MAINE STATE LEGISLATURE

Maine Library of Geographic Information
2013 Annual Report
to the
Environment and Natural Resources
and
State and Local Government
Joint Standing Committees
of the
126th Legislature

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1. PURPOSE

In 2001, the Legislature instructed the State Planning Office to convene what came to be called the Resolve 23 Steering 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 ("the GeoLibrary") was established as a partnership of public and private stakeholders with the following guidance. The legislative purpose and duties are to:

1. operate a coordinated, cost-effective electronic gateway providing access to data custodians' public geographic information;
2. establish and maintain standards, rules and policies for non-state data custodians' geographic information;
3. reduce redundancies in the creation, verification and maintenance of public geographic information and to enhance its utility for complex analyses;
4. set priorities and authorize the expenditure of state funds;
5. promote innovative uses of geographic information;
6. enter partnerships to promote the purposes of the legislation;
7. 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;
8. conduct studies relating to the coordination, development and use of statewide geographic information;
9. 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;
10. develop appropriate internal services to facilitate generalized access for and use of data by governmental agencies and the public.

2. MEMBERSHIP

The GeoLibrary is governed by a board of directors, and its members are appointed by the Governor, the President of the Senate, the Speaker of the House, the Chancellor of the University of Maine System, the Commissioner of Dept. Administrative & Financial Services and the Chief Information Officer. The Board is independent, term-limited (with the possibility of reappointment), and drawn from the public and private sectors. Therefore, it is uniquely positioned to represent all stakeholders fairly and in a way most likely to foster efficient cooperation and mission success. The membership as of 12/31/2013 is shown in the Table 1.

Table 1 – Maine GeoLibrary Board Membership 12/31/2013

Representing	Name	Title	Affiliation	Appointing Authority
U Maine System	Vinton Valentine,Ph.D	Director of USM GIS	Univ. Southern Maine	Chancellor University of Maine
Chief Information Officer	Michael Smith	State GIS Manager	Office of Information Technology	Chief Information Officer
Commissioner of Administrative and Financial Services	Dan Walters	USGS Liaison for Maine	US Geological Survey	Commissioner of Administrative and Financial Services
State GIS Interests	Christopher Kroot	GIS Manager	Office of Information Technology	Governor
State GIS Functions	VACANT			Governor
Statewide Association of Counties	Betsy Fitzgerald	County Administrator	Washington County	Governor
Utility Interests	Alina Taus	Project Manager	Greater Augusta Utility District	Governor
GIS Vendors	Brian Norris, PLS	Surveying Engineer	Consultant	President, Maine Senate
Municipal Government	VACANT			President, Maine Senate
Public	VACANT			President, Maine Senate
Real Estate and Development Interests	William Hanson, Esq. Chair	Attorney	Rudman & Winchell, LLC	President, Maine Senate
Environmental Interests	VACANT			Speaker of the House
GIS Vendors	Jon Giles, PLS	GIS Manager / Surveyor	Sebago Technics	Speaker of the House
Municipal Government	VACANT			Speaker of the House
Statewide Association of Regional Councils	Ken Murchison	GIS Specialist	Northern Maine Development Corporation	Speaker of the House

3. SUMMARY OF ACTIONS TO MEET 10 PRIORITIES SET BY LEGISLATURE

1.	**Operate a coordinated, cost-effective electronic gateway providing access to data custodians' public geographic information**	Incomplete, see Section 5 B
2.	**Establish and maintain standards, rules and policies for non-state data custodians' geographic information**	No new data standards were completed this year.
3.	**Reduce redundancies in the creation, verification and maintenance of public geographic information and to enhance its utility for complex analyses**	Work continues in this area with good results in the area of geospatial data acquisition. More detail can be seen in Section 5 A
4.	**Set priorities and authorize the expenditure of state funds**	The requirement was with implementation of data acquisition projects described in Section 5A
5.	**Promote innovative uses of geographic information**	The Board sponsored a Geospatial Data Symposium see Section 5; D, iii
6.	**Enter partnerships to promote the purposes of the legislation**	The board met this requirement. All of the accomplishments noted in Section 5 required the efforts of many partners to accomplish.
7.	**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**	No disputes were submitted for review.
8.	**Conduct studies relating to the coordination, development and use of statewide geographic information**	No studies were undertaken this year. The Strategic Plan was last updated in 2009. This needs to be updated again. See Section 4 for more details.
9.	**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,**	This is met with the submission of this report.
10.	**Develop appropriate internal services to facilitate generalized access for and use of data by governmental agencies and the public.**	This was not met. See Section 5 B for more information.

4. STRATEGIC PLAN

The GeoLibrary completed an update to its Strategic Plan in 2009 based on intensive collaboration with the state's geospatial user community. The effort conducted surveys as well as sponsoring several outreach meetings across the state. The results of this effort identified an extensive set of data needs and educational requirements, far greater than the Board's capacity to deliver given the level of funding provided. Because of this plan, the Board has identified three primary data acquisition projects to pursue. Despite a lack of dedicated funding the need for dependable, accurate, orthoimagery, high-resolution topographic data and parcel mapping is too important to ignore. All three data sets are critical components of geospatial infrastructure required by all levels of government. They are essential to local economic and community development efforts, extremely valuable to the private sector, and yet beyond the reach of most communities because of the high costs for acquisition at the local level. These three data layers are foundational providing base level data for analysis and making intelligent decisions based on factual evidence rather than instinct or anecdotal evidence. The Strategic Plan is now 5 years old and needs updating. Continuing advances in technology require close monitoring to determine the validity and efficiency of current practices.

- **FUNDING NEED** The Board estimates an update of the plan will cost $50,000.

An executive summary of the 2009 plan can be viewed at this web site.
http://www.maine.gov/geolib/Policies/exec_sum_strategic_plan_2009.pdf

5. 2013 GOALS AND ACCOMPLISHMENTS

A. Data Acquisition: The Board has pursued acquisition of key base level mapping data vitally important to all levels of government, private sector and non-profit interests. Through volunteer efforts of Board members and limited support from the Maine Office of GIS the Board was able to add to publicly available, high resolution topography, orthoimagery and parcel data sets.

i. **High Resolution Topography:** The most cost efficient method of acquiring high-resolution topography is Light Detection and Ranging (LiDAR). LiDAR has an added benefit of capturing in time a total three-dimensional record of all surface features including vegetation, buildings and other structures in addition to basic topographic data accurate to 9.5 centimeters and better. The data is critical for better floodplain mapping, site preplanning, economic development, transportation, forestry and utility project design among a myriad of other uses.
Availability of high-resolution topography reduces entry-level costs for business development, particularly for new start up enterprises. Developing high-resolution topographic data for subdivision, site development permits and other development analyses costs thousands of dollars /acre on a site-by-site basis. The 2013 LiDAR acquisition cost less than $260/square mile and yields many other benefits.

The 2013 acquisition was a state and federal partnership proposal to acquire additional data for three counties. This project brought three federal agencies, the

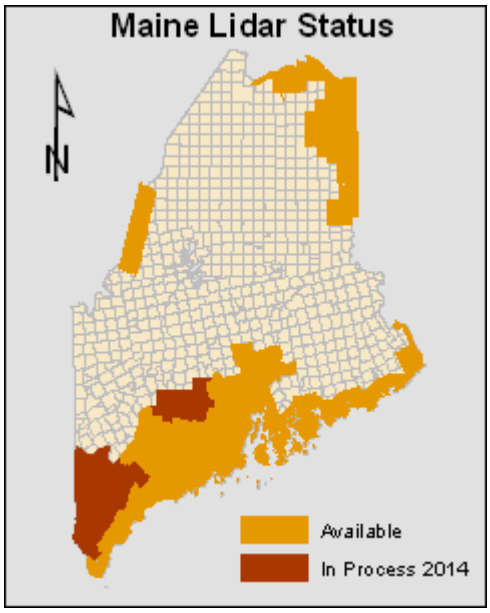


Figure 1 LIDAR STATUS 12/30/2013

United States Geological Survey (USGS), Federal Emergency Management Agency (FEMA) and the United States Department of Agriculture (USDA) and three state agencies the Maine Department of Transportation (MeDOT), Maine Department of Health and Human Services (MDHHS) Drinking Water Program and the Maine Public Utilities Commission (MPUC) together. The state agencies redirected funding committed to data acquisition to take advantage of the greater purchasing power of a larger project. This partnership resulted in a successful acquisition of over 2,100 square miles of data and we have now completed high-resolution datasets with contour equivalents of 1' and 2' for Kennebec, Cumberland and York counties; the area shown in light green in Figure 1. State agencies contributed $55,000 and federal agencies provided $516,084 showing almost a 10 to 1 leverage ratio. The 2012 collection was a $402,084 project with $51,000 coming from state agencies and $351,084 from federal agencies showing a leverage ratio of about 7 to 1.

While these leverage numbers are enviable, the state has been exceedingly lucky to accomplish this. What is missing is the ability to acquire greater geographic areas and achieve greater economies of scale. As an example when the 2013 project was first proposed, the USGS was paying $350/sq. mi. for data acquisition. Through negotiations based on increasing areas of acquisition, we were able to negotiate a price of $252/ sq. mi. based on 2,000 square miles. We could have reduced the pricing by an additional 20% if we had funds to match on a 1 to 1 basis with the federal partners. Because of the uncertainty surrounding federal funding and lack of consistent grant programs for applications, we must be ready when the opportunity arises. Having an annual allotment of data acquisition funding would ensure we could maximize savings and ensure acquisition of a complete high-resolution data set in a reasonable amount of time.

Many states across the country are taking full advantage of available federal funding by providing their state agencies with matching funds for applications. Currently funding from Federal sources has been unpredictable but available. We cannot plan on it being always available. The projected cost of LiDAR acquisition for the rest of Maine based on this year's project costs would be $5.5 million. If we could reduce that cost by 20% then we would be reducing our overall expense by over 1 million dollars.

- **FUNDING NEED** To acquire LiDAR data for the remainder of the state will cost an estimated $5.5 million dollars over 5 years or $1.1 million dollars/year.

More information on this ongoing project is available on the MEGIS website at http://www.maine.gov/megis/projects/lidar.shtml

ii. **Orthoimagery:** In 2012 the Board was able to complete a Return on Investment (ROI) study for the value of ortho imagery. Based on an analysis of just 4 economic sectors using imagery it showed a minimum return of 4 to 1 and the potential of a 12 to 1 return. A summary of its findings can be found at this web site. (http://www.maine.gov/geolib/maine_roi_handout.pdf)

Acquisition of accurate base mapping imagery is another area where economies of scale present the opportunity for incredible savings. Orthoimagery has become the default choice for base mapping at all levels of government and the private sector. *While companies such as Google or Bing purchase lower quality consumer grade imagery for their web mapping services,* ***state, local and federal governments require significantly more accurate data to support their business needs.*** Recognizing this need, the GeoLibrary initiated a project designed to spread the cost of imagery acquisition through a three-way partnership of County, State and Federal agencies.

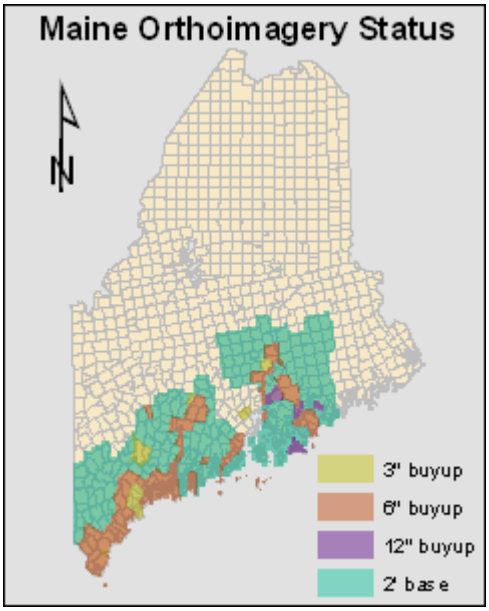


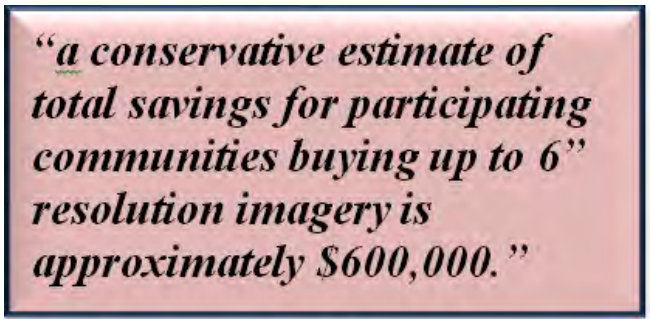
Figure 2 2013 ORTHOIMAGERY ACQUISITION AREA

In 2011, the Board released an RFP to acquire a statewide orthoimagery base map with a minimum resolution of 24" in organized communities and 1-meter resolution in unorganized territories. With county participation, municipalities are allowed to piggyback on the program to purchase higher resolution imagery. The goal of this program is to provide for refreshing imagery on a rotating five-year schedule. Since this is the first time the Board has attempted a program of this complexity, it is working through challenges presented by a lack of dedicated funding and full time staff. These impedances inhibit the Board's ability to handle day-to-day management and creation of a smoothly operating program.

Despite these challenges and moving into the third year of its program, the Board has achieved some success. In 2012, imagery was acquired for Cumberland and York Counties with 29 communities participating to 'buy up' imagery from 24" base level resolution to 6" and 3" resolutions. In 2013 Androscoggin, Kennebec, Sagadahoc,

Lincoln and Knox Counties participated with 22 communities 'buying up' to 6" and 3" resolutions.

Communities can save thousands of dollars in solo acquisition costs by participating in the program. The actual amount depends upon the size of community and resolution being purchased. For example, the town of York saved $26,000 and received better quality data as compared to a 2005 acquisition. A reasonable estimate of average savings for each community buying up to 6" imagery would be $20,000. When this is applied to the 2012 and 2013 projects a conservative estimate of total savings for participating communities buying up to 6" resolution imagery is approximately $600,000. *For some communities this program is the only way they can afford to acquire high-resolution imagery needed to support their base mapping efforts.*



As the state moves towards implementation of the NG911 program, it will need to upgrade mapping accuracy statewide. The orthoimagery acquisition program will help achieve the requirement for 1 to 5,000-scale mapping. A minimum of 24" pixel resolution with appropriate ground control or high-resolution topographic data is necessary to achieve this scale requirement.

The 2012 and 2013 acquisitions illustrate the power of state leadership and ability to leverage other funding for orthoimagery. In each year $100,000/year invested by three state agencies leveraged $377,516 and $316,199 respectively. In order for this program to be successful, the board needs additional funding.

- **FUNDING NEED** The cost of acquiring statewide orthoimagery at a pixel resolution of 24" is $2.3 million dollars over 5 years or approximately $450,000/year.

The complete orthoimagery acquisition plan is available for review on our website at http://www.maine.gov/geolib/orthophotography.htm (Appendix A provides a context for the types of savings and value the imagery program has for Maine. This information was derived from a cost benefit analysis conducted for the Board in 2012.)

iii. **Parcel Data:** On line access to community parcel data was identified as a priority need for the real estate and development communities as well as the general public and agencies whose programs require interaction with property owners such as utility and transportation providers. The Board has developed one set of data

standards for parcel mapping and is encouraging adoption by communities throughout the state.

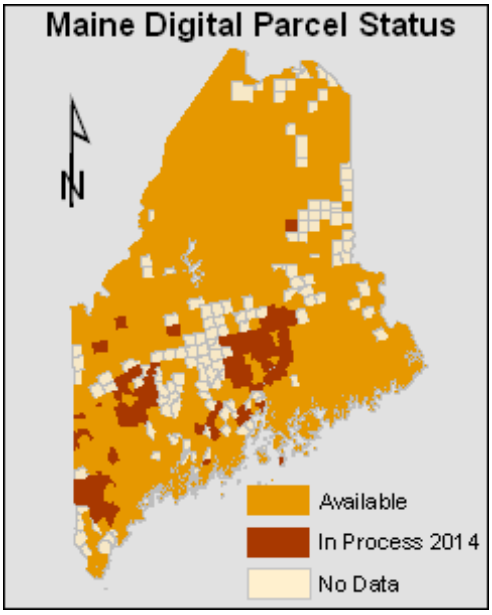


Figure 3 PARCEL MAPPING STATUS

In cooperation with MEGIS, the GeoLibrary Board continued development of a statewide parcel dataset and web based parcel map viewer. Since 2010 the Board has applied for and received over $200,000 to develop a parcel data set. Beginning with parcel data developed from the 2003 bond issue and contributed by communities and working with MeGIS, the University of Maine system, private contractors and the Muskie School of Public Service at the University of Southern Maine digital parcel data has been compiled into a single statewide data layer that with completion of the 2013 project will result in parcel data for 80% of Maine's communities.

A key component of this effort is the development of a web based map viewer allowing public access to the data collected as part of the project. The viewer can be accessed at this web site (www.maine.gov/megis/maps) Having a parcel mapping data set available on line is a small step in the right direction however its value is limited because of important missing data associated with the parcels. Increased functionality and supporting data is needed for it to achieve its full potential - improving customer service to the public.

The Board will be evaluating the parcel data acquisition project in 2014. Municipalities are responsible for developing tax mapping and the methods and standards for tax mapping vary from one community to the next. Some communities do not have any sort of parcel map while others may be very accurate to within a few feet or less.

- **FUNDING NEED** To Be Determined

A more complete report on activities can be found on this web site.
http://www.maine.gov/megis/projects/parcels.shtml

B. Maine GeoLibrary Portal: The purpose of a GeoPortal is to provide a centralized 'library' of data sources for geographic information. It is a web portal used to find and access geographic information (geospatial information) and associated geographic services (display, editing, analysis, etc.) via the Internet. Geoportals are important for effective use of geographic information systems (GIS) and a key element of Spatial Data Infrastructure (SDI).

The Board has pursued establishing a GeoPortal since it was created in 2002. Initially access to data, opportunities for listing and hosting GeoSpatial Meta data were limited. It required expensive hardware for hosting and extensive manpower to support. Since then, rapid advances in technology and steadily increasing opportunities for free hosting of Meta data have been established. Web sites such as Data.Gov offer free hosting services. A google search on 'geoportal' will provide numerous geospatial data sources.

The Maine Office of GIS provides a data catalog of GIS data developed by state agencies. These data sets make up a large proportion of GIS data developed in the state. Data developed by municipalities, the educational community and other GIS professionals appears to be a smaller subset, and more difficult to acquire and publish in an affordable and easy to maintain 'Library of Geographic Information".

Because of constantly changing technologies, data listing needs and lack of operating funds the Board voted to discontinue its pursuit of a geoportal at this time. Until a new format for housing and distributing GIS data is developed and operating funds become available; non-state agencies have been notified to host their own metadata and register them in a catalog such as the Data.Gov website. When pursuing an update of its Strategic Plan this will be a key point of analysis to determine how to achieve this legislated mandate.

- **FUNDING NEED** To be determined

C. Data Standards Development: The Board is currently working towards developing a common data standard for recording land use codes. Land use based coding is useful to communities and state agencies for many purposes including emergency response planning and permitting processes. Developing a common coding system will require an extended amount of effort due to multiple challenges. Typically each community develops its own land use designations, Maine Revenue services has a separate system for coding real estate transfers, and assessing software providers include yet another system of land use codes in their applications. An added factor complicating the effort is that some parcels may have multiple designations. For example when recording a multi-use property, that is used for agriculture, residential and commercial.

- **FUNDING NEED** None required at this time

D. Other Accomplishments: The Board recognizes the need for geospatial data acquisition funds as well as operating funds. The Board relies on the Maine Office of GIS (MeGIS) to provide staff support for Board activities and it relies heavily on Board members and the GIS community to provide additional volunteers for special projects. This year Board members pursued two important projects towards achieving a more stable and successful GeoLibrary.

i. MeGIS reorganized its staffing to include a Director of Special Projects position that is dedicated to support the Board as an Executive Director. This position will provide staffing to supervise data acquisition, other projects and pursue funding to support

Board activities. In late November, this position was filled and began working to improve delivery of the 2014 orthoimagery acquisition project, assist with seeking out prospective board members to fill vacant board seats and complete reporting requirements.

ii. During the first session of the 126th Maine Legislature, the Board worked with Senator Tom Saviello, District 18 to create a fund for acquiring geospatial data. Senator Saviello sponsored LD 877 "An Act to Establish the Geospatial Data Reserve Fund" and cosponsored by Representative Dennis Keschel, House District 83. The bill was passed to be enacted on 5/21/2013 and signed by the Governor. Passage of the bill did not include funding however; this is a start towards the goal of a stable system for continued funding of geospatial data.

iii. A Geospatial Data Symposium was held on March 21, 2013. The symposium was attended by 62 professionals from a variety of disciplines including municipal and utilities management, GIS, engineering and forestry. The one-day symposium included presentations showcasing the use of imagery and LiDAR in forestry, government, environment, engineering and development. It also included a "Working with LiDAR and Imagery Data" workshop.

Michael Smith, Maine Office of GIS Manager, provided an overview of publicly available data and how to access or download data. He also provided demonstrations of the GeoLibrary's orthoimagery and LiDAR data acquisitions, including concepts such as point cloud, shaded relief, raster images, bare earth, DEM, TIN, LAS and how to use these files in GIS applications.

6. FUTURE PRIORITIES AND INITIATIVES

The GeoLibrary's projects reflect priorities of all of its stakeholders which are well documented in the GeoLibrary's 2009 Strategic Plan. Since its formation in 2002 the initiatives have been consistently identified as high priorities in surveys, forums and meetings. However, without additional funding since a $2.3 million bond was passed in 2003, the GeoLibrary Board has not been able to keep pace with basic critical data needs of GIS stakeholders in both the public and private sector. The Board will do its best to continue the three data acquisition projects it has started, orthoimagery, LiDAR, and parcel mapping but without consistent annual funding economic and community development efforts will be handicapped.

The following initiatives were also identified by stakeholders as important needs with in the GIS community.

A. SHORT TERM INITIATIVES

i. **High Resolution Topography (LiDAR):** This project will continue
ii. **Orthoimagery:** This project will continue
iii. **Parcel Data:** This project will continue as opportunities arise.

B. LONG TERM PRIORITIES

i. **Integrated Land Records System** - The real estate and development community along with others identified this data set as an important tool that would yield increased efficiencies for community and economic development. Creating a unified statewide-integrated lands record management data set is a challenging task. It requires the cooperation of individual communities with County level departments. Communities are responsible for parcel mapping and counties are responsible for deed and subdivision recordings, with no direct connection between the two. Public access to the data from these two related sources is inconsistent, sometimes requiring travel to town offices and deed registries in person, sometimes available through multiple web sites, and none of it connected to each source of data in an organized complementary methodology.

ii. **Shoreland Zoning Mapping –** In the first year of the 126th Legislature, LD 1490 was passed. It changed the Mandatory Shoreland Zoning Laws to require communities to use the highest resolution version of the national hydrography dataset available from the United States Geological Survey. Most Maine communities do not have the GIS technology for creating maps. This could be an opportunity to partner with communities saving them significant dollars and providing a statewide shoreland-zoning map easily accessible to the public.

iii. **Land use and Land Cover –** This base mapping data is required for planning and development purposes at all levels of government as well as in the private sector. This data set has not been updated since 2004 and should be updated at least once every 10 years.

iv. **1 to 5,000 Scale Mapping** – The new NG911 emergency services system requires much more accurate small-scale base mapping to be fully implemented. In addition, this scale mapping would provide a vast improvement and benefit to all other GIS stakeholders over the current base map scale for the state which is 1 to 24,000.

To achieve the more accurate base mapping the state will need to acquire at least 2' resolution imagery along with statewide LiDAR data. The Board will be reviewing mapping standards to determine what is needed for Maine to meet this new requirement.

7. PROJECT FUNDING FOR BASE MAPPING

State agencies and the people of Maine require an accurate and regularly updated base-mapping program. Enumerable decisions are made on a daily basis requiring the best data available. Current GeoLibrary projects represent just three subsets of the overall base mapping needs. By not investing in a regular map maintenance program, Maine is wasting precious tax dollars by increasing long-term costs for doing business. These costs are reflected in lost opportunities for partnering with other agencies in data acquisition, not taking advantages of economies of scale, people making bad decisions based on outdated data or having to pay more for smaller data acquisitions satisfying special projects.

"By not investing in a regular map maintenance program, Maine is wasting precious tax dollars by increasing long-term costs for doing business."

The lack of consistent funding to implement cost saving measures and leverage funds from other sources is preventing the Maine Library of Geographic Information from meeting its potential for reducing state expenditures for base level mapping. It has not received any direct funding for programs since a $2.3 million bond allocation was approved in 2003. The table below illustrates the deficiencies in funding. Experience has shown that state funding in these projects leverage other federal and local funding at least on a one to one basis.

Budget Line	FY14	FY15	FY16	FY17	FY18
PROJECTS					
Statewide Digital Orthophotos	$450,000	$450,000	$450,000	$450,000	$450,000
State Agencies	$100,000	$100,000	$100,000	$100,000	$100,000
Counties	$150,000	$150,000	$150,000	$150,000	$150,000
Deficit	***$200,000***	***$200,000***	***$200,000***	***$200,000***	***$200,000***
High Resolution Topographic Data (LiDAR)	$1,100,000	$1,100,000	$1,100,000	$1,100,000	$1,100,000
State Agencies	0	0	0	0	0
Federal Agencies	0	0	0	0	0
Deficit	$1,100,000	$1,100,000	$1,100,000	$1,100,000	$1,100,000
Strategic Plan Update	tbd	tbd	tbd	tbd	tbd
Parcel Mapping	tbd	tbd	tbd	tbd	tbd
Integrated Land Records System	tbd	tbd	tbd	tbd	tbd
Shoreland Zoning	tbd	tbd	tbd	tbd	tbd
Landuse and Landcover Mapping	tbd	tbd	tbd	tbd	tbd
1 to 5,000 Scale Mapping	tbd	tbd	tbd	tbd	tbd

The Department of Administrative and Financial Services through the Maine Office of GIS provides limited staff support to the GeoLibrary Board. This is supplemented with voluntary support from Board members and stakeholder agencies to leverage grants to implement its work plan. While this has been somewhat successful, it is not keeping up with the need for updating existing data sets. Mapping data must be constantly refreshed due to changes because of development and natural environmental changes. *Intelligent decision-making requires current mapping data.*

APPENDIX A

Cost Savings from the Use of Orthoimagery

Available at: http://www.maine.gov/geolib/orthosurveyresults.htm

At the request of the GeoLibrary Board state agencies have tried to quantify their cost savings from the use of aerial orthoimagery. A small information technology section estimated savings of approximately $17,000 per year using orthoimagery to map roads. One department dealing with natural resources estimated savings of $27,000 per year. Another natural resource oriented department estimated savings as high as $2,500 *per week* on a regular basis by using orthoimagery particularly to avoid field trips.

Avoiding expensive travel was a recurring theme. One agency gave a specific example "…one overnight trip from Augusta to Houlton by an employee at $15 per hour costs the state a minimum of $560. In most cases, a trip like this would have to be extended for at least a week in order to approach the amount of information contained in one recent, high resolution aerial image."

Here is a selection of responses to the GeoLibrary'sOrthoimagery Use Survey:

- A municipal mapping company: "We estimate that for a town of approximately 2,000 parcels, the savings in a tax mapping project is $20,000 or more by using the orthoimagery."
- An academic institution: "…using the orthoimagery for mapping wetlands saved over three weeks of intensive manual labor by two individuals, …240 hours or $12,000."
- An engineering firm reported saving $2,000 by using orthoimagery instead of an on-site visit.
- An agricultural management business: "I regularly download ortho imagery to use as a base map while constructed field maps for….potato growers. The maps (I) make allow me to soil sample and field scout more effectively and also increase the reproducibility of sampling from year to year versus the old hand drawn maps."
- A surveying firm: "Time (is) saved by being able to assess logging roads from photography to determine the most efficient access to an area. The aerial photography is a huge asset for us."
- The U.S. Naval Facilities Engineering Command: "I have used the orthoimagery to create presentation and base plans for use in civil engineering, land development and environmental planning. It's indispensable for conceptual design, comes in handy during design development and even permitting documents."
- A land management company: "We have our own photos of the land we manage, but using the aerial photography….is very helpful to see abutting ownerships roads, etc. The aerial photography also ….can be useful in delineating harvest boundaries from previous harvests."

- A surveying company: "By using your information we reduce travel time to each site as well as time spent in the field."
- Site design consultants: "We use orthophotos available on the site all the time for pre-project planning and for overview of site area and general viewing."
- A large grocery chain: "(We) use the imagery to verify household counts in certain zip codes and pull imagery into a GIS so they can be shown with our town boundary files."