

Maine GeoLibrary Board  
Integrated Land Records Information System

**RESEARCH PLAN and FINDINGS**

January 12, 2009 | final | rev. 1.0

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## INTRODUCTION

The Maine Library of Geographic Information (“Geolibrary”) has been working with the Maine Office of Information Technology and the Maine Office of Geographic Information Systems (“MEGIS”) to help the State develop geographic information system (“GIS”) capabilities to promote efficient government administration and land use planning. Since April, 2008 the GeoLibrary has been gathering information to assist Maine in designing a GIS-based integrated land records information system (“ILRIS”) which would facilitate access to information about a particular parcel and adjoining lands. This effort has in part been funded by a \$50,000 grant by The Federal Geographic Data Committee (“FGDC”) which promotes the coordinated development and dissemination of national geospatial data. The grant monies were obtained from the FGDC’s Fifty States Initiative and have been supplemented by contributions from the Geolibrary and MEGIS<sup>1</sup>.

The Maine ILRIS would build upon and enhance the accessibility and utility of geographic information now maintained by data custodians at all levels of Maine government. Once implemented the ILRIS would allow all persons interested in the attributes of a particular parcel (among them, title examiners, planners, conservationists, and developers) to see a parcel on an aerial photograph (map quality orthoimagery is the desired standard), and readily access information about land cover, roads, protected lands, soils, wetlands, aquifers and geology. Under the envisioned IRLIS this information would also be linked with parcel title information maintained in the county deed registries. The current GeoLibrary project is a first step in determining how best to create these links.

This framework document describes the Geo Library’s research and findings for the ILRIS. The document provides overall information-gathering objectives and key research considerations essential to the successful planning, design and implementation of this system.

The document is organized as follows:

- **Section 1: Goals.** This section provides an overview of the primary land records stakeholders, primary project goals, and characteristics of what an optimal ILRIS should and should not encompass;
- **Section 2: Maine Municipal, County & State Status.** This section identified which land data is of greatest interest, current status of municipal lands data, issues associated with standardization of data and consequences of the lack of incentives, current status of County records and potential benefits of geo-referencing this data, interaction between municipalities and counties, and a national model for parcel data.
- **Section 3: Comparative State Experiences.** This section provides an overview of other state systems providing relevant benchmarks and how they might pertain to Maine’s experience.

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<sup>1</sup> (<http://www.fgdc.gov/policyandplanning/50states>)

- **Section 4: General Benefits of Maine Integrated Lands Records.** This section articulates the broad benefits to active land records data consumers and potential high-benefit lands records data users.
- **Section 5: Stakeholder Inventories.** This section provides an inventory of beneficiaries of an ILRIS.

## 1. GOALS

The primary objective of the ILRIS program is to achieve greater efficiencies in land records data collection and maintenance while improving quality of service to data users at all levels of government and in the private sector.

Project stages of the ILRIS initiative include Research, Promotion, Conceptual Framework Development and creation of Functional Specifications. Each of these stages has involved and will continue to involve interacting with and soliciting input from a large number of land records stakeholders.

These stakeholders can be divided into three primary categories:

- **Tier 1: data producers** and stewards of property-based data; primarily State and Municipal Assessors and Land Use and Zoning Administrators and County Deeds Registers
- **Tier 2: active land records data consumers** and potential high-benefit land records **data users**, comprising the full spectrum of government, commercial and citizen users, some of whom may add content to the geographic information database( for instance, through registration of land transfer documents);
- **Tier 3: technical facilitators and vendors**, including mapping companies, GIS firms, surveyors, appraisers and others;

This document identifies the status, needs and capabilities of all three, with a focus on Tiers 1 and 3, as these stakeholders provide the core geometry and attribute content upon which all downstream users will depend. Potential and identified uses of integrated land records for Tier 2 users are identified in Section 5.

Significant opportunities exist to leverage rapidly maturing information system technologies to cost-effectively integrate Maine parcel data editing and distribution processes and deliver higher quality content to a larger population of end users.

From input gained to date using statewide GeoLibrary project forums, workshops, meetings and evaluations of existing systems, a core group of project goals is emerging. These findings indicate that a successful implementation for Maine should:

- Remedy existing discontinuities that exist between municipal parcel maintenance (for tax assessing purposes) and county maintenance (for deeds and registered surveys)
- Reduce inconsistencies in data quality and currency by instituting standard digital parcel and attribute products and services
- Encourage access to land records data with minimal technical or economic barriers to entry – make existing data accessible to more users
- Increase access to data that are not currently geographically enabled or easily searchable and integrated with GIS technology – make more data available to existing users

Functional and line-of- business considerations of numerous classes of existing and potential data users need to be considered to:

- Expand municipal uses where digital parcels exist and expand digital parcel coverage into currently unmapped areas
- Increase overall utility of and access to digital land records data by public and private decision makers
- Support land use permitting and compliance review

Any system should also:

- Adhere to existing State GeoLibrary digital parcel standards
- Integrate efficiently with overall state and federal geospatial data infrastructure objectives
- Include provisions for standardizing land use codes
- Facilitate higher quality analysis between and among different agencies and individuals
- Be supported by high profile and vocal political champions who understand and believe in its benefits
- Have realistically estimated costs over defined time horizons
- Be funded sustainably

Throughout the data gathering exercises, consistent and frequently stated public opinion declared that a successful integrated land records system must NOT:

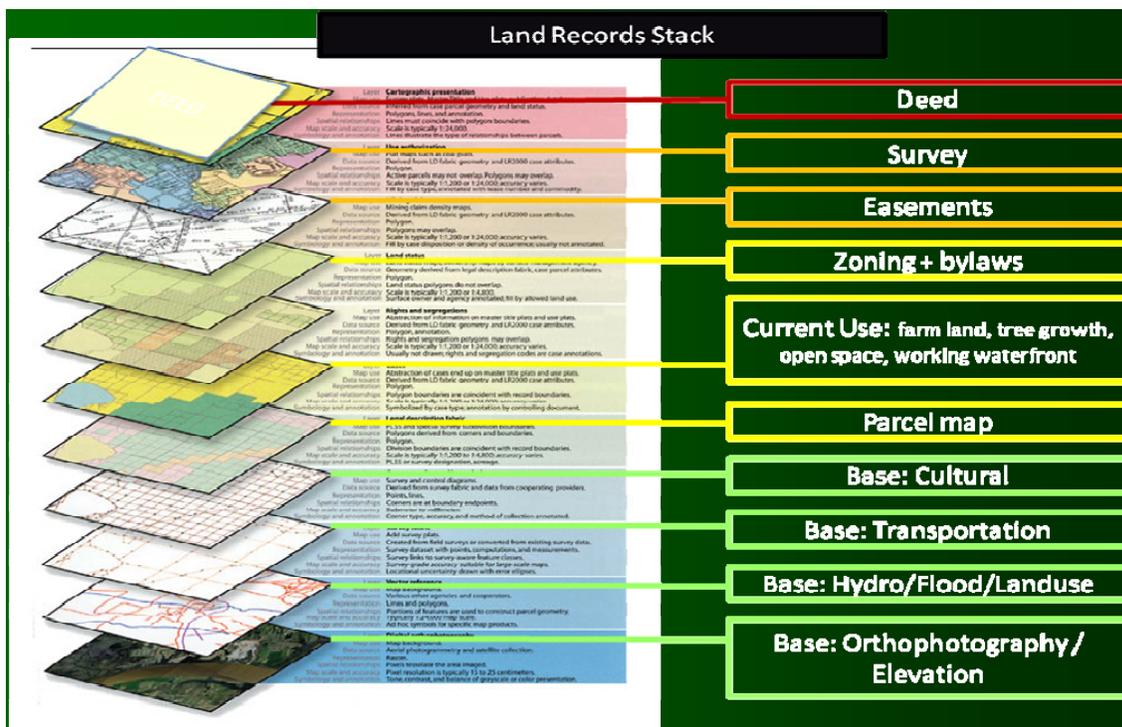
- Add additional workload to existing data maintenance stewards
- Increase the risk of loss of data control and self-determination to commercial implementers or vendors
- Compromise the privacy of individuals or organizations

## 2. MAINE MUNICIPAL, COUNTY + STATE STATUS

### Introduction

The Land Records “Stack” depicted in Figure 2-1 represents a typical GIS layering model of commonly geo-referenced information. While this type of graphic is a fairly common schema used to depict GIS technology, this particular example focuses on the yellow, orange and red layers toward the top, which pertain to geospatial land records data. Beginning with parcels and sub-parcel-related geography-anchored content, these culminate in the deed with attendant survey and easement resources directly beneath.

**Figure 2-1: GIS Land Records Data**



The message in this diagram is simple: the data of most immediate utility for land ownership and rights information rises to the top. The green boxes beneath contain only a representative subset of the vast amount of geospatial data in the state’s geographic information system that may be used in conjunction with land records in a fully integrated land records information system. Deeds, surveys, easements, zoning and bylaws, exemption polygons and parcels define not physical or even visible features, but record property rights, taxation and conveyance information that is of vital utility both in and out of government. The usefulness of these data increase dramatically when combined with information already available in the state’s GIS.

Project research shows that collection and maintenance of the land records information in Maine currently mixes modern information technology with traditional paper-based approaches. While many technically and organizationally forward-looking data storage and access implementations operate in pockets throughout the state, significant inefficiencies and inconsistencies persist over large areas.

**Tier 1 stakeholder - Municipalities**

**Parcels: Completing the Coverage**

As a foundation layer, property parcel data are invaluable to GIS analysis across practically all sectors of government, non-government, and commercial land-oriented organizations.

At the municipal level, tax assessors have historically been the early adopters and core users of parcel data. But other departments including Public Works, Schools, Conservation and Recreation, Health, Planning, Zoning, Police, Fire, and Inspection Services increasingly rely on these data when they are digitally available and dependable. Essentially, parcels provide an indispensable building block for municipal GIS across all departments.

Evidence suggests that converting paper-based parcels to a functional digital format has traditionally been expensive and technically challenging. Because of this the larger, better-funded Maine municipalities have moved to digital first.

Table 2-1 shows the cities and towns in Maine with the highest parcel counts.

**Table 2-1: Maine Municipalities with Highest Parcel Counts**

Municipality	Parcels	Population
Portland	22,500	64,249
Lewiston	12,152	35,690
Bangor	9,973	31,473
Auburn	9,306	23,690
Sanford	9,214	20,806
York	8,979	13,306
South Portland	8,593	23,324
Augusta	8,428	18,560
Scarborough	8,010	16,970
Windham	7,920	14,904
Saco	7,907	16,822
Biddeford	7,730	22,072
Brunswick	7,144	21,172
Wells	6,839	9,400
Gorham	6,505	14,141

A strong correlation exists between population and parcel count, though it is not exact. At the national level, this ratio tends to hover around 2 inhabitants per parcel, though in Maine the number of parcels per person is somewhat higher. Some Maine communities with large numbers of seasonal dwellings have inflated parcel counts. All of the cities and towns in Table 2-1 have digital parcels and have working GIS operating at different functional levels.

As depicted in Table 2-2, the 15 municipalities shown in Table 2-1 account for approximately 20% of the total number of parcels statewide. The top 75 municipalities in Maine, or 16% of

the 470 municipalities total being tracked by the Maine Bureau of Revenue Services (MRS), account for approximately 50% of the total parcels.

**Table 2-2: Segments of Municipalities and Percentages of Parcel Data**

<b>Segment</b>	<b>% of All Towns</b>	<b>Parcels</b>	<b>% of All Parcels</b>
Top 15	3%	140,000	20%
Top 75	16%	375,000	50%
All Towns (470)	100%	750,000	100%

This is a striking statistic. It provides strong evidence that much of the heavy lifting in parcel data development, especially in densely developed areas, is already in place or under way. And since it leaves such a large number of small communities with a lot of land area but very low populations, revenue and parcel counts, it suggests that many of these remaining communities without digital parcels might never be in a position to develop these data on their own.

**Parcel Development: Ad Hoc to Standard**

While real property ownership and taxation records have been recorded in and about Maine for nearly 400 years, converting Maine parcel maps to electronic formats for use in computerized mapping applications is a relatively recent development. This began in the late 1980's by larger cities and towns as well as some northern forest property owners. The trend has been augmented and accelerated in Maine somewhat by the local presence of numerous digital mapping firms and educational institutes of national stature.

Parcel inventories have traditionally been maintained as maps, on paper or mylar and at scales ranging from 1"= 40' to 1" = 200'. Such parcel inventories provide the only means to associate both mathematically and visually all individual records in an assessing database to a geometrically accurate, graphical representation of these records.

Municipal parcel automation, from paper to digital, is usually accomplished by digitizing an entire municipality at once to maximize consistency and data integrity. Parcel geometry from multiple paper, linen or mylar sheets (typically at scales ranging from 1"= 40' to 1" = 200') is automated and edge-matched. These data must then be matched against tabular records of individual properties to enable them geographically.

Such initiatives can represent significant expense for small communities. Properly quality-controlled parcel automation projects tend to cost between \$3.50 and \$6 per parcel, and can run significantly higher if the quality of source manuscripts is poor or out of date requiring time intensive deed research.

In communities where digital parcel data are available, there is generally a strong consensus that having this information readily available to the public, particularly to developers and project proponents, is beneficial to community health and well-being.

Occasionally, towns and cities federate together to enjoy economies of scale and technology transfer, and build their systems in tandem. Cases like data development in Lewiston and Auburn provide an example of this, where two separate municipal systems exist but much of the data and interface work has enjoyed the benefits of parallel development. In 2006/07 Lewiston and Auburn water and sewer districts were aerially photographed in tandem, providing valuable base data for parcel updates and other applications. Numerous other examples of collaborative

data acquisition on regional scales serves a valuable precedent, and approaches of this type may be very attractive as a means to automating and enabling geographic capabilities in towns that, alone, would have difficulty mobilizing necessary resources.

Maine has an effective and functioning parcel standard that was established by the Maine GeoLibrary following the Statewide Resolve 23 Plan of 2002. This standard provides a stable template for data automation and update and will permit compliant data to conform into a working composite of great practical benefit to a large number of land records data stakeholders. Adoption of parcel data standards also increases Maine's federal funding opportunities for uniform GIS promotion.

Nearly 80 municipalities in Maine have participated in two rounds of parcel grant funding by the GeoLibrary helping to standardize data quality in many areas of the State. Enforcement of a standard through targeted incentives is a proven, effective way to move the State toward a functioning ILRIS.

While some issues (such as edge matching across town boundaries) remain, the combination of available grant funding and active use of the GeoLibrary's state parcel standard provides a clear development path for bringing most or all remaining parcels into compliance.

A frequent criticism of the GeoLibrary grant program has been that there is currently no mechanism in place to guarantee (or even actively encourage) submission of updates as these occur. Because the parcel landscape is never static, the lack of this mechanism necessarily causes data to go stale quickly and compromises the overall utility of the parcel composite.

In addition to the state parcel standard, development of complementary data standards may be advisable to ensure workable deployment of statewide parcels as well as maintenance and integration with other layers. These complementary standards could include:

- Structure standard: to ensure that building data overlays cleanly with parcel data as these two layers are developed
- Computer Aided Design and Drafting (CADD) submission standards: to facilitate ingestion and integration of survey quality data directly into storage repositories and GIS
- Road centerline standard: to synchronize road segment address ranges and positional data placement with property parcel data

### **Tier 1 Stakeholder - Counties**

#### **Deeds Registries**

County Deeds Registries in Maine and New England maintain an attenuated relationship to the rest of the overall geospatial community. Registries serve as the deepest reservoirs of geographic information governing title to real estate. Geographic information systems are designed and built around accessing and integrating different reservoirs of geospatial information, yet there is little GIS activity in or around any of the County Registries.

This paradox is primarily attributable to the fact that Registry data have not been enabled geographically ("geo-referenced" for use in a GIS). Deeds are textually descriptive, and even

while a large proportion of these have been scanned into image files, these provide no direct, automated link to location using computerized mapping software.

From an historical perspective this is understandable. Registries are run like libraries. What the Registers do and do well is maintain indexing and accessibility to the documents in their repositories. They have little need to analyze or aggregate their content. And with no current business requirement or incentives for context information concerning deeds, few natural geospatial developments have occurred.

But project research identified three core areas where a tighter county-GIS relationship could provide considerable benefits across a large array of stakeholders including: *This is an important section and may need to be highlighted or summarized elsewhere/*

1. Geo-referencing scanned survey plans to use as a reference layer and a resource for improving flawed geometry in GIS layers [incorporated in what? could this be clarified?] to certified accuracy. Approximately 120,000 survey plans have been identified across Maine’s 18 Registries.
2. Instituting a parcel identifier – possibly x, y coordinate based, that allows registry documents to be queried from a map interface (e.g., show me all of the plans, deeds and other documents within a half mile of an identified brownfield remediation site).
3. Utilizing the physical location and land records assets of County Registries to anchor one or more GIS Service Centers. Locating small technical offices containing hardware, software and geospatial expertise within County Registries would provide an interface opportunity with not only the Registries and their data but with other County departments as well as local municipalities and the public at large. Operationally this would be similar to the manner by which select Regional Planning Commissions throughout Maine provide parcel maintenance and other GIS services to municipalities.

County	Parcel Count
ANDROSCOGGIN	45,540
AROOSTOOK	46,873
CUMBERLAND	125,010
FRANKLIN	22,887
HANCOCK	48,063
KENNEBEC	65,549
KNOX	28,709
LINCOLN	28,078
OXFORD	43,346
PENOBSCOT	104,970
PISCATAQUIS	17,558
SAGadahoc	19,046
SOMERSET	35,791
WALDO	27,711
WASHINGTON	26,418
YORK	104,140
State Totals	789,689

This is an important metric to consider when evaluating potential costs and strategies for digitizing parcels in groups. It is worth noting that dozens of *counties* across the US have parcel counts exceeding the overall state total for Maine.

Further, the three counties with the lowest counts (Piscataquis, Sagadahoc and Franklin) do not in total have as many parcels as the *city* of Portland.

These parcel quantities speak to the fact that the primary impediment to a statewide cadastral mapping is not one of technical complexity of the sheer number of features requiring automation. The challenge has more to do with harmonizing the many subcomponents of each of these counties to produce and maintain these features over time.

**Table 2-3: Parcel Counts by County**

## **Tier 1 Stakeholder – The State**

### **Parcels: Statutory Support**

Under Maine law, the MRS must annually certify to the Secretary of State before the first day of February the equalized just value of all real and personal property in each municipality and unorganized township that is subject to taxation. Each community is required by statute to maintain a complete inventory of property as part of the overall property tax assessment process<sup>2</sup>. Unfortunately, at present there is no requirement to use map-based data for this purpose.<sup>3</sup>

Where up-to-date parcel data exist, establishing just value is a far less challenging, time consuming and error-prone exercise than where they do not.

### **County-Municipal Land Records Data Exchange**

Across most of the United States, tax and ownership data relating to real estate are managed from one location: the county registry. In Maine, as well as much of New England, this is not the case. Here the management responsibilities are separated between municipality (taxation-parcels) and county (ownership-deeds). The basis for this separation is rooted in historical and local factors, but with the availability of modern information technology any technical reason for such division of labor has disappeared.

Of course these two management entities need to interact over ownership and rights issues concerning specific properties. For valuation and taxation purposes specific paths of data flow and transaction-based communications are required. The most frequent and important of these revolve around administration of the Real Estate Transfer Tax (RETT) by the MRS.

In brief, this process involves a multi-level exchange of data between MRS, Maine's 18 County Registries, and the hundreds of organized towns and cities throughout the state where the land is located. Specifically, after deeds have been filed with accompanying real estate transfer tax declaration at a registry, a copy of the declaration is provided to the MRS in order to log this change in land value and disposition in the central state revenue database.

Once the registry-specific book, page and ownership data have been entered, the MRS conveys the form to the appropriate municipality so that additional information may be attached that is pertinent to property-specific taxation and exemption details. This includes data relating to exemptions such as participation in Maine's Tree Growth programs as well as the Map and Lot identifiers that the municipality uses to index this property in its local system.

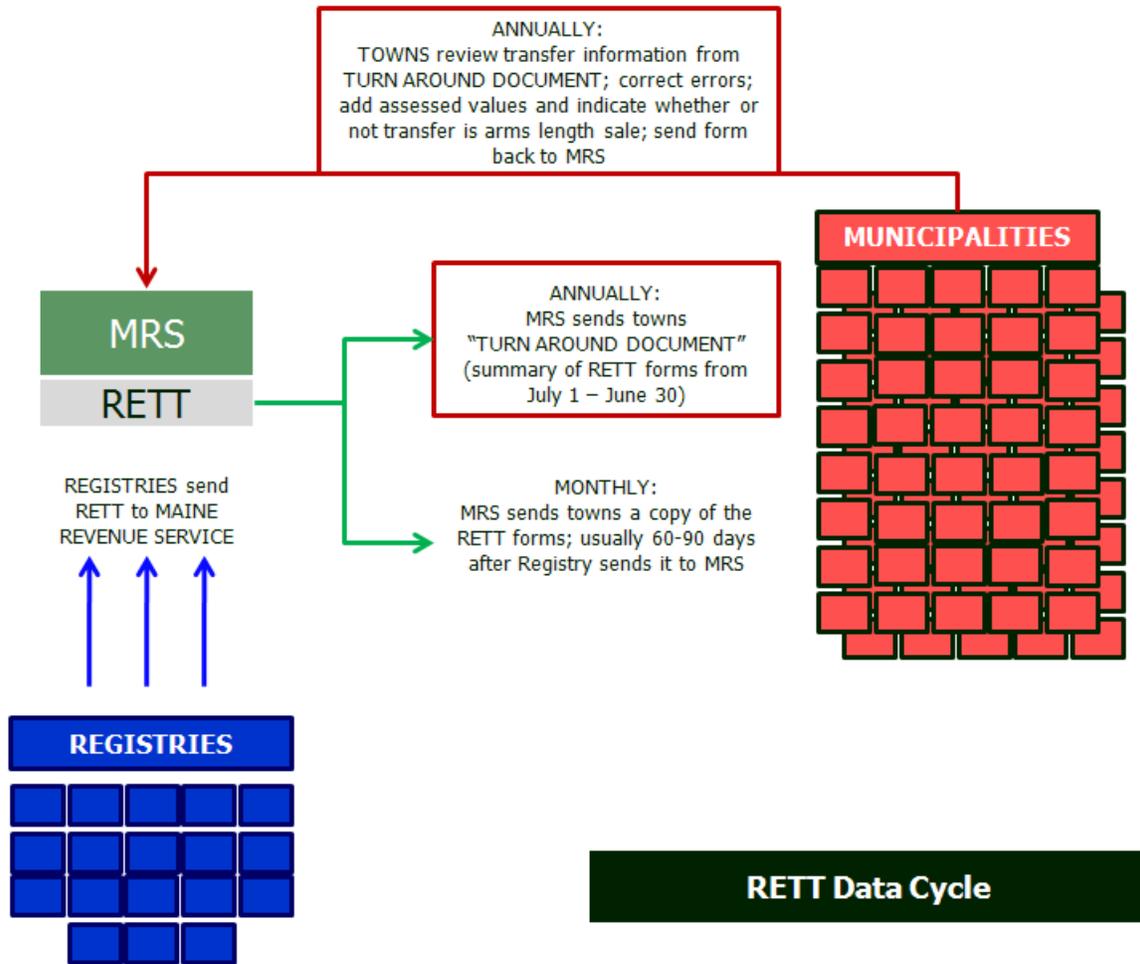
With these additional pieces of information added, the towns send the RETT forms back to the MRS to be logged centrally. Figure 2-1 outlines these relationships.

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<sup>2</sup> MRS Property Tax: MRS Title 36;

<sup>3</sup> MRS Title 36, Chapter 102, Section 328: 9. Tax maps: Municipal assessing units do not necessarily have to maintain tax maps

**Figure 2-1: Process for Processing RETT Forms**



The technical details and daily burden of these interactions produce many complaints among participants. Multiple data entries produce numerous points of potential error. Data do not always effectively and accurately make their way back to Registries and municipalities. Municipalities may not take the time and care to research proper parcel map and lot numbers. As a consequence, a significant proportion of the data content (outside of the registry-essential Book/Page identifiers and ownership information) is often considered to be suspect or wrong.

MRS is currently working to design a future all-electronic version of this RETT data transmission cycle, but at time of this writing, its details are not settled.

The electronic exchange of geospatial data among these levels of government would add value and resolve current inefficiencies. For example, information reported in RETT allows tracking of classified lands benefitting from current use taxation programs (Section 8 of the form). These classified lands include Farmland, Open Space, Tree Growth and Working Waterfront. If the RETT data associated with these properties are properly maintained and documented, this can provide significant tax benefits to property owners. Presently the geographic data used to track these significant and valuable assets are poorly defined and difficult to use for inventory purposes.

The sheer magnitude of the numbers involved in exempt properties and classified lands suggests that careful tracking of these data ought to be a high priority. Research during this project has confirmed that making the inventory system for these data as robust and error-free as current technology will allow is an objective strongly held by many, including MRS officials.

Table 2-4 below provides a snapshot of land-based Classified and tax-exempt properties.<sup>4</sup>

**Table 2-4: Current Number and Value of Exempt and Classified Lands**

	Total Properties	Total Value
Tree Growth	22,900	\$403,500,000
Farmland (cropland + woodland)	3968	\$49,000,000
Open Space	1715	\$109,000,000
Working Waterfront	39	\$7,300,000
Totals		\$568,800,000
Exempt: US Government		\$3,022,000,000
Exempt: State of Maine		\$1,976,000,000
Exempt: Municipal Corporations		\$4,269,300,000
Exempt: Public Water Supply		\$80,000,000
Exempt: Airports		\$246,000,000
Exempt: Sewage		\$42,000,000
Totals		\$9,635,300,000

That Maine government cannot identify these properties as parcels on a map is unfortunate but in no way surprising. The US federal government does not maintain a parcel-based inventory of its holdings (despite at least three attempts over the past fifteen years to accomplish this). Most US states do a poor job at this as well. But considering the tens of thousands of properties involved as well as the billions of dollars of land involved, tracking these assets using geography-based information technology tools could yield formidable resource benefits.

The cost of maintaining the status quo in this regard is not immediately apparent, because potential benefits will not be evident until the data are carefully scrubbed and sequenced. But, by example, it is possible, with a single press of a button, to query one of the nation's many million-plus parcel counties that is fully automated and geospatially enabled, or to make a one-line database interrogation that produces a list of all records (with verifying maps) representing exempt properties.

In a situation of fiscal uncertainty and strained government budgets, IT investments directed toward infrastructure and asset tracking are particularly vital. If for no reason other than to preserve institutional memory in times of accelerated layoffs and employee turnover, investing in information systems that facilitate accurate and transparent data visibility should be viewed as a worthwhile funding priority.

<sup>4</sup> Figures from MRS 2007 MRS Valuation Return Statistical Summary.

## Parcels: The National Vision

The national model is described here because many of the principles are scalable and directly applicable to data sharing and coordination within Maine. The concept of Land Records Coordinator, explicitly identified as an essential resource for interface with the federal level, is a staffing responsibility that Maine will ultimately need to consider if this interface is to be properly cultivated.

At the federal level there is growing use and appreciation of unified parcel data as a resource for government. Serious studies of a standard, national cadastre have been evolving since 1980 when the National Research Council (NRC) issued a report titled *Need for a Multipurpose Cadastre*. In a recent study, the NRC has determined that complete national land parcel data in the United States “are necessary, timely, technically feasible, and affordable.”<sup>5</sup>

The national vision is being developed and formalized by the Bureau of Land Management within the Department of Interior (DOI), with a team including the FGDC, the Department of Homeland Security, the Census Bureau and others.

This national vision stipulates a border-to-border cadastral fabric that largely follows carefully defined principles. According to the recent NRC study, an integrated and comprehensive national parcel system should be:

- Distributed with data capture and update maintained as locally as possible
- Accessible through web-based interface
- Built to provide a minimum set of attributes
- Overseen by national land parcel coordinator, working with coordinators for
  - Federal lands (federal land parcel coordinator)
  - Indian lands
  - State coordinators (in each state).

Coordinators would insure national data consistency and work with the Census Bureau and other departments to create accurate boundaries and identifiers

National land parcel data would serve as cadastral framework data layer for the National Spatial Data Infrastructure. Data would also:

- Be placed and remain in the public domain
- Contain no information about private ownership, use or value
- Use the parcel as the fundamental, unique and cellular land records element
- Be maintained by local government officials
- Contain the following attributes:
  - unique identifier
  - street address
  - generalized category of ownership

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<sup>5</sup> National Land Parcel Data, National Academies Press, 2006

- FGDC compliant metadata

The national vision emphatically asserts that it is not intended as any sort of replacement for existing property record systems. It also indicates that intermediate alternatives to polygonal parcels could be constructively pursued en route to full-blown parcel development. While it remains to be seen whether such a point or centroid based intermediate program is appropriate to the needs of Maine, it has been effective in other states (including New York).

Funding of such a program is viewed as a shared responsibility among all stakeholders. The federal government would bear responsibility for integrating data across boundaries, including not merely state boundaries but levels of government within a state as well. Various sources of high-quality imagery will be funded to provide support context for parcel data automation.

It is anticipated that local governments with existing parcel programs would retain current licensing privileges and receive new funding to cover costs of data sharing.

### 3. COMPARATIVE STATE EXPERIENCES

Integrated property parcel data at the state level are not the norm in the United States. But significant work is currently being undertaken in this area and a number of states are committed to completing unified digital parcel data within their borders in the near future.

Significant study has gone into evaluating state level parcel systems. The FGDC Subcommittee for Cadastral Data has inventoried state systems as recently as 2005. Those studies and updated findings provide interesting benchmarks for such systems and how they might pertain to Maine’s experience. Some of these findings include:

- Nineteen states have converted more than 80% of their parcels to digital format
- 2,389 US counties (75%) do not have digital parcel data
- South Carolina, West Virginia and New Hampshire are estimated to have only 10% of their parcels converted
- All states but Alaska distribute responsibility for collecting parcel data to local (comprising both county and municipal) governments
- Twelve states centrally manage parcel data; eight centrally manage geometry
- The number of entities responsible for collecting parcel data varies considerably, with Maine at or close to the top of the list as depicted in Table 3-1.

**Table 3-1: Comparative State Parcel Maintenance Burden**

State	# of Entities Responsible
New Jersey	566
<b>Maine</b>	<b>500+</b>
Massachusetts	351
Vermont	253
Texas	253
Delaware , Hawaii	<10

At least eight states are currently working to integrate or develop parcel data at an integrated statewide level. For some this involvement amounts to creating and subsidizing a parcel standard, while in others (e.g., Montana) the actual parcel boundary data is being maintained for the bulk of local jurisdictions. Table 3-2 summarizes status of these initiatives.<sup>6</sup>

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<sup>6</sup> State comparison tables and data are modified from Stage/von Meyer, 2006

**Table 3-2: Status of Statewide Parcel Data Integration**

	Maine	Alabama	Arkansas	Florida	Montana	North		
						Carolina	Tennessee	Wisconsin
Population (millions)	1,317,200	4,500,000	2,693,000	16,000,000	900,000	8,050,000	5,700,000	5,400,000
Area (sq mi)	33,414	50,750	52,100	53,927	145,552	48,000	41,219	54,310
Parcels (total in state)	760,000	2,600,000	20,016,500	9,000,000	1,000,000	4,421,000	3,600,000	3,500,000
Density (people/sqmile)	39.4	88.7	51.7	296.7	6.2	167.7	138.3	99.4
Persons per parcel	1.7	1.7	1.3	1.8	0.9	1.8	1.6	1.5
Average parcel size (acres)	22.7	12.5	16.5	3.8	93.2	7.0	7.3	9.9
Program begin date		2000	2002	1998	1997	1976	2000	1989
Program end date		2008	2008	2005	2003	2000	ongoing	ongoing
Percent converted at program start		UNK	UNK	48%	10%	0%	0%	UNK
Current state of conversion		60%	10%	99%	99%	95%	40%	83%
Cost share (state/county/other)		75% -25%	UNK	75% -25%	75% -25%	UNK	75% -25%	30% -70%
Funding source		agency, legislature, cooperative	agency, cooperative	agency, legislature, cooperative	agency, legislature, cooperative, recording fee	cooperative, recording fee	agency, legislature, cooperative	recording fee, cooperative
Managing agency	GeoLibrary	DOR	DOR/GIS	DOR	DOR/GIS	State	Commerce / Comptroller	Commerce / Comptroller
Centrally manage data		YES	YES	YES	YES	YES	YES	NO
Centrally compile data		YES	YES	YES	YES	NO	NO	NO
Central database		YES	YES	YES	YES	NO	NO	NO
Counties (total)	16	67	75	67	56	100	95	72
Counties (participating)	16	67	73	67	48	100	30	72

**Arkansas** maintains a geospatial data clearinghouse that includes parcels, though these are not nearly complete statewide. The GeoStor system provides consolidated hosting services for interactive web mapping. Local, state and federal agencies may store, publish and distribute their parcels and other layers through this system.

**Montana** provides an intergovernmental collaborative program that produces and maintains parcel information in a consistent format for the entire state. This system provides the foundation for the Montana Department of Revenue mass appraisal system and coordinates parcel development throughout the state

**North Carolina** provides an example of how state government can behave as an intermediary between local providers and the user community. Each participating data provider stores and controls releases of and access to its own parcel data. This is a more likely potential model for Maine distribution and maintenance, even while it is county-implemented rather than managed to the municipal level.

**Tennessee** Division of Property Assessments operates a statewide computer-assisted tax billing system and a long range program for periodic re-appraisal of locally assessed property. As part of this program the state creates and maintains county-level parcel data to “ensure county-level parcel data are accurate and current so assessing officials can correctly locate boundaries and related information.”

**The Province of New Brunswick, Canada**, is another state-equivalent system that merits consideration in this study partly because it is an immediate neighbor to Maine and partly because of the excellence of the system. New Brunswick was the first provincial (or state) organization in North America to provide province-wide web-based property mapping,

valuation, and registry-related data to its customers. Launched more than 10 years ago, this smoothly operating system manages more than 550,000 parcels for a population of 730,000 in an area roughly the size of Maine. The New Brunswick Land Registry encompasses 15 counties and 13 registry offices and registers over 108,000 documents annually. This includes more than 3,200 plans.

In the New Brunswick system, all parcels of land were mapped and converted to digital format by the late 1990's. Each parcel was assigned a Parcel Identifier (PID), which is the key to access both the digital map as well as attribute data. Digital maps are updated on a daily basis with new parcels created by registered documents or plans.

In the New Brunswick system, legislative amendments were necessary (2001) to establish the PID as the legal description key for the property. This legal framework is an essential step toward moving digital parcel data into a central role in land ownership and transfer.

In 2006 a project was begun to scan all historical documents (prior to 2002) for all registry offices. By end of year (2008) this project will be completed, having scanned and indexed more than 13 million total pages.

Ultimately New Brunswick is aiming toward implementation of a complete Torrens title system, by which title is guaranteed by the state to the property described and to those included in the register.

## 4. GENERAL BENEFITS OF MAINE INTEGRATED LAND RECORDS<sup>7</sup>

Tier 2 users, including active land records data consumers and potential high-benefit lands records data users, can significantly benefit from a future Maine ILRIS. As digital parcels are essential to a broad swath of municipal departments, so too are they critical to a broad spectrum of state agencies. From Conservation, Environmental Protection, Health and Agriculture to Transportation, Economic Development and Planning, there is practically no end to the applications for digital parcels.

Among regional planning agencies, non-government organizations such as The Nature Conservancy and Audubon Society, and private firms concentrating on land-based activities, they are also singularly valuable. A large number of federal agencies also maintain keen interest in these data. Contributing to this study, representatives from the US Environmental Protection Agency, the Department of Homeland Security, US Department of Agriculture, National Geospatial-Intelligence Agency, National Oceanic and Atmospheric Administration, Centers for Disease Control, US Fish & Wildlife Service, the Census Bureau and others have expressed explicit interest in these data.

Significant benefits stand to be gained from accessible, accurate and dependable integrated land records data in Maine. Some of these which have proven themselves out to different user categories follow.

### **Benefits to Local Governments**

- Assures that the best available data are used in each public transaction
- Avoids conflicts among land records of different public offices
- Improves accuracy of real property assessments
- Provides base maps for local governance across multiple departments
- Encourages coordination among various data users through common mapping framework
- Improves public attitudes toward administration of local government by making the process appear more transparent to the public
- Reduces traffic flow into offices thereby allowing staff to concentrate their efforts on more value added services
- Accelerates land-centric searches and transactions and provides geographic context and “intelligence of place”

### **Benefits to State Government**

- Provides definitive record of “envelope” of and abutters to Department of Transportation activities;
- Provides accurate inventories of natural assets to DEP, DOC and other environmental agencies
- Provides accurate location references for administration of Health, Public Utilities, and other regulatory agencies
- Accurately locates State ownership or interests in land

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<sup>7</sup> Some benefits components are compiled from Procedures and Standards for a Multipurpose Cadastre (NRC, 1983)

- Provides standardized database for public lands management
- Simplifies coordination among State and local offices
- Provides a database for monitoring objects of state concern, e.g. agricultural land use, development patterns adjacent to sensitive resources, or out-of-state ownership of Maine real estate
- Benefits comprehensive planning initiatives fundamentally by producing a common operating picture of land ownership and rights

#### **Benefits to Federal Government**

- Provides a flow of standardized data for updating federal maps and statistics
- Provides a database for monitoring objects of national concern, e.g., border configurations, use or foreign ownership of US real estate, inventories of vulnerable properties in areas prone to natural disasters
- Provides standardized records for managing federal assistance to local programs such as housing, community development and historic preservation

#### **Benefits to Non-government and Commercial Entities**

- Produces accurate inventories of land parcels and makes these freely available as true public records
- Formalizes accurate inventories of land parcels and makes these freely available as true public records
- Makes possible standard, high-accuracy maps that can be used for planning, engineering or economic development studies and initiatives
- Speeds up and assures compliance with governmental regulations
- Saves cost, effort and time in assessing siting considerations and the geography associated with permitting questions

#### **Benefits to Individuals**

- Provides faster and more dependable access for records impacting individual rights, especially land title
- Clarifies boundaries of areas restricted by zoning, wetland restrictions, pollution controls or natural hazard impacts
- Produces accurate maps that can be used for resolving private interests in land
- Improves efficiency of tax-supported government services
- Saves cost, effort and travel time in answering land ownership and property configuration questions
- Improves transparency of government, property rights, land access and regulatory specifics

## 5. STAKEHOLDER INVENTORIES

A large number of stakeholders stand to benefit by access to integrated and available land records data resources. These beneficiaries are not restricted to current data owners who do not have graphical access to their data (such as municipal assessors) but extend to state and federal agencies, land trusts, regional planning agencies, surveyors, assessors, appraisers, individual land owners and a multitude of commercial interests who can use these data in combination with other resources to add value to their business models.

An inventory of beneficiaries of an ILRIS is provided below.

### **Tier 1 – Data producers:**

- Municipalities (assessing and property maintenance departments)
- County Registries
- MRS/LURC

### **Tier 2 – Core data consumers:**

- Municipalities (outside of property maintenance departments)
- State agencies
- Federal agencies
- Non-government organizations: land trusts, regional planning agencies, etc.
- Private entities: title companies, developers, law firms, etc.
- NGOs: land trusts, regional planning agencies, etc.
- Individual property owners

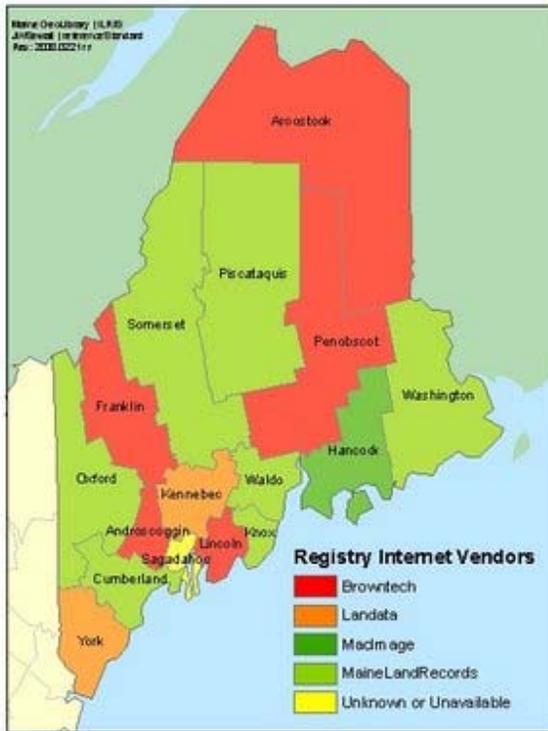
### **Tier 3 – Technical facilitators:**

- Surveyors: There are more than 675 surveyors listed as current members of the Maine Society of Land Surveyors<sup>8</sup>
- Registry web vendors: Currently four different vendors serve Deeds Registries in providing access to digital records via the internet. These include:
  - Browntech
  - Landata
  - Maclmage
  - MaineLand Records / ACS
- Future integration of land records to the registry level will necessarily involve agreements of one form or another with these vendors to maintain continuity of access.

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<sup>8</sup> link: <http://www.mslls.org/members.php>

Figure 5-1: Registry Web Vendor Areas of Coverage



- Mapping + GIS companies:  
Some of the mapping companies listed in Table 5-1 are no longer operational, but are editors-of-record in the list maintained by MRS. This is due to the fact that some of Maine's towns have not had map updates since the early 1970's. A small number of the listed firms (e.g., Aerial Survey & Photo, Sewall) are the identified parcel mapping firms for the vast bulk of the approximately 470 tracked municipalities.

**Table 5-1: Mapping Companies Serving Maine Municipalities**

Mapping Companies Serving Maine Municipalities	
45 North Cartographic	Laurence Amazeen
Acme Engineering & Design Inc.	Lee Doody
Aerial Survey & Photo, Inc.	Linda Alverson
Andrews & Lane Inc.	Michael Malesky
Austin Engineering	John Cahoon
Avis Air Maps	John Miller Eastern Mapping
Bridgham Engineering & Surveying Inc.	N.K.R. Planning Commission - Harold Dowse
C.K. Archer	NMDC
Cartographics	Northeast Forest Engineering
Central Maine Surveying	O'Donnell & Associates
CES	Patton Associates
CMC Associates	Paul Herrick
Coffin	Photoscience/Kappa Mapping
Coolong	Plisca & Day
Deslauriers	Portland Eng.
Dickey/Coolong	Prentiss & Carlisle Co.
Dirigo Forest Management	R.D. Scott
Donald Burhe	Raynold Holmes
Eastern Mapping Service	Richard Buxton
Elgin Turner	Sackett & Brake Survey, Inc.
Ernest Lewis	Sage Collins
Forrest Smart Surveyor	Scott Appraisal
GEO Systems	Seven Islands Land Company
GIS Mapping & Analysis	SLF, Inc.
GIS Solutions	Smart
Griffiths	Spatial Alternatives
Hamlin Associates, Inc.	Tarr Assessing Services
Hatfield Randall Associates	Town Engineer
Herbert Dickey	U.S. Army Corps. Of Eng.
Herrick & Salisbury	W B Hamlin
Hillier & Associates	Webber Surveying
In-House	Woodard & Curran and GIS Mapping & Analysis
JW Sewall Co.	Wright-Pierce

**Figure 5-2: Revaluation Companies Serving Maine Municipalities**

Revaluation Companies Serving Maine Municipalities	
ABC Assessors	Lona LaFrancis
Assessor (in house) & Mark Gibson	Lowe
Bell Assoc	Maine Assessment & Appraisal Services, Inc.
Bernard Williams	Maine Equalization Consultants
Board of Assessors	Marion Anderson
Board of Assessors & Murphy Appraisal Services	Mark J Gibson
Bowdoin Associates	Matthew E. Sturgis, CMA
Brenda (Hunnewell) Gove	Mayo/Cook
Brenda Gove	MBA Assessing
Brenda Hunnewell	ME Equalization Consultants
Carl Lowe	Meadow Brook Consulting
Carroll Willette	Merwin Welch
CLT	Michael Noble
CMC Assoc	MMC Inc
D & B Assessing	Murphy Appraisal Services, Inc.
D. Guy	Nancy Sprague
Dead River company	Nyberg - Purvis
Dickey Appraisal Services	O'Donnell & Associates
Edward Cyr	Parker Appraisal
Emerton	Partridge
Eugene A. Huskins	Patriot Properties
Garnet Robinson	Patten Appraisals
Gary Blanchette	Penquis Real Estate Services
Geaghan & Assoc.	Phillips & McGillicuddy
Gerald E. Daigle, CMA	Pleasant Ridge Plt. Board of Assessors
Gerald Thurlow	R.J.D. Appraisal
Gibson	Randy Tarr
Gove	RE-Tarr Appraisal/PP-Patton Appraisal
H. Dickey of Dickey Appraisal	Richard Main
Hamlin Associates, Inc	RJD Appraisal
Herbert Dickey	Robbins
Hunnewell	Robert B. Stevens
In house CMA	Robt Gingras/Parker Appraisal
In House	Roger Peppard
In House and Hamlin Assoc. on Commercial	Ruth E Birtz CMA
In House by Kevin McGillicuddy, CMA	Samson - Stevens
In House w/ Comm Consultant	Samson/Garrity
In House/Property Valuation Advisors	Sandra Hebert
In house-Ruth E. Birtz CMA	Scott Appraisal
Independent Appraisal	Selectmen/Assessors Per Tarr Assessing Services
J Douglas Guy CMA	Stanley Barrows
J. W. Sewall Co.	Tarr Associates
Jackie Robbins	Thompson
James A Phillips	Town
James Jurdak	Tyler Technology/Cole Layer Trumble
Joan Janeski	United Appraisal
John E O'Donnell & Assoc.	Van Tuinen
Kevin McGillicuddy	Vexman consulting
Knox Town Assessors	Vision Appraisal Technology
LaFrancis	W-3 Associates
Local Assessors	White Church Associates
	Whiteley

Revaluation companies, responsible for property appraisal across the State, are another stakeholder group that stands to benefit from the adoption of an ILRIS in Maine. A number of the firms listed in Table 5-2 utilize these data where they are available, but lack of dependable digital parcel data for many Maine municipalities adds significant cost to the revaluation process. Recent revaluations in towns with fewer than 2,500 parcels have cost upwards of \$125,000 to deliver.

- National and Regional Commercial Land Records Vendors

A number of firms in the private sector are actively creating parcel data sets. These data are essential to applications that require accurate geographic location for addressing properties and those that require detailed attributes about the ownership, use and value of properties. There is a robust market for each of these application areas, and a sample of some of the more prominent representatives of these vendors is listed in Table 5-3<sup>9</sup>.

**Table 5-3: Sampling of National and Regional Commercial Land Records Vendors**

Company	Product	Data Type
<i>improved address location and navigation firms</i>		
Navteq	Parcelboundaries	polygons
TeleAtlas	Address Points	points
First American	parcelPoint	points, polygons
GDR	Addresspoints	points
<i>parcel information and boundaries supply firms</i>		
Boundary Solutions	National Parcel Portal	polygons
ParcelQuest	ParcelQuest	polygons
Sidwell Maps	Digital Tax Maps	polygons
eMaps Plus	Digital Tax Maps	points
<i>land records and sales data firms</i>		
The Warren Group	RE Record Search	tables, points, polygons

**A SPECIAL NOTE OF THANKS**

The Strategic Planning and Integrated Land Records team of the GeoLibrary is grateful for all of the participation at interviews and forums throughout this data collection process by scores of individuals representing the full spectrum of public and private stakeholders inside and out of State.

A full list of these participants will be available as an appendix to the overall Strategic Plan document.

<sup>9</sup> Table modified and enhanced from National Land Parcel Data, NRC, 2007