine Library of Geographic Information Board (GeoLibrary Board)** as set by Statute (Title 5, Part 4, ch.163, §2003[6]) are as follows:

1. To oversee the Maine Library of Geographic Information to ensure that it operates as a coordinated, cost-effective electronic gateway providing public access to data custodians' public geographic information.
2. To establish and maintain standards, rules, and policies for nonstate data custodians' geographic information that is incorporated into the Maine Library of Geographic Information.
3. To reduce redundancies in the creation, verification, and maintenance of public geographic information and to enhance its utility for complex analyses.
4. To set priorities and authorize the expenditure of state funds, including awarding of grants or subgrants to data custodians when available.
5. To promote innovative uses of geographic information through the provision of verified, coordinated, intergovernmental information via the Maine Library of Geographic Information. The geographic information board shall seek advice from the general public, professional associations, academic groups, and institutions and individuals with knowledge of and interest in geographic information regarding needed information and potential innovative uses of geographic information.
6. To enter partnerships to promote the purposes of this subchapter.
7. To hear and resolve disputes that may arise between data custodians or with respect to information to be placed in the Maine Library of Geographic Information, enforcement of geographic information board standards, rules or policies or other related matters, all in accordance with the Maine Administrative Procedure Act.
8. To conduct studies relating to the coordination, development, and use of statewide geographic information.

[6] https://legislature.maine.gov/statutes/5/title5sec2003.html

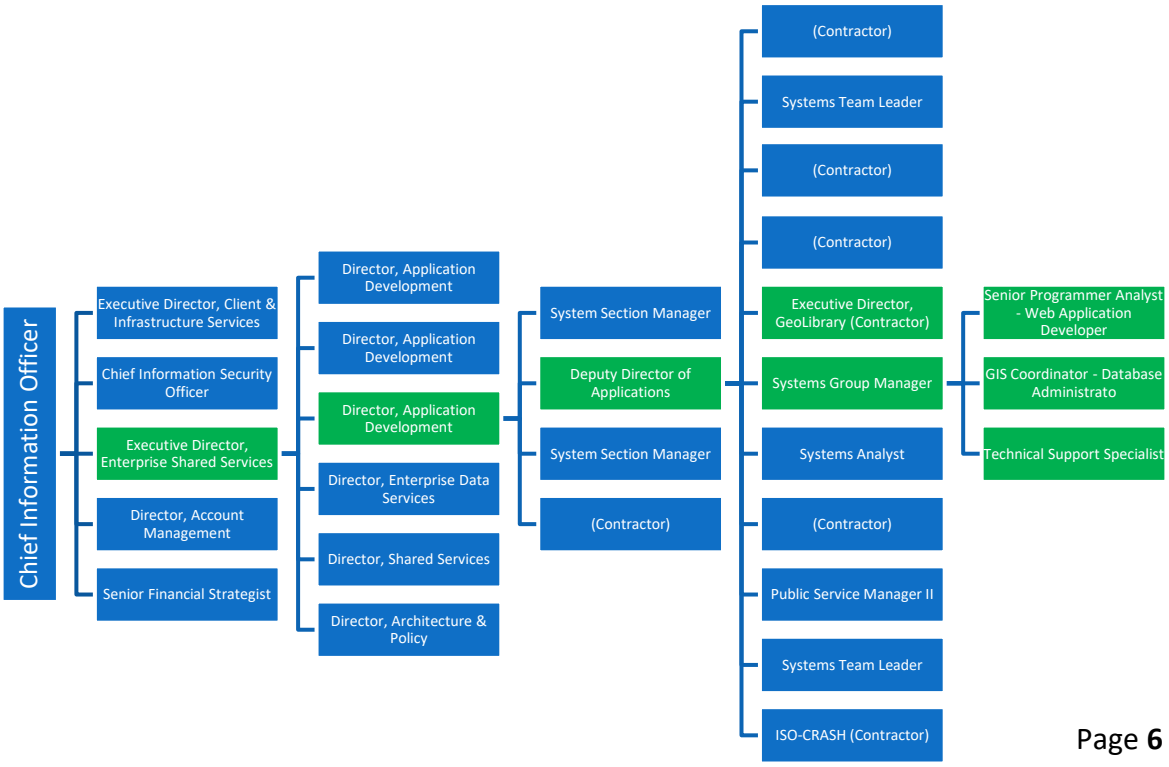
9. To report annually to the joint standing committees of the Legislature having jurisdiction over natural resources matters, and state and local government matters.
10. To develop appropriate internal services to facilitate generalized access for and use of data by governmental agencies and the public.

Organizational Structure

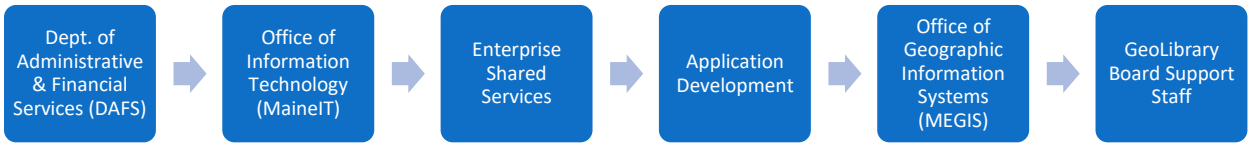
In January 2005, the Office of Information Technology was created by Executive Order to consolidate the IT functions, staff, and equipment from the Bureau of Information Services and all Executive Branch Agencies. The consolidation was done to adopt statewide IT solutions and promote the use of information efficiently across State government. Since the consolidation, the Office of Information Technology has been delivering the full range of technology services to the Executive Branch, and selected services (such as e-mail and network support) to non-Executive Branch agencies.

The Office of Information Technology has over 500 IT professionals providing essential technology, technology support and strategic leadership for 11,000 Executive Branch employees, 14 Cabinet-level departments, all the smaller Executive Branch Agencies, and the GeoLibrary Board. The Office of Information Technology also provides network support for the Judicial Branch, Secretary of State, and Attorney General, supports Maine residents through the Maine.gov web portal, and maintains the MSCommNet public safety radio communications network, among other services.

The organizational diagram for the Maine Office of Geographic Information Systems (MEGIS), and the GeoLibrary Board, within the Office of Information Technology is depicted below. The full organizational path is noted on the diagram in green.



The organizational structure of the Department of Administrative and Financial Services to the GeoLibrary Board is below:



The GeoLibrary Board consists of 15 voting members. All members are appointed to the board by the authorized Appointing Authority. The full list of member positions, the position/entity they represent, and the authorized Appointing Authority are listed in the table below.

Seat #	Representing	Appointing Authority	Term
1	DAFS Commissioner	DAFS Commissioner	Permanent
2	State Chief Information Officer (CIO)	State CIO	Permanent
3	Removed from statute	N/A	N/A
4	State GIS Functions	Governor	3 years
5	University of Maine System	UMaine Chancellor	3 years
6	Municipal Government	Senate President	3 years
7	Municipal Government	House Speaker	3 years
8	Statewide Association of Regional Councils	Speaker of the House	3 years
9	Statewide Association of Counties	Governor	3 years
10	Real Estate and Development Interests	Senate President	3 years
11	Environmental Issues	Speaker of the House	3 years
12	Public Utilities	Governor	3 years
13	GIS Vendors	Senate President	3 years
14	GIS Vendors	House Speaker	3 years
15	Public	Senate President	3 years
16	State GIS Functions	Governor	3 years

Benefits, Services, Staffing, and the Importance of GIS

The Benefits of GIS

GIS is extremely important to long term economic stability and growth, as demonstrated in the below examples:

- King County (Seattle, WA) has had a GIS program that dates to 1992. In 2010 they hired an independent economist to perform a return on investment (ROI) analysis. The economist's findings were that while the yearly cost to run the department was approximately $14.6 million, the net benefits were averaging $180 million (2010 dollars).[7]
- In 1996 Montana started the process of building a digital cadastral database (cadastral data contains information about land ownership) out of their paper maps. This process

[7] https://nsgic.org/assets/docs/Library/KCGIS_ROI_Report.pdf

would not be completed until 2003, at the cost of $3 million. By 2005 the state announced they had recouped that investment. In 2009 they announced that the annual return on investment was $9.3 million. Montana is a particularly good comparison for Maine as both are large states that depend on land-use heavy industry (farming, ranching, logging, etc.), though Maine has done a better job than Montana in terms of diversifying their industrial base.[8]

- The State of Maine hired an independent firm, AppGeo, to conduct a study in 2012 concerning the ROI of its orthoimagery program. Their study covered orthoimagery uses in fields such as stormwater planning, economic development, forestry, and wildlife management. The AppGeo team found that over a five-year period the orthoimagery program spent $2.4 million while returning benefits of $20 million (estimates range from $10 million to $30 million).[9]

Data Layer Services and Applications

Currently, among the GIS entities, we have the capacity to support Statewide Leaf-off Imagery, Land Cover, Land Use, and LiDAR/Elevation systems and services for State agencies, municipalities, and other groups. The LiDAR/Elevation efforts are actively being supported through Federal Grants.

Statewide Leaf-off Imagery (Active)

Statewide Leaf-off Imagery is among the most important resources state and local GIS users have. While most users will only ever see this data as a background to the data they are looking for, aerial imagery (sometimes called satellite imagery), contains much more information than can be seen with the naked eye. Modern satellite imagery collects images in up to nine different spectrums (of which only three are visible). These different imagery bands are used in a wide variety of industrial applications. Statewide Leaf-off Imagery is actively supported by the GIS entities.

- **Applications:** Coastal Resilience, Development Planning, Climate Resilience, Infrastructure, Emergency Planning and Mitigation, Disaster Recovery
- **Stakeholders Supported:** State and Municipal Agencies/Departments, Tribal Governments, Regional Planning, Architecture and Engineering, Surveying, Real Estate and Development, Environmental, Energy and Timber, Utilities, Universities, Researchers, Maine GIS User Group (MEGUG)

Land Cover (Active)

Land Cover represents the actual surface cover of the ground (for example, vegetation, water, urban area, bare soil, etc.). The information obtained from Land Cover data is very important to economic and environmental planning. Having this information at a state-wide level greatly increases the specificity with which new development can be created. While cover is primarily a planning tool used by state and municipal governments, its quality does influence industry. Land Cover is actively supported by the GIS entities.

[8] https://www.esri.com/~/media/files/pdfs/library/ebooks/return-on-investment.pdf
[9] https://www.maine.gov/geolib/publications/Return_on_Investment/MaineOrthoROIStudy_FINAL.pdf

- **Applications:** Coastal Resilience, Development Planning, Climate Resilience, Emergency Planning and Mitigation, Forestry, Carbon Market, Public Health Management
- **Stakeholders Supported:** State and Municipal Agencies/Departments, Tribal Governments, Regional Planning, Architecture and Engineering, Surveying, Environmental, Energy and Timber, Utilities, Universities, Researchers, MEGUG

Land Use (Active)

Land Use is in some ways very similar to land cover, but rather than showing the natural cover of the land it shows the approved use or uses for land. Examples include agriculture, industrial, residential, mixed use, etc. Land use maps are very important to all kinds of development and are widely used by municipalities. The zoning maps used by cities and towns is a commonly used example of a land use map. Land Use is actively supported by the GIS entities.

- **Applications:** Development Planning, Infrastructure, Public Health Management, Social Service Provision, Disaster recovery, Carbon Market, Emergency Planning and Mitigation
- **Stakeholders Supported:** State and Municipal Agencies/Departments, Tribal Governments, Regional Planning, Architecture and Engineering, Surveying, Environmental, Utilities, Researchers, MEGUG, General public.

LiDAR/Elevation Data (Active through Federal Grants)

As one of the newer mapping technologies, LiDAR comes with a hefty price tag: $7 million. But LiDAR does several things that no other technology can do. Unlike other methods, LiDAR allows for both tree-top and ground elevations. This data is important to a wide variety of industries, from insurance to disaster response to ecological planning. As ground elevation is derived from LiDAR data, it is also very important to flood prediction modeling. LiDAR/Elevation Data is actively supported through the GIS entities through the use of Federal grant funds.

- **Applications:** Coastal Resilience, Development Planning, Climate Resilience, Infrastructure, Emergency Planning and Mitigation, Disaster Recovery, Forestry, Carbon Market
- **Stakeholders Supported:** State and Municipal Agencies/Departments, Tribal Governments, Regional Planning, Surveying, Environmental, Energy and Timber, Utilities, Real Estate and Development, Universities, Logistics and Transportation, Researchers, MEGUG

For the future of State GIS efforts, with the support of our additional resources, Maine GIS entities will further our collaboration and coordination efforts with unorganized territories, Maine towns, counties, and cities, and Federal agencies to leverage grant programs.

As part of these initiatives, we will leverage opportunities to provide GeoLibrary support and services for unorganized territories, coordinate priority statewide GIS data sharing and service needs to streamline efforts and eliminate duplication, and better track, and respond to grant funding and partnership opportunities.

Staffing

GIS and technical professions are in high demand and merit competitive compensation due to education and experience requirements. To deliver on the strategic direction and to be an effective partner in supporting the Maine GeoLibrary Board with its statutorily mandated tasks, the Administration requested, and the Legislature approved in PL2023, ch. 412, two new full-time positions to serve and focus on GeoLibrary Board initiatives, modernizations, strategic enhancements, and citizen support. The addition of the two positions will allow MaineIT to robustly support the GeoLibrary Board, generate more value, increase cost savings to the State of Maine, and ensure the citizens of Maine are able to benefit from the service.

The current State-funded positions supporting the GeoLibrary Board are listed in the table below. The two new positions are in **bold**. Click on the position title to see the associated state job description.

Position	% FTE	Annual Cost
Systems Analyst[10]	25%	$35,000
Geographic Information Systems Coordinator[11]	50%	$65,000
Senior Programmer Analyst (Web Application Developer)[12]	25%	$35,000
Systems Analyst[13]	**100%**	**$140,000**
Public Service Coordinator[14]	**100%**	**$145,000**
Contract/Grant Specialist[15]	33%	$35,000
Systems Group Manager[16]	10%	$10,000
Total	**-**	**$425,000**

Next Steps

Once filled, the staff in these full-time positions will be critical in best positioning the GeoLibrary Board to deliver on their strategic direction, become a more supportive partner, and fulfill their statutorily mandated responsibilities. Tasks assigned to these two full-time staff members will be focused solely on GeoLibrary Board initiatives, including expanding on

[10] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=\ActSpec\JobSpecs_HTM\0867.htm
[11] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=/ActSpec/JobSpecs_HTM/9554.htm
[12] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=/ActSpec/JobSpecs_HTM/0866.htm
[13] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=\ActSpec\JobSpecs_HTM\0867.htm
[14] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=/ActSpec/JobSpecs_HTM/CA21.htm
[15] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=/ActSpec/JobSpecs_HTM/0340.htm
[16] https://apps.web.maine.gov/cgi-bin/bhrsalary/jobs.pl?pagenum=4&pagereq=/ActSpec/JobSpecs_HTM/0170.htm

modernizations, strategic enhancements, and citizen support while generating more value and increased cost savings to the State of Maine.

One major area of focus for these two positions will be to expand the State of Maine's ability to leverage, and collect a robust database from, LiDAR technology, one of the newer and more modern mapping capabilities. LiDAR mapping will allow the State of Maine to expand into an area of GIS mapping that no other technology can support. Expanding our ability to leverage LiDAR allows for both tree-top and ground elevations, which is critical data for a wide variety of industries, including insurance, disaster response, ecological planning, and flood prediction modeling.

In addition to other support and expansion responsibilities, these staff will assist with securing and leveraging Federal matching grants to make the most of our financial resources as we expand and modernize our GIS datasets and efforts being completed by the GeoLibrary Board. Areas of focus may include securing funding for expanding GIS data layer services:

- A parcel layer will show property lines and land ownership to assist with city and rural planning.
- A coastal layer that will show land definition and water depth, coastal flood plains, fish and wildlife population, fishing areas, lobstering areas, clam flats and other details to assist with coastal and climate resilience, and emergency planning and recovery.

Having resource bandwidth available to assist in securing additional funding will allow the GeoLibrary Board to support governmental agencies and municipalities in using GIS data more efficiently and effectively in support of all Maine residents.

These positions will further empower the State of Maine to effectively handle both expected and unexpected projects while improving the output of the GIS department as a whole and increasing the efficiency of every department that relies on GIS and the GeoLibrary Board in some form.

Through the creation, and eventual fulfillment of these positions, the GeoLibrary Board is best positioned to fulfill its statutory mission, modernize data collection methods, update data sets, and expand in the use of new and emerging technology advancements.

We extend our appreciation to the Legislature for supporting the GIS efforts for the State of Maine through the creation of these two full-time support positions to promote and foster the distribution and innovative advancements of GIS data for the benefit of all Maine's residents.