Maine Library of Geographic Information

Maine Office of Geographic Information Systems
Department of Administrative & Financial Services
Office of Information Technology
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Governor	Commissioner	Acting Chief Information Officer	Executive Director

March 26, 2019

Honorable Senator Brownie Carson, Chair
Honorable Representative Ralph L. Tucker, Chair
Members of the Joint Standing Committee on Environment and Natural Resources
100 State House Station
Augusta, ME 04333-0100

Dear Senator Carson and Representative Tucker:

The Maine Library of Geographic Information is pleased to submit its annual report of operations as required by L.D. 2116 "An Act to Establish the Maine Library of Geographic Information (Chapter 649)." This report will be posted to the GeoLibrary website at http://www.maine.gov/geolib/ .

Significant recommendations in this report are to

- Request a bond for $6 million to increase the State's economic competitiveness with current spatial data. This would be matched with at least $6 million from other sources and potentially much more considering the GeoLibrary's proven track record in finding partners to finance data acquisition.
- Work with the Legislative oversight committees to develop a funding mechanism to support a functional geospatial Library.
- Submit a bill in legislature to update the GeoLibrary's enabling legislation, clarifying its responsibilities and maintaining currency with today's evolving technology

This data is used by everyone; public, private and nonprofit, yet no one state agency is responsible for maintaining it. Maintaining it is an investment in infrastructure just as building and repairing of roads, bridges and other physical infrastructure. Please support us in this effort.

I, and members of the Board, would be pleased to appear before your Committee to answer any questions you may have.

Sincerely yours,

Claire Kiedrowski

Claire Kiedrowski
Executive Director
Maine Library of Geographic Information Board

FY 2018 ANNUAL REPORT
MAINE LIBRARY OF GEOGRAPHIC INFORMATION

To the Joint Standing Committees of:
Environment and Natural Resources
and
State and Local Government
129th Legislature, First Session

This Maine Library of Geographic Information Annual Report for FY18 has been prepared in accordance with 5 M.R.S.A. §2003(I)(L).

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GEOLIBRARY PURPOSE

In 2001, the Legislature instructed the State Planning Office to convene what came to be known as the Resolve 23 Steering Committee (Committee) to study the use of GIS in statewide strategic planning. The Committee developed a needs assessment – the conclusion of which recommended the creation of the GeoLibrary, its method of governance, and strategic focus. The Legislature and Governor concurred, and the Maine Library of Geographic Information Act 5 M.R.S.A. Section 2001 et. Seq. became effective April 2002. The Maine Library of Geographic Information ("GeoLibrary" or "Board") was established as a partnership of public and private stakeholders with the following guidance of purpose and duties, to:

- Operate a coordinated, cost-effective electronic gateway providing access to data custodians' public geographic information;
- Establish and maintain standards, rules and policies for non-state data custodians' geographic information;
- Reduce redundancies in the creation, verification and maintenance of public geographic information and to enhance its utility for complex analyses;
- Set priorities and authorize the expenditure of State funds;
- Promote innovative uses of geographic information;
- Enter partnerships to promote the purposes of the legislation;
- 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 GeoLibrary standards, rules or policies or other related matters;
- Conduct studies relating to the coordination, development and use of statewide geographic information;
- Report annually by January 1st to the joint standing committees of the Legislature having jurisdiction over natural resources matters, and state and local government matters, and;
- Develop appropriate internal services to facilitate generalized access for and use of data by governmental agencies and the public.

EXECUTIVE SUMMARY

The GeoLibrary continued its efforts to coordinate agency data acquisitions in FY 2018. Following is a summary of the GeoLibrary's data acquisition activities and data needs.

The United States Geological Survey (USGS) approved the **acquisition of 7000 square miles of LiDAR data in 2018**. The contractor did not completely capture all the data due to weather and sensor issues. Delivery of what was collected is expected in 2019 but may be pushed to 2020. Data acquisition to complete the remaining area will continue in the spring of 2019.

The GeoLibrary had planned to develop a proposal for submission to the USGS in October of 2018, but was unable to do so, due to the sudden retirement of the Executive Director in August 2018.

The GeoLibrary initiated a refreshment of orthoimagery base mapping in Androscoggin, Kennebec, Sagadahoc, Knox and Lincoln counties. This partnership with the five counties and

nineteen communities resulted in upgraded eighteen-inch or twelve-inch pixel resolution mapping for the counties. Six communities acquired three-inch pixel resolution and thirteen more acquired six-inch pixel resolution mapping. An interactive map is located on the GeoLibrary's website (http://www.maine.gov/geolib/programs/ortho/index.html) which provides more detail regarding the orthoimagery base mapping efforts.

Data from many towns in the State's composite parcel data layer is very out of date, which happens for several reasons. Sometimes communities do not update their data every year and others may update the data but do not share it with the GeoLibrary. Several times a year, inquiries from communities are made regarding the availability of grant funds to help pay for the conversion of paper maps to a digital format. An interactive map showing communities that have submitted parcel information to the GeoLibrary is located here: (https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=28e35c8fcf514d2685357b78bdd0b246)

GeoLibrary Recommendations

Recommendation #1:

Provide bonding in the amount of $6 million to increase the State's economic competitiveness with current spatial data. This would be matched with at least $6 million from other sources and potentially much more considering the GeoLibrary's proven track record in finding partners to finance data acquisition.

Recommendation #2:

The services of the GeoLibrary are for stakeholders outside of state government. They support engineers, surveyors, developers, realtors, communities, the educational community and many others. These services should be supported through appropriations from the State's general fund or another dedicated source of funds. The GeoLibrary should work with the Legislative oversight committees to develop a funding mechanism to support a functional geospatial Library.

Recommendation #3:

Submit a bill in legislature to update the GeoLibrary's enabling legislation, clarifying its responsibilities and maintaining currency with today's evolving technology.

GEOLIBRARY BOARD ACTIVITIES

OneMAP for ME Initiative

OneMAP for ME seeks to maintain and improve Maine's base mapping. Geographic information systems (GIS) utilized by the state, private and nonprofit sectors all rely on certain

base level mapping layers. Maintaining and improving these mapping layers is an important service benefiting from the GeoLibrary's systematic and coordinated approach to improving the state's authoritative mapping data. The GeoLibrary has identified eight key mapping data layers where stewardship is not the responsibility of any single state agency. Creating these base maps reflect an investment valued in many millions of dollars. This has been accomplished over many decades and is a result of years of work.

The mapping layers identified below are of strategic importance to Maine including:

- Orthoimagery
- Elevation
- Bathymetry
- Hydrography
- Cadastral/Parcel
- Transportation
- Land Cover and Impervious Surfaces
- Wetlands.

"GeoLibrary has attracted over eight and a half million dollars of funding ..."

Table 1 provides budget data developed and acquired through experience from working to improve the highest priority data. However, several of the base maps have not had any significant updates made in many years and cost data is not available. This table does not reflect a full cost of data maintenance and acquisition needed. The GeoLibrary is pursuing an update to its strategic plan and will provide a better analysis of needs in the next annual report.

TABLE 1: PARTIAL ESTIMATE OF GEOSPATIAL DATA COSTS

Mapping Layer	Total Estimated Cost	Budgeted Cost	Annual Cost
Orthoimagery	$1,886,000.00	$1,886,000.00	$314,000.00
Elevation	$7,000,000.00	$4,000,000.00	$666,700.00
Bathymetry	N/A	$3,000,000.00	$500,000.00
Hydrography	N/A	$00.00	$00.00
Cadastral/Parcel	N/A	$4,618,000.00	$770,000.00
Transportation	N/A	$00.00	$00.00
Land Cover & Impervious Surfaces	$847,000.00	$847,000.00	$141,000.00
Wetlands	$1,000,000.00	$00.00	$00.00
TOTAL	**$10,733,000.00**	**$14,351,000.00**	**$2,391,700.00**

The *OneMAP for ME* program responds to the State's need for current authoritative base mapping. By acquiring data for large geographic areas and seeking out partners needing the same mapping, the **GeoLibrary reduces the cost of acquisition and leverages their** funding to further reduce investment of state taxpayer dollars.

The GeoLibrary has managed to maintain a very large return on investment of state tax dollars. Since 2009 when the GeoLibrary initiated the first elevation acquisition project, the GeoLibrary has attracted **over $8.5 million of funding from dozens of other investors with less than $500,000 dollars in state tax dollars.**

Current, accurate mapping reduces the state's labor costs and facilitates economic development in the private sector.

With current reliable informative mapping, state employees can do more work without leaving the office saving thousands of hours of unnecessary travel time and expenses. It speeds up the permitting processes by allowing verification of information in applications submitted, thus saving economic development projects time and money.

The GeoLibrary proposes a $6 million bond for continuing investment in base mapping data important to the public, land development community and, state and local government for management of Maine's assets. This Bond anticipates leveraging an investment of an additional $6 to $8 million from other private, non-profit, state, federal, local, and county sources.

In most instances, state and federal agencies, communities and other interested parties all have an interest in developing high accuracy base mapping. This represents numerous opportunities to leverage work and funding from these sources.

LEGISLATIVE CHANGES

Legislation was submitted in 2017 to change our support structure.

DATA ACQUISITION

Key data layers outlined below need more study to develop plans for coordinated data updates and maintenance. Each data layer has a brief description of acquisition plans and their status. Additionally, an estimate of costs and potential partners for data acquisition are provided when information is available.

LEAF-OFF ORTHOIMAGERY

The Maine GeoLibrary has attempted to acquire statewide orthoimagery since it was established in 2003. Some of the initial bond proceeds were used to acquire one-foot and two-foot pixel imagery. This was successful in organized communities but the unorganized parts of the state were mostly left out of the process.

The coverage of orthoimagery can be seen in **Appendix D.**

This imagery base map data is available for use by public, private, nonprofit corporations and individuals at no additional charge through the GeoLibrary's data services. This program is a notable example of a cost sharing approach leveraging state, county, and municipal funding sources. The imagery base map serves as an accurate base map upon which other data is developed and registered.

The GeoLibrary initiated its third program (2017-2022) for imagery base mapping and is in its second year of the current program.

"…over 25,000 square miles of aerial imagery acquired in 2018 ...over 150 communities benefiting..."

During FY18, Androscoggin, Kennebec, and Sagadahoc counties signed contracts for eighteen-inch resolution orthoimagery. Knox and Lincoln counties opted to purchase the higher resolution of twelve-inch imagery. Nineteen communities joined in to purchase higher resolution imagery (this larger number was partly due to carryover from the 2017 program, when weather prevented acquiring some of the buy-up imagery in York and Cumberland counties). **This resulted in over 25,000 square miles of imagery acquired in 2018 and over 150 communities benefiting from this data!**

Unfortunately, since the Board was without an Executive Director (due to retirement in August 2018) to contact key counties and municipalities during their budgeting phase (Summer/Fall 2018), only Penobscot County and a handful of communities have made a verbal commitment to the 2019 orthoimagery program. However, many communities have expressed interest in continuing and participating in the program. With the Executive Director role now filled (January 2019), it is anticipated that participation in the 2019 program will be smaller, but that by 2020 the program will be back on track.

Adoption of the new MeGIS/GeoLibrary budget will stabilize the orthoimagery program for the next two years. It will provide enough funds to continue providing matching funds to counties and attract funding from local communities. This will provide continuity for a program that has substantially benefited the state, counties and municipalities. The GeoLibrary encourages counties that have not participated to join its efforts to acquire an orthoimagery base map for all of Maine.

ELEVATION/BATHYMETRY

The GeoLibrary has been pursuing high resolution, base elevation or topographic data since 2009. In FY18 the GeoLibrary initiated another acquisition totaling approximately seven thousand square miles. The GeoLibrary expended just a little over $1.2 million for LiDAR acquisition in 2018 using just $150,000 of GeoLibrary matching funds. Most of the funding comes from state, county, federal, non-profit and private funding sources. For every $1 spent on LiDAR data by the GeoLibrary, over $8 is matched from other funding sources!

The GeoLibrary had planned to submit another proposal to the USGS for funding to update older elevation data (as old as 2006) along southern and coastal sections of Maine. However, since the GeoLibrary did not have an Executive Director during the announcement for grants, the Board decided not to pursue this grant. It is the Board's intention to pursue the USGS grant during the next funding phase, which is Fall 2019.

Current bathymetry data is a hodgepodge of data acquired piecemeal for numerous independent studies and of varying accuracies. New consistent high-resolution data is needed to complete studies of the land-sea interface for many applications. Near and offshore high-resolution data is

needed for a better understanding of Maine's fisheries, support to aquaculture, and impacts of development. No estimate is available for the cost of acquiring this data at this time.

Partners for acquiring elevation and bathymetry include the USGS, NOAA, USDA, State agencies, the University of Maine, Non-Profit Organizations, the Bureau of Ocean Energy Management, counties, communities and private enterprise.

"For every $1 spent on LiDAR data by the GeoLibrary, over $8 is matched by other funding sources!"

Elevation Data

Since 2009, the GeoLibrary has initiated several projects to acquire high resolution elevation, also known as topographic data. Topographic data is used to create contour maps at 1 or two-foot elevation intervals suitable for planning development at the parcel level. Despite a lack of GeoLibrary funding, it has developed partnership proposals to acquire new data with Light Detection and Ranging (LiDAR) Technology for about 80 % of the state's land area. (See map in **Appendix D**).

The GeoLibrary has received funding from numerous public and private sources including the Natural Resource Conservation Service (NRCS), the NRCS National Geospatial Center for Excellence, state agencies such as Maine Department of Transportation and Maine Department of Agriculture, Conservation, and Forestry; the Nature Conservancy; Seven Islands; Clayton Lake Woodlands; Cooperative Forestry Research Unit (CFRU); and others. The GeoLibrary has solicited $304,027 from state and local partners to apply for USGS matching funds. This has resulted in attracting over $700,000 in federal funding for data acquisition. These data are having a transformative effect on land development costs for private and public sectors in Maine's economy. In addition, elevation data provides a rich resource for analyzing the natural and manmade environments.

Bathymetry

In addition to terrestrial topography, the state needs updated bathymetry data. Bathymetry data for near shore areas is fragmented, acquired for specific projects and not in a coordinated regional manner. Large sections of the coast lack current near shore bathymetry and the rest of the Gulf of Maine needs to be updated taking advantage of modern technology for increasing the accuracy. Better bathymetry would contribute greatly to improved navigation, understanding of fisheries habitat, aquaculture support and flood modeling.

Developing cost estimates for improving the state's bathymetry will be addressed in the proposed strategic plan update.

Parcel Data

Nine communities provided updated data to the parcel layer in FY18. This is totally inadequate in terms of providing a current statewide parcel map. Less than three hundred communities

have invested in digital parcel maps; approximately two hundred communities have not. A significant reason for this is that small communities do not see a significant cost benefit to converting their paper parcel maps into a digital product. The GeoLibrary sees a need for a partnership grant program that would assist communities to maintain parcel maps in some digital format meeting state standards for data sharing.

In addition, the State's parcel data for the unorganized communities, maintained by Maine Revenue Service (MRS), is several years out of date and in poor condition for inclusion in the statewide parcel map.

For budget purposes in support of the *OneMAP for ME* concept, the GeoLibrary assumed an estimated cost for converting paper maps to digital products at $20,000 per town. However, this price can vary based on many factors including the number of parcels, currency and quality of existing maps. Using this average cost, the estimate for converting all communities to digital products would be approximately $4.2 million.

Costs for updating parcel maps will also vary widely according to how large the community is and level of subdivision activity. Again, an estimate of average cost for small rural communities updating an existing parcel maps would be about $2,000 every six years. Larger communities may complete updates every year. For budgeting purposes, the GeoLibrary set a goal of obtaining updates from communities every six years. By matching the estimated cost of $2,000 with a $200 stipend to defray the expense, the GeoLibrary would leverage community investment at the rate of $10 for every $1 invested and get a copy of the updated data.

Cost estimates for improving parcel data quality will be updated as part of the proposed strategic planning process.

Potential partners besides the communities would be state agencies among others.

HYDROGRAPHY

The USGS maintains this data at a scale of 1:24000 (1" =2000'). However, to be useful at the local level, a resolution of 1:4800 (1" =400') or better is needed for most state agencies and communities.

To achieve this level of mapping requires high resolution topographic and orthoimagery data to create the better resolution mapping of Maine's lakes, ponds, river, streams and watersheds. Potential partners for developing this level of data quality include the USGS and state agencies. An assessment of the cost for a complete update of all data components needs to be done.

The USGS Regional Water Science Center has developed a proposal to update the 12-digit HUC watershed boundaries component of this data set. This is just one small component of the total NHD data layer and would cost $75,000. The GeoLibrary will consider this as a project to be included in future acquisition plans.

In addition to the USGS, potential partners include other state agencies.

GOVERNMENTAL UNIT BOUNDARIES

The delineation of Maine's township and county boundaries have evolved over time. For most of the state, no modern surveying of boundaries has been done. Frequently, parcel data submitted by communities does not agree with the boundaries in the Maine Township boundary data due to the latter's original accuracy as depicted on the familiar USGS Topographic Quad sheets at a scale of 1:24000 (1" =2000'). A system for updating town, township, and county boundaries to reflect modern technical capacity for accuracy should be established. This will require engaging with stakeholders to determine a long-term plan for improving this data, preferably, with participation from all stakeholders.

Potential partners would be state agencies, counties and communities. No estimate of cost for this data upgrade is available.

TRANSPORTATION

The Department of Transportation and the Public Utilities Commission, Emergency Communications Services Bureau (ESCB) have business requirements for developing transportation data. Each entity has divergent technology for developing this type of data resulting in overlapping efforts and a level of redundancy. Since the GeoLibrary's past efforts to reconcile these two data sources, new technology exists to eliminate this duplication. However, to adopt the new technology and move to a new platform would require substantial upfront costs that are beyond the scope of existing agency budgets. The exact costs are unknown, but should be investigated and a plan developed for a single transportation data layer meeting the combined business needs of both agencies. The two agencies are currently collaborating to reconcile attributes when possible.

This would provide all stakeholders with more usable and accurate transportation data. Potential partners are state and federal agencies.

STRUCTURES

Having an accurate representation of structures is very useful for emergency response to calls for police, fire and other emergency services. It can also be helpful in evaluating changes to transportation routes, development and many other applications. Maine does not have an adequate structures data layer. The ESCB has initiated this project to support Next Generation 911. Potential partners for development of this important data layer include state and federal agencies, counties and communities. No estimate has been completed for accelerating development of this data.

LAND COVER AND IMPERVIOUS SURFACES

Maine's most recent land cover data was developed in 2006 and is at a resolution of 5 meters (16.4 feet). It is very out of date and entirely inadequate for supporting the level of analysis required today. Urban communities planning for storm water runoff and retention from impervious surfaces, oil and hazardous spill responders charged with protecting the environment, Inland Fisheries and Wildlife professionals identifying prime habitat for the state's

aquatic and land species, all require resolution of at least 1-meter resolution. NOAA estimates the cost of developing these data for the State of Maine would be about $847,000. NOAA has already committed to invest $230,000 to develop a 10-meter data layer. (This is only half the resolution of existing data and a step backwards in quality for Maine. NOAA is offering a buy up program to 1-meter resolution for an estimated additional estimated cost of $300,000 for the state of Maine).

A buy up to this resolution of data would be a great benefit for communities and state agencies needing accurate data for storm water modeling, floodplain mapping and the impact of development and land use activities.

Potential partners for this project besides NOAA would include, state agencies, non-profits and other federal agencies.

GEOSPATIAL DATA STANDARDS

Much more work is needed to identify data standards and cost estimates for data acquisitions, but, with MeGIS staff support limited and an all-volunteer work group, the GeoLibrary is not able to keep up with this legislative mandate. Orthoimagery is just one of several data layers needing work to develop standards and a strategy for data acquisition.

The proposed update to the GeoLibrary's strategic plan will identify data standards that need updating and will provide recommendations for updates and additions to the current standards, as well as recommendations for its true staffing needs and a funding solution to meet those needs.

GEOSPATIAL DATA LIBRARY

The first purpose specified in the GeoLibrary's enabling legislation was to create an electronic gateway for distributing GIS data to the public. The GeoLibrary has pursued several attempts to create a Geoportal that would meet the needs of the GIS community and extend what is already available on the Maine Office of GIS' Data Catalog. So far, these efforts have been unsuccessful in the long term. Changes in technology, the costs of operating an electronic gateway, and a funding source to maintain, operate and staff a geospatial data library have prevented a fully operational gateway for GIS data and reference services.

MeGIS staff support the GeoLibrary's efforts with its data catalog of state data and services for distributing elevation, imagery and parcel data developed by the GeoLibrary. What is lacking is a central repository of geospatial data developed in support of communities, research and other sources that are of interest to the greater GIS user community.

Due to the lack of operational funds, the GeoLibrary discontinued its latest attempt. However, the need for an organized library of geospatial data still exists. Just as the State Library maintains and keeps current its selection of books, periodicals and reference materials, and provides a librarian to assist customers, a GeoLibrary must continually maintain and acquire new data layers, reference materials and staff support to stay current and meet the needs of Maine's GIS and geospatial data users. For many applications of geospatial data, it is also important to have access to older data that is no longer current.

Researchers and others need to be able to complete comparative analysis using previous data relative to the newest data. The State and GeoLibrary do not have any method for making this data available and, even more importantly, the State is not providing a historical record of more than just a few data layers deemed important. Even these are not stored with easy access to the public.

Analyzing these needs of the public for a geospatial library and developing a strategy to meet them will be an important part of the strategic plan update.

FINANCIAL STATUS

The GeoLibrary does not receive funding from Legislature for either operations or data acquisition. Despite the lack of funding, the GeoLibrary has been able to leverage funding from cooperating partners to finance data acquisition. As a result, the GeoLibrary has managed to accrue a positive balance in its Geospatial Reserve Fund (account # 013-18B-3057). This balance results from good fiscal control and acquiring data at less than anticipated costs.

These funds will be used to update the GeoLibrary's strategic plan and to support additional data acquisition. Table 1 shows the status and sources of funding from partners. A more complete description of sources will be found in the data acquisition section under the project descriptions.

TABLE 2: GEOLIBRARY PROJECT FUNDING FY18

GEOLIBRARY PROJECT FUNDING SUMMARY							
Project	**Total Contract for 2018**	**GeoLibrary Match**	**Federal Agencies**	**State Agencies**	**Counties**	**Muni-cipalities**	**Private - Nonprofits**
Ortho Imagery	$ 311,095.00	$ 46,700.40	$0.00	$0.00	$ 81,994.60	$182,400.00	$0.00
LiDAR	$1,235,965.50	$150,398.50	$781,540.00	$137,580.00	$0.00	$0.00	$166,447.00
Parcel Mapping	$0.00	$0.00	$0.00	$0.00	$0.00	$ 36,000.00*	$0.00
Total	**$1,547,060.50**	**$197,098.90**	**$781,540.00**	**$137,580.00**	**$ 81,994.60**	**$182,400.00**	**$166,447.00**

** Estimated value of municipal parcel data updates*

APPENDIXES

APPENDIX A – ACRONYMS & SELECTED DEFINITIONS

Board	Board of Directors for the Maine Library of Geographic Information
CIO	Chief Information Officer for the state
ESCB	Emergency Services Communications Bureau
FEMA	Federal Emergency Management Agency
FGDC	Federal Geographic Data Committee, sets metadata standards
GeoLibrary	Common name for Maine Library of Geographic Information
GIS	Geographic Information System
HUC	Hydrologic Unit Code
LiDAR	Light Detection and Ranging, a remote sensing system used to collect topographic and other data
MDIFW	Maine Department of Inland Fisheries and Wildlife
MDOT	Maine Department of Transportation
MEMA	Maine Emergency Management Agency
MeGIS	Maine Office of GIS
MEGUG	Maine GIS Users Group
MPUC	Maine Public Utilities Commission
NGA	National Geospatial-Intelligence Agency
NGO	Non-Government Organization
NG911	Next Generation 911
NHD	National Hydrography Dataset
NMDC	Northern Maine Development Commission
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NSDI	National Spatial Data Infrastructure, a consortium to promote the sharing of geospatial data and standards

OGC	Open Geospatial Consortium, a non-profit international organization that develops standards for geospatial and location-based services
OIT	Office of Information Technology
Orthoimagery	Aerial imagery corrected to represent the earth's surface, having been adjusted for topographic relief, lens distortion, and camera tilt so that it can be used as an accurate base map
Resolve 23	Legislative committee that drafted the plan that resulted in the GeoLibrary
USDA	United States Department of Agriculture
USGS	United States Geological Survey

APPENDIX B - PAST PROJECTS

Return on Investment Study for Orthoimagery*: The Maine GeoLibrary, in cooperation with the Maine Office of GIS, received a FGDC grant to conduct a return on investment (ROI) study of orthoimagery in Maine. The independent study was conducted by Applied Geographics, and showed a ROI of 400-1200%.

Strategic Plan: When the Maine Library of Geographic Information was formed in 2002, its first strategic plan was developed under Legislative Resolve 23. The GeoLibrary completed an update to this plan in 2009. The strategic plan serves the same function for the GeoLibrary as a Comprehensive Plan for a municipality. The plan guides the development of the GeoLibrary and is a living document that needs to be updated regularly. The pace of technological advances in the field of digital mapping is fast and requires the GeoLibrary to make continual adjustments in how it approaches the acquisition of data and the delivery of geographic information to the many users of this information. The 2009 plan identified a series of recommendations for:

- Expanding Participation
- Improving Statewide GIS Coordination
- Improving Access to Geospatial Data
- Developing and Maintaining Statewide Geospatial Data
- Lowering the Barriers to the Use of GIS
- Improving Access to Training and Education
- Establishing Sustainable Funding for the GeoLibrary.

2003 -2005 Orthoimagery Acquisition*: The project was a $3.2M project to create, in cooperation with the U.S. Geological Survey (USGS), full color, high-resolution digital orthophotos for most of the populated areas of Maine.

Parcel Grants: In the Resolve 23 Study leading to the creation of the Maine Library of Geographic Information (GeoLibrary), surveyed municipalities placed great emphasis on acquiring and updating digital tax parcel data. Having this local information in a standard format, and in a central repository, would assist individual communities and regional planners in various planning activities. In addition, municipalities will also be able to develop a regional outlook for whatever data is being studied. Consequently, the GeoLibrary approved two rounds of grants to Maine municipalities for the upgrading and creation of digital parcel data, budgeting a total of $371,419 with awards varying from $1,000 to $10,000.

Land Cover Partnership*: The Maine Landcover Dataset (MELCD 2004) project provided updated land cover and impervious surface data for Maine based on 2004 satellite imagery. Previously, the most recent such data for Maine was based on 13-year old imagery and was at a very coarse resolution of 30 meters (98.4 feet). This project provided data at a higher resolution of 5 meters, and was tightly integrated with federal landcover mapping projects. In addition, impervious surface data were developed at a 5-meter resolution as well.

2005 County GIS Study*: This study focused on county GIS needs and identification of opportunities to support county use of GIS. Data gathered from the study resulted in four general areas of

information, Lessons Learned, Opportunities for Collaboration to Build and Fund County GIS, Planned Information Forums, and the need to collect more detailed information.

Resolve 23: This was the original comprehensive strategic plan developed in 2002. This plan set the stage for implementing a statewide partnership approach to collection and distribution of GIS data. It provided a comprehensive analysis of needs and benefits to all GIS providers.

**Please contact the Board for access to studies that are off-line.*

APPENDIX C – GEOLIBRARY ORGANIZATION

The GeoLibrary is staffed by agreement with the Office of Information Technology (OIT). OIT/MEGIS provides an Executive Director and support staff to manage and operate the GeoLibrary website, GIS database, and data access facilities. The GeoLibrary Board meets monthly or as needed. Agendas and meeting notes can be found on the GeoLibrary website: http://www.maine.gov/geolib/.

The GeoLibrary has three standing committees:

1) **Finance Committee, with responsibility for:**
   - budget oversight;
   - recommending budget or other financial actions to the GeoLibrary for approval;
   - primary interaction with outside entities on financial issues.
2) **Policy Committee, with responsibility for:**
   - policy oversight;
   - recommending policy adoptions and amendments to the GeoLibrary;
   - memorializing approved GeoLibrary policies;
   - primary interaction with external entities on policy issues.
3) **Technical Committee, with responsibility for:**
   - advising the GeoLibrary on all technical matters;
   - oversight of all GeoLibrary projects;
   - primary interaction with outside entities on technical issues.

In addition to the three standing committees, the GeoLibrary has four workgroups with members solicited from the states geospatial community. These members provide for a broad cross section of interests in a geographic sense and in terms of their use of GIS data. These work groups are:

1) Coordination and Communication

The Communication/Coordination Workgroup seeks to continually improve GeoLibrary outreach relations with federal, state, county, and local governments, academia, non-profits, private industry, and the public, by way of documenting and promoting the activities of the GeoLibrary through various media delivery methods. The workgroup also seeks to educate people about the importance of GIS and using geographic data to solve problems, find new data contributors to the GeoLibrary, and obtain a wide base of support for the efforts of the GeoLibrary.

2) Geospatial Data

The mission of the Geospatial Data Work Group is to develop appropriate geospatial data standards and define the geospatial data needs and flows between all levels of government, private sector, and academia to permit the ongoing acquisition of multi- purpose geospatial data for Maine. The workgroup seeks out a strong coalition of state, local, federal, private and non-profit partnerships to achieve this mission.

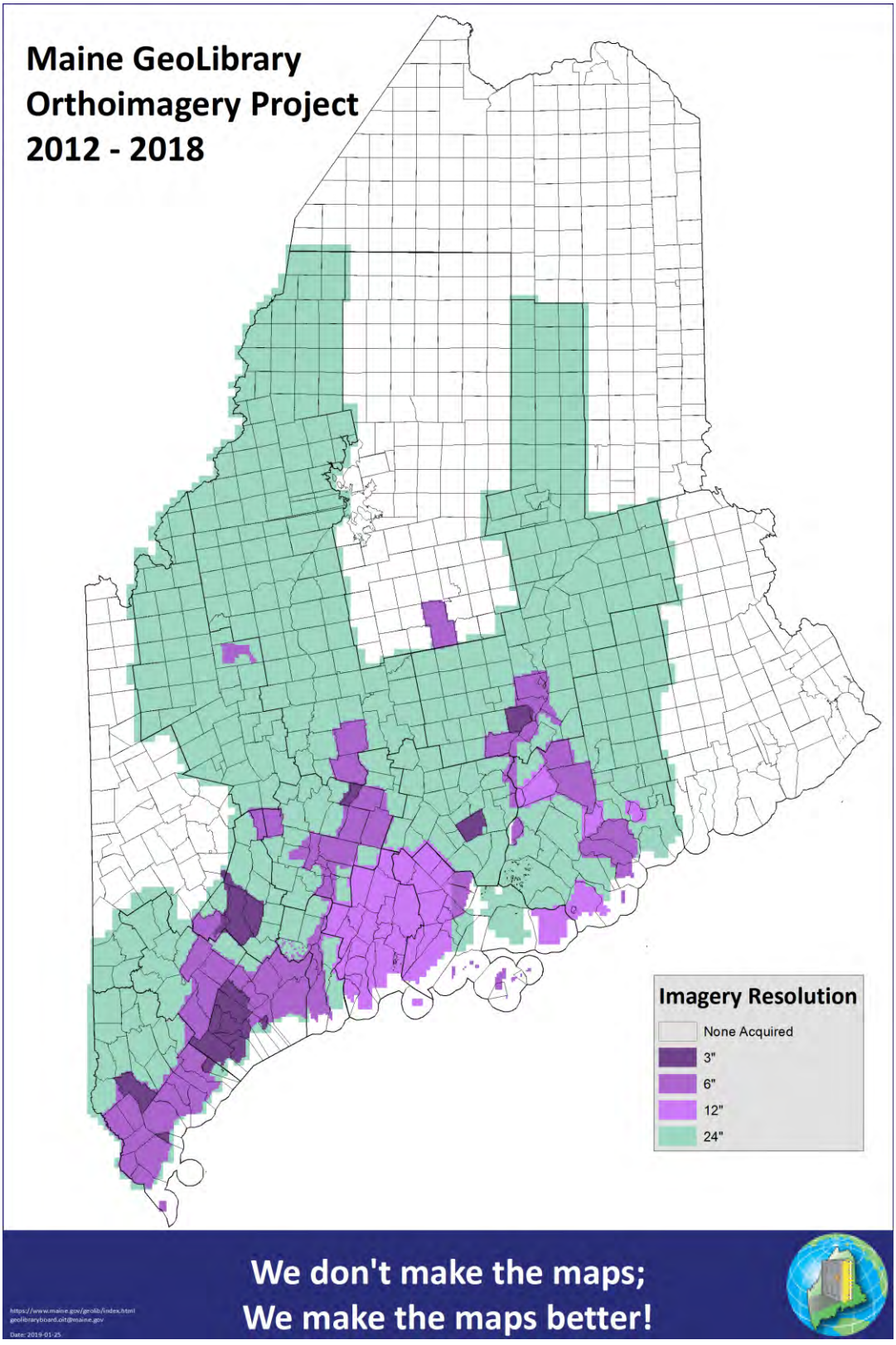
3) Education and Training

The mission of the Education and Training Workgroup is to expand and improve coordination of geospatial education, training and other outreach activities in support of better public use of geospatial data. In this capacity, the Workgroup seeks to develop and ensure a broad-based and efficient strategy for GIS education and training initiatives among all organizations and institutions state wide, considering special needs of the various constituencies: K-12, academia, local government, non-profits, and any Maine citizen.

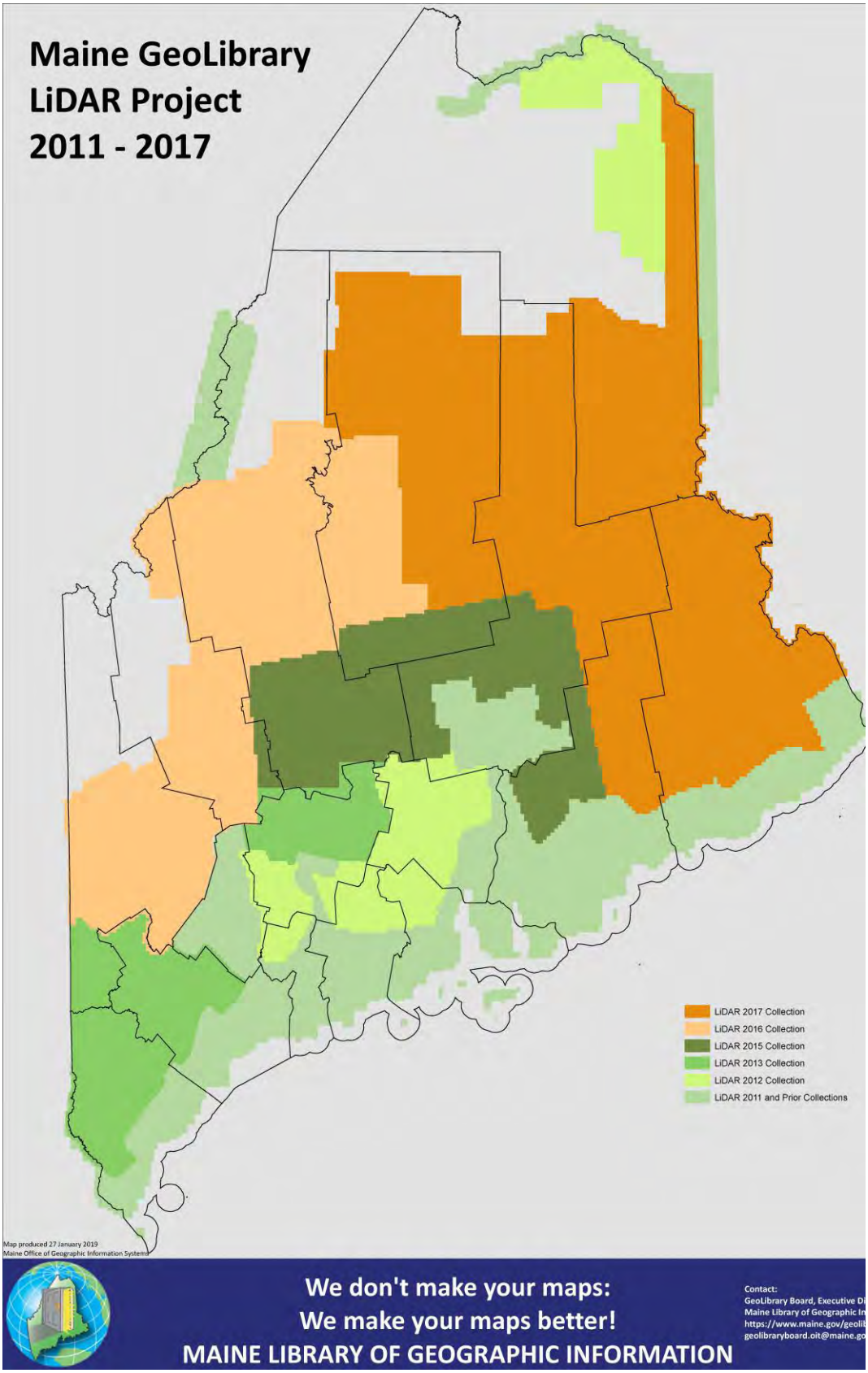
4) GeoParcels

The mission of the GeoParcels work group is to develop a statewide parcels data layer with links to the registry of deeds, assessing data and other related databases.

APPENDIX D – DATA ACQUISITION PROGRESS MAPS



This Maine Library of Geographic Information Annual Report for FY18
has been prepared in accordance with 5 M.R.S.A. §2003(I)(L).



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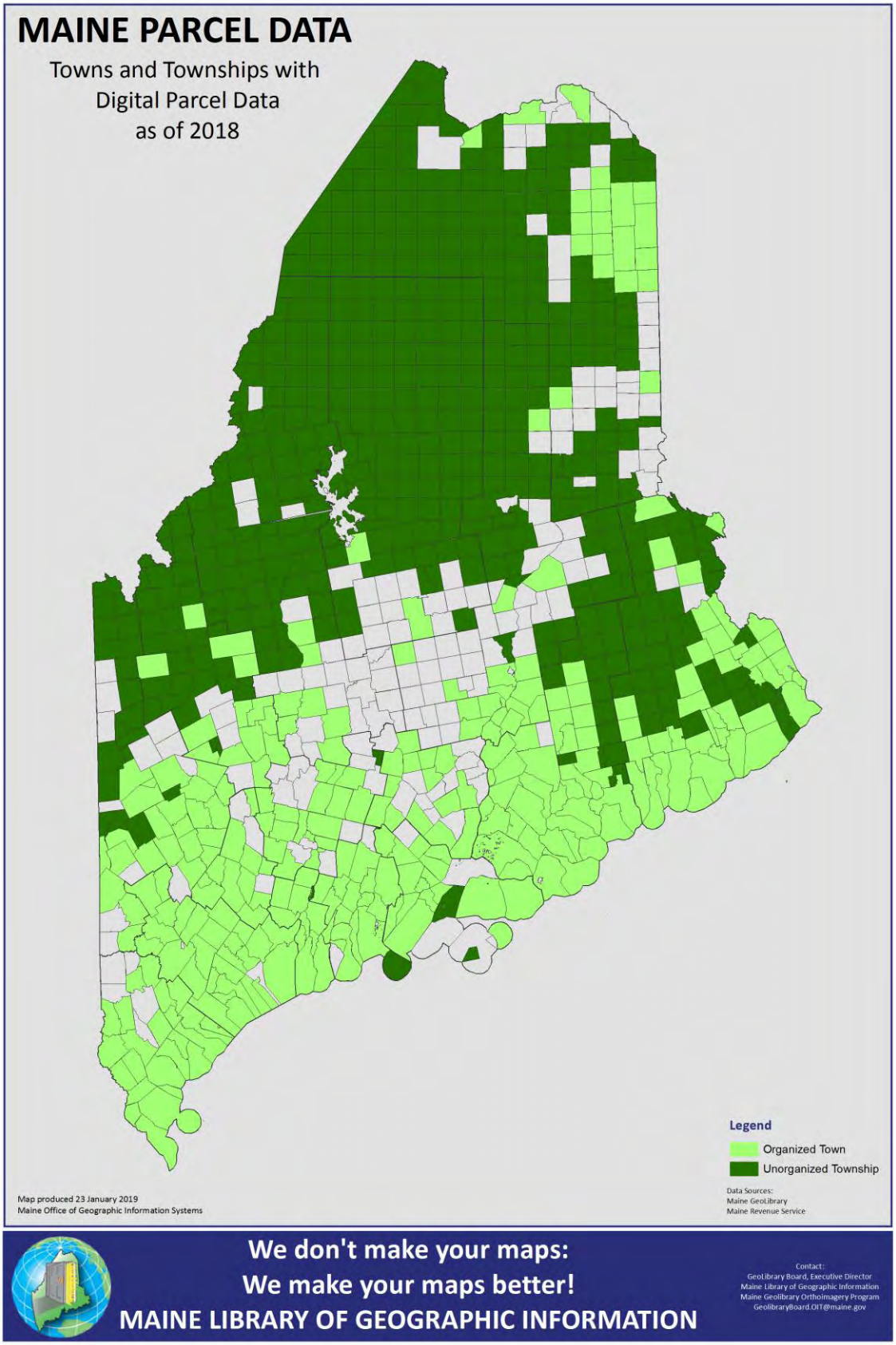

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APPENDIX E – GEOPARCEL PARTNERSHIP PROGRAM OUTLINE

This program is designed to provide funding for communities in this order of priority:

- Towns that do not have any parcel maps
- Towns that have just paper parcel maps
- Towns that have digital maps but have not updated them in more than five years
- Proposed Allocation of Funds
    - New Digital Parcel Maps $280,000
    - Updating Existing Parcel Maps $16,500
    - Total $296,000

NEW DIGITAL PARCEL MAP FUNDING APPLICATIONS

Applications for funding are due on August 1st of each year. The GeoLibrary will provide up to 50% of the funding necessary to develop new parcel maps. To qualify for these funds communities must provide the GeoLibrary with parcel data meeting Digital Parcel Standards minimum of Level I as described in the GeoLibrary's "Standards for Digital Parcel Files".

PARCEL MAP UPDATE FUNDING APPLICATIONS

Applications for funding are due on August 1st of each year. The GeoLibrary will provide 10% of the funding necessary to develop new parcel maps. To qualify for these funds communities must provide the GeoLibrary parcel data meeting Digital Parcel Standards minimum of Level I as described in the GeoLibrary's "Standards for Digital Parcel Files".

APPENDIX F – GEOLIBRARY BOARD MEMBERSHIP – Current as of January 2019

SEAT	PHOTO	MEMBER	TERM ENDS	APPOINTING AUTHORITY	REPRESENTING
1	VACANT	VACANT		DAFS Commissioner	Dept. of Administrative and Financial Services
2		Brian Guerrette Office of Information Technology Child Street Augusta, ME 04333 (207) 649-3838 Brian.Guerrette@maine.gov	Permanent	State CIO	State Chief Information Officer
4	PHOTO NOT AVAILABLE	Nate Kane Dept of Transportation Child Street Augusta, ME 04333 (207) 624-3297 Nate.Kane@maine.gov	9/17/2018	Governor	State GIS Functions
5	PHOTO NOT AVAILABLE	Vinton Valentine University of Southern Maine 37 College Avenue, Bailey Hall 303 Gorham, ME 04038 (207) 228-8455 Vinton.Valentine@maine.edu	6/22/2019	University of Maine Chancellor	University of Maine System
6		Patrick Cunningham Blue Marble Geographics 22 Carriage Lane Hallowell, ME 04347 (207) 624-4622 patrickc@bluemarblegeo.com	2/22/2020	Senate President	Municipal Government
7	PHOTO NOT AVAILABLE	Vern Maxfield Town of Woodstock PO Box 317 Woodstock, ME 04219 (207) 665-2668 vhm24@megalink.net	4/5/2020	House Speaker	Municipal Government
8	VACANT	VACANT		House Speaker	Statewide Association of Regional Councils
9		Besty Fitzgerald Washington County 65 Court Street Machias, ME 04655 (207) 255-3127 manager@washingtoncountymaine.com	9/17/2017	Governor	Statewide Association of Regional Councils
10		William Hanson Rudman & Winchel Law Firm 84 Harlow Stree Bangor, ME 04402 (207) 947-4501 whanson@rudmanwinchel.com	3/15/2018	Senate President	Real Estate and Development Interests
11		Jake Metzler Forest Society of Maine 115 Franklin Street Bangor, ME 04401 (207) 945-9200 jake@fsmaine.org	4/2/2020	House Speaker	Environmental Interests
12		Brian Lippold Casco Bay Advisors, LLC 2 Streamside Ln Gardiner, ME 04345 (207) 289-2976 brian.lippold@yahoo.com	9/17/2018	Governor	Utility Interests
13	VACANT	VACANT		Senate President	GIS Vendors
14		Jon Giles, Chair Sebago Technics 75 John Roberts Road South Portland, ME 04106 (207) 200-2128 jgiles@sebagotechnics.com	2/22/2020	House Speaker	GIS Vendors
15	VACANT	VACANT	2/23/2021	Senate President	Public
16		Maria Jacques Maine Public Utilities Commission 101 Second Street Hallowell, ME 04347 (207) 287-6083 Maria.Jacques@maine.gov	9/13/2021	Governor	State GIS Functions

Seat #3 was eliminated by legislation.

This report was prepared for the Library of Geographic Information with support from the Maine Office of GIS, Office of Information Technology, Department of Administrative and Financial Services

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