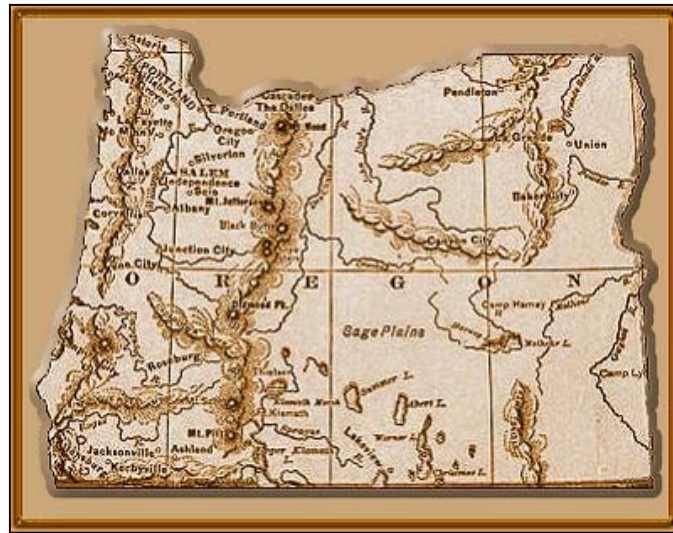


OREGON DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT  
**Information Resources Management Strategic Plan**  
**2005 – 2007 Biennium**  
July 2004



## Contents

I. Introduction and Purpose	
II. Oregon's Statewide Land Use Enterprise: The Framework for IT Planning	
A. Oregon's Land Use Program Mission Statement	3
B. Land Use Enterprise Goals and Objectives	3
C. Oregon's Land Use Enterprise Partners and Customers	3
III. Opportunities to Improve Enterprise Functions with Information Technologies	
A. DLCD Setting for Information Technology	9
B. Status of Information Technology in the Department	10
C. Improving DLCD's Capacity to Manage Information	13
IV. DLCD's Information Resource Management Strategic Plan	
A. Information Resource Management Goals And Objectives	19
B. Improving Enterprise Functions with Information Technology	20
C. Proposed Information Resource Management Improvements	20
D. Needed Resources	21



Oregon Department of Land Conservation and Development  
Lane Shetterly, Director

635 Capitol St. NE  
Suite 150  
Salem, OR 97301  
(503) 373-0050

<http://www.lcd.state.or.us/>

For additional information about this IRM Plan, contact  
Bob Bailey  
[bob.bailey@state.or.us](mailto:bob.bailey@state.or.us)

## I. Introduction and Purpose

Oregon’s statewide land use planning program is an ambitious initiative established by the 1973 Oregon Legislative Assembly to “assure the highest possible level of liveability [sic] in Oregon... .”<sup>1</sup> The program is based on the development and implementation of “properly prepared and coordinated comprehensive plans for cities and counties, regional areas and the state as a whole.”<sup>2</sup>

Today, after thirty years of developing the statewide system of local land use plans, Oregon’s land use program has matured at all levels. It can be referred to as an *enterprise*—a “systematic purposeful activity”—that involves many partners, customers, and stakeholders. Land use decisions have become increasingly complex as growth and development of Oregon’s communities continues. A critical function of the statewide land use enterprise is to ensure that land use decisions are made on the basis of sound and complete information.

The information technology interests of the Statewide Land Use Planning Program mirror those of the statewide Information Resources Management Enterprise.

The Department of Land Conservation and Development (DLCD) administers Oregon’s land use enterprise. But overall, the enterprise relies on the actions and decisions of nearly three hundred partners, including Oregon’s cities and counties, many other state agencies, and several federal agencies. Over the past decade, many of these partners have acquired information technologies to improve their access to information for decision-making, and to increase the quality of their services. It is clear that these technologies have immense potential to improve the state’s land use enterprise. To date, however, the DLCD has lagged far behind other partners and stakeholders in acquiring and employing information technology (IT) capacity.

Continued evolution of Oregon’s land use enterprise will be based on the ability of all partners and stakeholders to acquire, process, store, retrieve, analyze, synthesize, distribute, and apply information of widely differing kinds, involving widely different partners and their differing needs. The primary objective in investing in information resource management is to improve the quality of land use decisions and to monitor the effectiveness of the land use program in meeting

<sup>1</sup> 1973 Oregon Legislative Assembly, Senate Bill 100; codified as Oregon Revised Statutes 197.010(1).

<sup>2</sup> Ibid.

broad state objectives. A robust IT capacity within the Department is essential to improving the performance of the entire statewide land use enterprise.

This 2005-2007 Information Resource Management Strategic Plan provides a basis for the Department's investments in information technology to support the needs of the statewide land use program for the 2005–2007 biennium and beyond.

***Purposes of DLCD's Information Resource Management Strategic Plan***

- Provide a framework for the Department to implement and maintain a robust information technology capacity to support the statewide land use enterprise.
- Ensure that information technology within the Department and throughout the land use enterprise effectively supports the programmatic and business needs of the various partners.
- Enable efficient sharing of information and technology across the land use enterprise, among partners and with customers.
- Support proposed budget packages related to IT capacity within the land use enterprise.

## **II. Oregon's Statewide Land Use Enterprise: The Framework for IT Planning**

This section provides a summary of important basic information about Oregon's Statewide Land Use Planning Program and the many partners involved in its implementation. The land use program is the context for DLCD's Information Technology Strategic Planning.

### **A. OREGON'S LAND USE PROGRAM MISSION STATEMENT**

*Support all program partners in creating and implementing comprehensive plans that address and balance the statewide planning goals, the vision of citizens, and the interests of local, state, federal and tribal governments.*

### **B. LAND USE ENTERPRISE GOALS AND OBJECTIVES**

#### **1. Sustainability Goals**

- Promote sustainable development
- Streamline the state land use planning program
- Secure Oregon's natural resource legacy
- Implement internal sustainability practices

#### **2. Operational Goals**

- Optimize development decisions and provide buildable lands
- Make community transportation systems work better
- Protect farm and forest resources
- Streamline DLCD land use planning activities
- Improve public involvement and access to land use planning information

#### **3. Statewide Land Use Planning Goals**

The land use enterprise is based on nineteen Statewide Planning Goals, which set standards for all city and county land use plans and for decisions by state and federal agencies. These goals require that land use plans and decisions be supported by a wide variety of information, much of it generated by entities other than the decision-maker. Oregon's Statewide Planning Goals address the following:

Goal 1: Citizen Involvement	Goal 11: Public Facilities and Services
Goal 2: Land Use Planning	Goal 12: Transportation
Goal 3: Agricultural Lands	Goal 13: Energy Conservation
Goal 4: Forest Lands	Goal 14: Urban Growth
Goal 5: Open Space, Natural Resources	Goal 15: Willamette River Greenway
Goal 6: Air, Water, Land Quality	Goal 16: Estuarine Resources
Goal 7: Natural Disasters & Hazards	Goal 17: Coastal Shorelands
Goal 8: Recreational Needs	Goal 18: Beaches and Dunes
Goal 9: Economic Development	Goal 19: Ocean Resources
Goal 10: Housing	

### **C. OREGON'S LAND USE ENTERPRISE PARTNERS AND CUSTOMERS**

Throughout the statewide land use enterprise, many partners and stakeholders make development and conservation decisions every day. The interactions of these entities via the sharing of information can be conceived of as a distributed system. The quality of the interactions of these many partners, stakeholders, and customers often relies on sharing of information across agency

and jurisdictional lines, collaboration among local governments and business partners, and innovations in business practices among state agencies. The Department of Land Conservation and Development interacts with many, if not most of these enterprise partners, and has an important role in facilitating the flow and application of land use and related information within this network. However, the Department has lacked the IT resources or capacity to fulfill this role, except in the coastal zone, where federal funds have been available to support the development and use of IT in land use planning.

Partners and customers in the land use enterprise include:

**1. Citizens**

Citizens are empowered by Oregon law to participate in all phases of local and state land use planning. Under Statewide Planning Goal 1, citizens are entitled to readily accessible and

Community development decisions are fundamentally about applying relevant data and information to land use problems. The quality, accuracy, and accessibility of information can make a big difference in the effect—and therefore the legacy—of those decisions.

understandable information about land use plans and land use decisions. Likewise, citizens are entitled to provide information to local and state land-use decision-makers as part of the decision-making process. Thus, citizen-to-government and government-to-citizen information sharing is essential for the beneficial operation of the Land Use Enterprise.

**2. Local Governments**

Oregon's cities and counties implement the land use program through local land use plans, zoning ordinances, development ordinances, design review standards, and other regulations. Cities and counties depend on spatially explicit information about land use and land cover and other information to update and implement their local plans. Local governments rely on information that is generated and maintained by state and federal agencies and, in return, often provide information about local land use to state agencies. Local

governments often broker information from other sources, and thus require assurance as to its accuracy and reliability.

**3. The Oregon Legislature**

The legislature maintains oversight authority for the land use enterprise. The legislature's fundamental role in the enterprise includes program assessments, fiscal appropriations, performance and budget audits, modifications of law and policy, and creation of additional program components. In addition, the Legislature has strong budgetary and policy interests in strategic development and application of IT to support state programs and has established the Joint Committee on Information Management & Technology.

**4. Business and Development Interests**

Private business and development interests create the economic conditions that promote and maintain livable communities, support education and other essential public services, and enable communities to participate in the benefits of technology and economic prosperity. Many Oregon businesses are land-intensive, and thus require access to information, some spatially explicit and/or time-sensitive, to make decisions to meet business objectives.

## 5. Agriculture and Natural Resource-Based Economies

Natural resource-based industries continue to be pillars of Oregon's economy and way of life, particularly in rural areas. Protecting these critical economic resources from the effects of urban and suburban sprawl was a driving force in establishing Oregon's land use program, and continues to be a key consideration in decisions about urban growth, transportation, housing, and development. Resource-based economic sectors that have a stake in the land use enterprise include agriculture, forestry, mineral and aggregates, commercial fisheries, aquaculture, tourism, and recreation.

## 6. Housing and Development Economies

A key function of the land use enterprise is to ensure that communities have a range of housing types and costs available to meet market choice and to provide shelter for a growing population. Similarly, ensuring that adequate lands are available for commercial and other business development is a crucial land-use enterprise function.

## 7. State Agencies

State agencies have distinct responsibilities and authorities for activities or issues that have or can have bearing on land use and development. Primary state agency partners and their land use enterprise interests include:

- Department of Agriculture: Use, protection, and condition of agricultural lands; conversion to other uses; aquaculture management.
- Economic and Community Development Department: Business recruitment; grants for infrastructure planning and development, buildable land inventories.
- Department of Fish and Wildlife: Fish and wildlife habitat protection and restoration, stream conditions, wetlands, watershed restoration.
- Department of Forestry: Forest land management, watershed and stream conditions, forest road management, water quality management.
- Department of Geology and Mineral Industries: Natural hazards such as landslides, floods, earthquakes and tsunamis ; aggregate management, mined land reclamation.
- Parks and Recreation Department: Park and recreation planning and management, beach access.
- Revenue Department: Land valuation, land division, and land use.
- Department of State Lands: Wetland management, submerged and submersible land management, waterway leasing, forest and rangeland management.
- Department of Transportation: Transportation planning and system construction, land use, access management, airport planning and development, public transportation planning.

Other state agencies that have or can have information bearing on land use and development include:

- Department of Administrative Services: Agency budget and management, Information Resources Management Division, State Chief Information Officer.
- Department of Consumer and Business Services: Regulatory streamlining, e-government, building and development codes, etc.
- Department of Employment: Labor statistics, employment and training.

- Office of the Governor: Governor's Economic Revitalization Team: integrative problem-solving and support for land use and development situations.
- Housing and Community Services Department: Housing distribution and condition, socio-demographic information.
- Department of Human Services, Health Services Division: Beach water quality monitoring, environmental contributors to disease outbreaks.
- State Marine Board: Marina and boating facilities planning and assessment.
- Military Department: Exercises and facility planning, compatibility with adjacent uses.
- Oregon Watershed Enhancement Board: Implementation of Oregon Plan for Salmon and Watersheds, watershed health monitoring and assessments, grant administration for habitat restoration activities, etc.
- Department of Environmental Quality: Water quality management planning, and permits affecting the quality of waters of the state.

## **8. Federal Agencies**

Federal agencies play a major role in the land use enterprise because of extensive land ownership and management authorities. More than 53 percent of the state's land area is owned and managed by federal agencies. Some federal agencies have significant regulatory or resource-management programs that influence state and local land planning and management programs, and affect private business decisions. Federal interest in the enterprise is somewhat higher in the coastal zone, where federal funds have been passed through to local governments for planning and coastal resource management. Federal agencies and some of their land-related responsibilities include

- U.S. Forest Service, USFS: Management of National Forests, wilderness, watersheds.
- U.S. Bureau of Land Management, BLM: Management of range and forest lands and coastal sites.
- U.S. Fish and Wildlife Service, USFWS: Management of national wildlife refuges.
- U.S. Environmental Protection Agency, EPA: Superfund sites, dredged material disposal, environmental assessments, estuarine research.
- Federal Emergency Management Administration, FEMA: Flood plain and floodway mapping, landslide and hazard areas, disaster and emergency preparedness.
- National Oceanic and Atmospheric Administration, NOAA: Fisheries management, coastal zone management, National Estuarine Research Reserves, endangered species protection.
- U.S. Army Corps of Engineers, USACE: Navigational structures, dredging, dam construction and operation, dredged material management, water management.
- U.S. Bureau of Reclamation, USBOR: Water management, dam operation.
- U.S. Geological Survey, USGS: Geologic mapping, natural resource mapping and assessments.

➤ **Federal Interests in the Coastal Zone**

Federal funding supports a wide range of activities within Oregon’s Coastal Management Program (OCMP), administered by the Department of Land Conservation and Development. Federal funding has enabled the OCMP to acquire, develop, and apply a significantly higher level of IT capacity and service than in parts of the Department supported by state general funds. Coastal funds have been used to develop local GIS capacity, map coastal hazards, and to develop the web-based Oregon Coastal Atlas described in section III.B.3.

**9. Tribal Governments**

Oregon’s tribal governments are increasingly assuming management responsibility for lands and resources and are carrying out a variety of community development activities on these lands. In many cases, tribal land use plans or activities can affect the plans of nearby local governments.

Many tribal governments, such as the Confederated Tribes of Siletz and the Coquille Indian Tribes, have acquired significant IT capacity to facilitate land use and development decisions and resource management

**10. Ports and Special Districts**

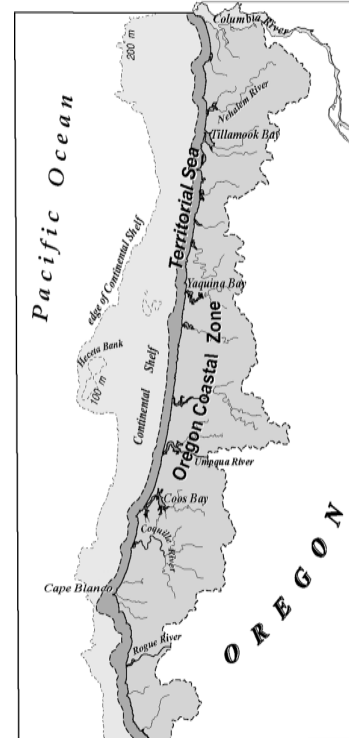
Oregon’s 23 port districts are local governments that serve both public and private purposes. Ports own land to support a variety of economic enterprises, most often associated with maritime industries, shipping, and navigation along the Oregon coast and the Columbia River. Some ports own and manage airports and industrial parks. Special districts exist to provide a wide range of public services such as libraries, sewer and water services, streetlights, solid waste management, fire protection and other services. The plans and authorities of these districts are all coordinated through county or city comprehensive plans and ordinances.

**11. Higher Education**

Oregon’s colleges and universities have long been partners in the statewide land use-planning enterprise. A number of research programs at the University of Oregon, Oregon State University, and Portland State University provide important data and information for state land use programs and provide essential research services to support public and private programs. Oregon State University serves the state as a federal geospatial data clearing house.

**12. K-12 Education**

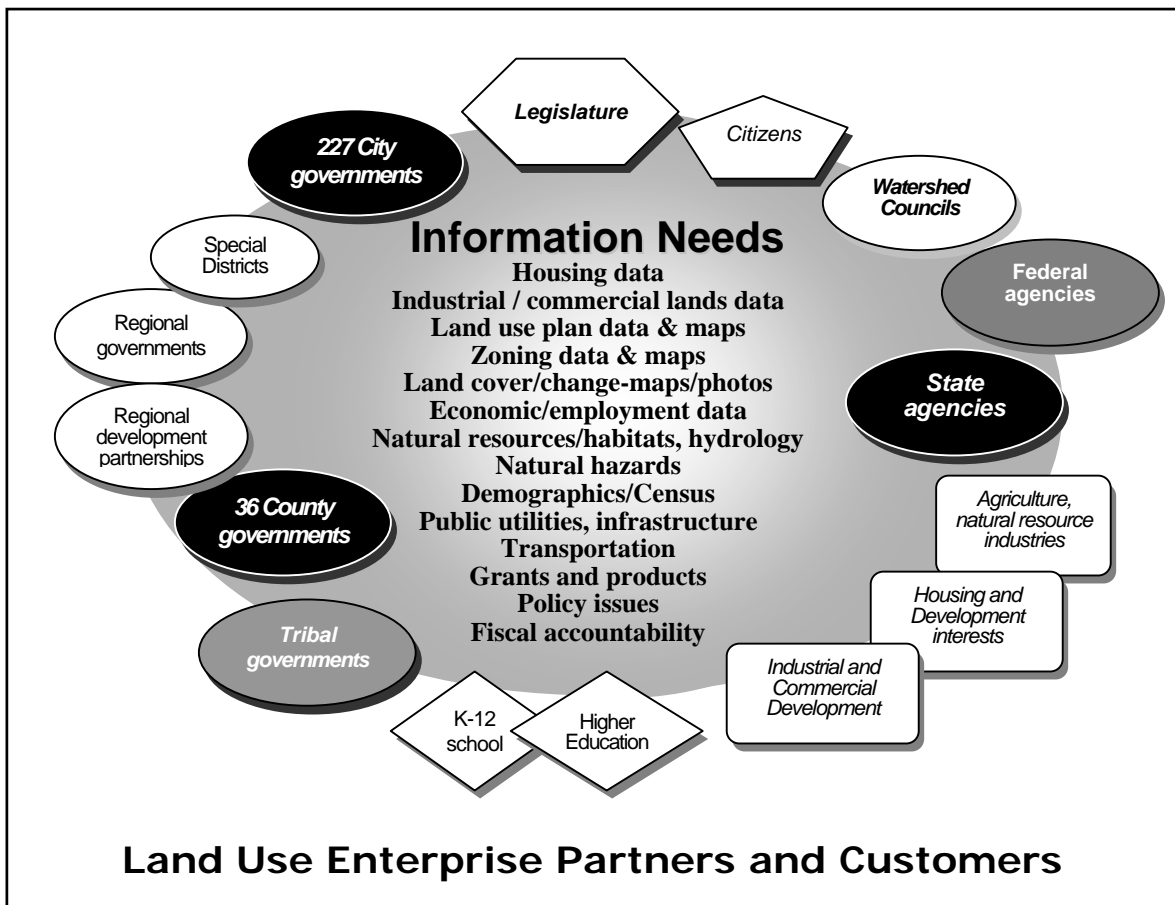
K-12 schools throughout Oregon seek information about communities, land and natural resources, and governmental programs via the Internet. Such information is an important part of the Oregon Coastal Atlas served by the Department.



The statewide land use program qualifies for federal funding within the “Coastal Zone.” Federal funds are used to support the planning activities of cities, counties, and state agencies in the coastal zone. The DLCDC uses some of these funds to support IT-related projects.

### 13. Watershed Councils

Watershed councils are the backbone of The Oregon Plan for Salmon and Watersheds. These councils have no regulatory authority but provide a forum for landowners, agencies, and citizens to work together to restore and protect water quality and habitat conditions in watersheds. The watershed councils rely on information about watershed conditions, land ownership, roads and bridges, stream conditions, and other features to develop and carry out programs. This information is often most usefully displayed in mapped form from GIS. Other locally-organized land trusts and conservancies provide similar focus for acquiring, protecting, and managing important habitats, recreational areas, housing, and other land-based features.



### **III. Opportunities to Improve Enterprise Functions With Information Technologies**

This section describes how information technologies have been used in the department and how they could be applied in the future to improve the execution of its mission.

Information is the currency that makes the land use enterprise work. Information about land uses and conditions, parcel zoning, transportation access, and development capabilities and restrictions is necessary to support local planning and development decisions and to reduce the risk of development investments. The same information aggregated at the regional or statewide level will support assessments of the overall statewide land use program, and will allow analyses of such things as the quantity of vacant industrial lands, the rate of farmland conversion, and the effect of specific changes in Oregon's land use laws or regulations. Oregon's past investment in land use planning has yielded a wealth of information about land, land use, and land use capability. However, at this point, access to that wealth of information is spotty and uneven.

*Access to Oregon's land use information can be a significant advantage to both local communities and the state in trying to foster or promote investment while maintaining livability by managing development decisions.*

The entire thrust of the Department's information technology strategy is to build a capacity for making land use and related information available to, and useful for, all enterprise partners, stakeholders, and customers.

In order to preserve the advantages and increase the responsiveness of Oregon's land use enterprise, DLCD must be able to make significant investments in information technologies, particularly in GIS.

#### **A. DLCD SETTING FOR INFORMATION TECHNOLOGY**

##### **1. DLCD's Functional Responsibilities**

DLCD is a principal coordinator and facilitator in the network of participants in the land use enterprise. The department serves Oregon's citizens, businesses, cities, counties, and state agencies and has a significant interest in facilitating the use of land use information by *all* program partners and customers. To do so, the Department has five functional responsibilities, all of which could be improved by utilizing information technology.

DLCD's functional responsibilities include the following services:

- Information repository and provider of statewide land use and related planning information, used to support the business objectives of other partners in the statewide land use program.
- Archivist for local land use plans and ordinances, aerial photos, maps, and other information related to planning and development.
- Provide policy and implementation support for planning actions of local jurisdictions, including revisions to local plans and appeals of local land use decisions.

- Data synthesizer and analyst of complex local, regional, and statewide land use issues involving several local, state, and federal interests.
- Manager of state funds for grants to local governments for local plan improvements and implementation of local plans; and of federal coastal and transportation grant funds.

## **2. Managing Departmental Operations**

In order to fulfill its functional responsibilities within the land use enterprise, the Department itself must remain functional. Maintaining departmental operations relies on information technology, resources, and practices, including the following:

- Build and maintain an Intranet to streamline agency functions.
- Provide reliable communication capabilities for field offices.
- Manage local government grants and work products.
- Manage federal grants and work products.
- Respond to requests for information from customers and partners.
- Aggregate data on land use statewide.
- Synthesize and analyze information about land use change at the local, regional, and state level.
- Analyze the effect of changes to land use laws.
- Monitor local plan and periodic review status.
- Mapping and visualizing land use and other geospatial information.
- Monitor vendor contracting and performance.
- Manage all IT assets, including lifecycle planning and updating.
- Coordinate data and information exchange among partner state and federal agencies.
- Provide access to information archives throughout the Department.

### **B. STATUS OF INFORMATION TECHNOLOGY IN THE DEPARTMENT**

Information technology has developed very rapidly over the past decade, which is less than half the time period in which Oregon's land use program developed and matured. Thus, much of the Department's programmatic and policy emphasis was developed prior to the advent of desktop or agency-wide computer systems and information technologies in wide use today. During the period in which information technologies were transforming the land use planning enterprise, most of the Department's limited investment in IT provided funding, expertise, and technical assistance to local governments. Budget limitations and the pressing need to approve local plans restricted the Department's investment in its own IT capacity. However, as time passes, continued under-investments in the department's own IT capacity will increasingly corrode the program's accountability, reduce customer service, affect risk management, and affect operational efficiency and innovation. Lack of IT capacity could affect the department's ability to contract for the acquisition of technical products for local governments and other state agencies.

Oregon's investment in the land use enterprise has produced a wealth of data and information that can be used to Oregon's advantage. Investments in information technology—specifically, in geographic information systems (GIS)—to aggregate, analyze, utilize, and provide access to that information will give the state and its partners a competitive edge in their ability to meet their business needs and land-related performance objectives. Significantly, the department's GIS capabilities have largely resulted from the use of federal grants and funds in the Coastal Zone.

### **1. IT Staff Capacity**

If IT investment is calculated in terms of staff capacity, IT support in the Department has been significantly under-capitalized. A 2003 study by the Gartner Group showed the average IT staffing ratios for federal, state and local governments were 1:12, 1:14, and 1:17 respectively. Within the land use field, which relies heavily on data and information, the ratios may be even higher. By contrast, the Department's General Fund-supported IT staff-to-employee ratio has ranged between 1:35 and 1:50; the present level is about in the middle of that range. *Significantly, the higher ratio has been achieved by cutbacks in non-IT staff, rather than by increasing the investment in information technology or IT staff.* Moreover, staff reductions have not reduced the department's workload.

It is generally accepted that efficiency improvements in government have been largely achieved by investment in information technology—by providing fewer staff with greater access to information. Given its program responsibilities and fiscal constraints, DLCDC has not been able to make such efficiency investments. The historic inadequacy of having one IT staff position located in Salem has been compounded by opening field offices—each of which has IT needs—in Waldport, Eugene, Central Point, Bend, and Portland. Another office is planned for La Grande.

### **2. Historic IT Budgets**

Historically, the Department has spent less than one percent of its General Fund budget on IT. Budget information for the past two biennia is typical.

➤ **2001-2003: (< 1 %)**

Expenditures agency-wide including hardware, software and expendable property:

- Federal Fund: \$57,902 approx.
- General Fund: \$62,692 approx.
- Total IT: \$120,594 approx.

➤ **2003-2005: (< 1 %)**

Expenditure agency-wide including hardware, software and expendable property:

- Federal Fund: \$46,918
- General Fund: \$50,505
- Total IT: \$97,423

(Reduction in budget due to overall unsustainable reduction of approximately 63% in discretionary supplies/services budget for the entire agency as a result of the special sessions.)

### 3. Coastal Information Technology Initiatives

As the administrator of the Oregon Coastal Management Program, DLCD receives federal funding to use in a variety of ways to manage the use and conservation of coastal resources. While General Fund IT investment in the department has provided for little more than the ability to maintain a computer network for the entire department, the coastal program, using federal funds, has been able to make greater use of information technologies. These funds have been used in part to support one position in DLCD's Ocean and Coastal Services Division that is fully devoted to information technology development. With assistance from the National Science Foundation, Oregon State University, and other coastal program partners, the Coastal Program's primary initiative has been to develop the robust, easy-to-use Oregon Coastal Atlas, which is described below.

In addition, federal coastal funds have been used to make significant investments in geographic information system development at the local government level. *Local GIS development is and will continue to be the foundation of enterprise-wide information system development.* Locally-generated and –managed data complement and vastly improve the utility of data sets managed by state agencies.

While federal program requirements limit the use of coastal funds to areas inside the Oregon Coastal Zone, which is essentially the area west of the crest of the Coast Range Mountains, the Atlas provides a template for IT investments in the land use enterprise in other areas of the state.

#### ➤ **The Oregon Coastal Atlas ([www.coastalatlus.net](http://www.coastalatlus.net))**

The Oregon Coastal Atlas is a premier example of a cutting edge information technology tool. It is an innovative, on-line data depot and geospatial information service created as a pilot project using federal and other funds approved by the 1999 legislature. Startup for the Atlas was supported by the NOAA Coastal Services Center (<http://www.csc.noaa.gov/>), and was further supported by the National Science Foundation and the U.S. Geological Survey through a cooperative agreement with Oregon State University.

The Atlas can be used to inform decision-making by local governments, state agencies, federal agencies, and the private sector. It contains background information on coastal systems; provides access to interactive mapping and geospatial analysis tools, and allows

various planning and natural resource data sets relating to coastal zone management to be downloaded. Atlas user tracking showed over one million hits in its first year of full public



service. It is widely used by local and state agencies to support land use decisions, to prepare and review permits, and to assess impacts of actions on the coastal environment.

➤ **Local GIS Capacity Development**

Over the last two years, the OCMP provided nearly \$500,000 in federal funds to coastal jurisdictions to support the development of local GIS capacity. Local GIS development includes such tasks as:

- Purchase and installation of GIS software
- Purchase of GIS workstation
- Training in GIS
- Development of GIS data layers for local planning
- Conversion of paper maps to digital format

Coastal local governments—including the City of Bandon, Lincoln County, the City of Gold Beach, and Tillamook County—have developed GIS capacity. While the coastal program cannot fund projects outside the Coastal Zone, the department will be able to capitalize on the GIS expertise in the coastal division as it invests in GIS enterprise-wide.

**C. IMPROVING DLCD’S CAPACITY TO MANAGE INFORMATION**

Improvements to the functionality of the Department, the land use program, and the overall networked enterprise will depend on investments in information technology to fill the slowly increasing gap between Department workload and staffing levels, and to bring the Department to a level of parity with the IT needs and capacities of the statewide land use enterprise. *In short, in order to preserve the advantages and increase the responsiveness of Oregon’s land use program, the department must be able to make significant investments in information technologies.* One of the most important improvements will be to bring the department’s existing databases up to current standards of efficiency, functionality, and access.

The Department’s IT needs can be clustered into three areas: Infrastructure, Operations, and Geographic Information Systems (GIS).

**1. Infrastructure Needs**

The Department’s IT infrastructure capacity is significantly below the level needed to achieve land use planning enterprise goals and to meet service needs within and external to the agency. Infrastructure consists of computer hardware, software, and staff expertise.

**a. Hardware**

All DLCD staff are equipped with desktop computers. In the Salem office, these are linked through a Local Area Network server. DLCD’s Portland office also has a LAN, which is linked to Salem by the DAS T-1 line. The department generally tries to adhere to the hardware replacement cycle recommended by the industry, but budget cuts during the 2001-2003 biennium forced the department to defer scheduled upgrades. Significant replacement difficulties and expense will arise in the 2005-2007 biennium and beyond if upgrades are not maintained.

**b. Software**

Not all the department’s workstations have the same suite of software applications. Some workstations and their operating systems are obsolete. System upgrades will involve the purchase of new software licenses.

**c. Staffing**

The agency currently has only one position to manage all the IT resources, issues, and service problems of about 45 staff located in Salem and in six field offices. This is a reduction from 1.5 FTE for 60 staff in four field offices in 2001. As noted previously, this is an IT staffing ratio far below the standard for government functionality. In order to meet IT service needs, the Department contracts with a private IT consulting firm for most maintenance and trouble-shooting for server and e-mail software. This arrangement, while enabling the Department to meet basic service requirements in the Salem office, is expensive and does not provide timely, integrative trouble-shooting to meet immediate service needs of staff or to install and integrate new software and hardware that would improve service.

**2. Operation Needs**

Agency operations include grant administration, tracking and recording changes to local plans; managing agency assets, record keeping, and maintaining fiscal and programmatic accountability. Lack of IT capacity prevents the Department from optimizing record-keeping, storing and using land use data, and assembling and integrating basic information about program performance over time to support legislative and Executive-level assessments and evaluation.

**a. Asset Management**

The Department does not yet have an IT Asset Management program pursuant to DAS/IRM Policy 107-004-010, dated April 20, 2004. The Department intends to develop, adopt, and implement such a program for acquiring, deploying, tracking/managing, and disposing of IT-related assets. The program will include all present and future forms of computer hardware, software, and related items used for business data processing, office automation, and access to information about land use and local land use plans.

**b. Record-keeping**

The Department must keep pace with digital records and communication requirements established by DAS. The Department is slowly but steadily moving its systems to digital format. For instance, the Department installed electronic timesheet and electronic leave-request programs a few years ago to enhance the agency's ability to assign staff costs to program functions.

**c. Tracking Land Use and Land Use Change**

Perhaps the most glaring need is for IT capacity to provide statewide data or information on land use to the Legislature, local governments, the Governor, other state agencies, or private-sector interests. This lack of capacity exists in three categories:

- 1. Program performance:* The performance of the statewide planning program can only be assessed over time through analysis of data that represent the effects of the enterprise "on the ground." Yet, absent specific legislative directives, the Department does not have the IT capacity or staff to conduct such performance assessments. The Department has, at the request of the legislature, compiled and analyzed data to assess the performance of certain elements of the program, but each project has had to start anew in acquiring and analyzing data involving farm and forest land use issues, plan amendments, and the use of rural lands. The resulting databases are neither

integrated nor widely accessible and the data for individual projects have not been able to be maintained after the completion of each analysis. For instance, a database to track periodic review data was created, but has not been implemented due to lack of staff capacity for data migration and training. Periodic review and permit data are maintained in spreadsheets, and are therefore difficult to access and evaluate. None of these projects have resulted in an on-going ability to analyze land use data statewide.

2. *Local land use plans*: The Department maintains a library of more than two decades' worth of paper documents consisting of the land use plans, ordinances, amendments, and supporting material of all cities and counties in the state. No two plans are alike in format, content, or organization. Finding information in any single plan about a particular land use issue is time-consuming and difficult. Land use data contained in this library is virtually unavailable. Converting these paper documents to digital format and embedding key data into digital databases is highly desirable. In addition, many local governments have made the transition from paper to digital format for planning documents and databases. Because the Department lacks commensurate IT capacity, accessing and archiving these documents and data presents a significant challenge for the Department. Finally, the department maintains an extensive database on local land use plan changes that could, with considerable effort, be upgraded to allow such changes to be shown on maps of varying scales.

3. *Policy development*: Similarly, the record of policy development and application for the 19 statewide planning goals exists largely in paper format that can be tracked only with difficulty. Legislative changes, court decisions, administrative rules, and decisions by the Land Conservation and Development Commission have all affected the content and application of statewide planning goals and policies. Background papers, staff reports, and memoranda accompany many of these policy decision documents. Because these records exist in paper format in files known only to a few staff, there is an increasing need to create a policy database to support long-term policy development and implementation.

A useful model for such a database exists in the Department's Coastal Management Program, which used federal funding to develop and implement a coastal policy database, using Access software. The coastal policy database is an archive and retrieval system for maintaining the "institutional memory" of policy development, decisions, and application.

#### **d. Managing Grants and Contracts**

The Department administers several grant assistance programs, enters into intergovernmental agreements with other state agencies, and acquires professional services through contracts. Records of grants, agreements, and contracts, and their products, are primarily in paper form or in non-database electronic text documents. These records and grant products have not been assembled into a useful and interactive database to support grants and contracts management. The Department's Coastal Management Program is currently using federal funds to create a database to assist in managing federally funded grants to coastal local governments. No general funds are available to expand this database agency-wide.

Departmental functions, policies, procedures, and communications can be vastly streamlined and coordinated through the development of an effective Intranet. Intranets facilitate and enhance the functions of the agency and provide agency policy and procedures, document-archiving and retrieval, e-mail filing, calendar, project management and tracking, and other electronic program management functions. The present form of the department's Intranet does not provide access to any information about local plans or land use.

### **3. Using Geographic Information Systems (GIS) to Manage Growth**

Oregon's statewide land use enterprise is fundamentally about applying policy and management decisions to land, land use, and resources in specific geographic situations. Historically, paper maps have been the principal means of recording and displaying geographic information needed to support these decisions. However, over the past two decades computerized Geographic Information Systems have become powerful and relatively inexpensive tools for analyzing data and information to arrive at and support decisions about managing land and other resources. The importance of GIS is expressed in Executive Order 00-02, Establishing the Oregon Geographic Information Council:

*“Geographic information about the character and location of the state's human, economic, natural, and infrastructure resources, and the activities that affect and are affected by those resources is essential to all levels of government in the State of Oregon. Mapping land records and geographic information systems (GIS) are the primary tools for analyzing this information.”<sup>3</sup>*

The *Business Case for Statewide GIS Coordination*<sup>4</sup> also provides a compelling case for the Department to acquire, perfect, and implement GIS capacity in support of the statewide land use enterprise.

Despite the power and potential of GIS, the rapid increases in performance and availability, and decreases in relative costs, *the Department does not have GIS capability*. As such, it is unable to either achieve most of the goals in the Oregon Geographic Information Council's *Strategic Vision*, or to carry out the *Oregon Strategic Plan for Geographic Information Management*.<sup>5</sup>

The use of information technologies to help in managing growth is spotty, and is developing jurisdiction by jurisdiction. Such spotty development largely defeats what is probably the most powerful capacity of geographic information systems—that is, to take a broader view and to compile information from many sources and data generators. *Some investment in GIS capacity within the Department is necessary in order to maintain the competitive advantage that comes from having a statewide comprehensive land use planning system*. DLCD's IT strategy essentially focuses on the development of its own GIS capability and a consistent GIS capability among its principal partners. Development of GIS enterprise-wide will rely heavily on the use of data that are developed in various capacities at the local level. Finally, consistent development of GIS capacity will allow for the broader use of valuable GIS data sets developed by state agencies.

---

<sup>3</sup> Executive Order NO. EO-00-02 Establishing the Oregon Geographic Information Council

<sup>4</sup> Oregon Geographic Information Council, April 2004

<sup>5</sup> Available at <http://www.gis.state.or.us/docs/2001FinalGISPlan.doc>.

The Department's interests in GIS and geospatial data include:

**a. Using Locally-Generated Geospatial Data**

Local jurisdictions generate geospatial data about local land use, zoning, and jurisdictional boundaries to support local land use planning and management activities. The Department funds the acquisition of these data through grants, and receives copies of these data in the form of plan text and, principally, maps. Historically, maps have been delivered on paper but are increasingly being developed and archived in digital form. The data are stored in a library as grant products, but due to IT limitations cannot be incorporated into databases or files that are available at staff workstations or outside the agency. It is estimated that 70 to 80 percent of planning-related data have a geographic component. The Department has virtually no capability to utilize these digital geospatial data resources or to share them with enterprise partners and customers.

**b. Geospatial Data Creation and Management**

Despite lack of a statewide GIS capacity, the agency has assisted in the creation of GIS data sets widely used by state agencies and local jurisdictions. GIS initiatives of particular importance to the Department are:

1. *Statewide Land Use Database:* In the mid-1980's, the Department synthesized local zoning information to create a series of maps showing the generalized pattern of zoning in the state. These maps were digitized by the State Service Center for GIS about ten years after they were first developed. This data layer has not been updated in nearly 20 years, during which time the state population increased by more than 500,000, and countless small changes have been made to local comprehensive plan designations to accommodate growth and development. This mid-1980s zoning data remains the only complete statewide coverage of land use classifications.

Currently, several counties are creating GIS data sets of local zoning, and the Oregon Geographic Information Council is working to ensure those data can be merged into a statewide data set. A new statewide zoning data set would be extremely valuable to the land use enterprise and its customers. However, the department lacks the capacity to participate in, take advantage of, or direct such an initiative.

2. *Farm-Forest Database:* Under state law (ORS 197.065) the Department collects data from counties regarding land use decisions that affect farm or forest lands as depicted in local plans. Often these conversions are made due to expansion of an urban growth boundary. The data collected include geospatial reference data. Yet the Department has no capacity to display these data in a geographic information system, or to analyze them in conjunction with other information.

3. *Rural Lands Database:* In 2000, the Department created a Rural Lands Database with a special appropriation from the Oregon Legislature. This database is a collection of GIS data for each county and is intended to assist in identifying special-purpose lands. However, these data are only available for distribution on CD-ROM and cannot be accessed via the Internet or by agency staff because of lack of GIS capacity to use these data.

4. *Urban Growth Boundary Database:* The Oregon Department of Transportation maintains a data set of urban growth boundaries (UGBs) that was updated in 2003 by

the Department of Employment under contract from the Oregon Geographic Information Council using data from the DLCD plan library. However, despite responsibilities for monitoring local government UGBs, the Department is unable to verify, maintain, update, utilize, or distribute these data due to lack of IT capacity.

### **5. Flood Hazard Mapping**

As Oregon's floodplain management agency, DLCD works in partnership with the Federal Emergency Management Administration (FEMA) to provide maps and other flood hazard information to local governments to support land use and development decisions. State agencies use these maps and information to make capital investment decisions, to plan for natural disasters, to respond to emergencies, and to review permit applications. These critical functions are essential for reducing the loss of life and property due to floods and other natural disasters. The accuracy of flood maps is essential to the mission of reducing risk.

Congress has approved a national initiative and funding to modernize flood hazard maps, which is high priority for FEMA. Modernization will significantly improve the currency, accuracy, quality, and utility of flood hazard information used by local governments, state agencies, realtors, developers, insurance carriers, and private individuals for making investment, regulatory, and emergency response decisions.

## IV. DLCD's Information Resource Management Strategic Plan

### A. INFORMATION RESOURCE MANAGEMENT GOALS AND OBJECTIVES

#### 1. IRM Goal in DLCD Strategic Plan:

*Increase the percentage of DLCD core activities that generate and make available data in a form and a time frame that is beneficial to staff and stakeholders.*

#### 2. IRM Objectives

##### a. Improve Citizen Productivity (citizen to government)

- Increase the accessibility and availability of information and information services to citizens; and
- Provide an Internet portal where citizens can obtain information about the land, the community, and the planning program.

##### b. Improve Business Infrastructure (business to government)

- Provide timely, easy access to important information about state and local planning requirements;
- Streamline land-use planning regulatory transactions via electronic transaction services; and
- Enhance contracting and granting procedures.

##### c. Improve Government Efficiency (government to government)

- Facilitate collaboration, coordination, and system integration among state agencies and local governments in using technology to operate more efficiently and effectively.
- Support effective communication and information transfer among state agencies, federal agencies, tribal governments, and local and regional governments.

DLCD can improve the delivery of land use planning services statewide by making investments in information system capabilities.

#### 3. Department Operational Objectives

##### a. Infrastructure

- Develop and maintain a fully functional information resources infrastructure.

##### b. Life-cycle

- Manage IT infrastructure consistent with the life-cycle and asset-management standards of DAS IRMD.

##### c. Databases

- Create robust data bases about land use, land use plans, grants, and local plan status, using data held by the Department and local governments.
- Facilitate appropriate access to databases for all potential customers and partners.

**d. Data Products**

- Consolidate, coordinate, and distribute planning-related data, with an emphasis on geo-spatial data.
- Develop and employ web-based information delivery and access systems, in order to provide geo-spatial and other information on demand.

**e. Planning**

- Meet Statewide IT Policies as adopted by the State CIO, with emphasis on 1.6: Governance and Control Objectives identified as published in the 3rd Edition (July 2000) of Control Objectives for Information Technology (COBIT) <http://www.isaca.org>.

**f. Accountability**

- Link and account for internal agency programs and activities.

**g. Program Evaluation**

- Evaluate the effectiveness of the state's planning program and local land use actions.

**h. Technical Capacity**

- Maintain highest standards of technical capacity at all organizational levels through recruitment, training, and skill building.

**B. IMPROVING ENTERPRISE FUNCTIONS WITH INFORMATION TECHNOLOGY**

Throughout the preceding sections of this plan, several actions have been identified that would improve the Department's ability to fulfill its role in the statewide land use enterprise. DLCD is uniquely positioned to be able to improve the delivery of land use planning services statewide by making investments in information system capabilities. Specifically the Department can improve enterprise functions in the following ways:

1. Promote and assist in the development of local GIS capacity to serve land use planning;
2. Make existing archived land use data available in digital form;
3. Maintain and provide key data related to land use to customers;
4. Report on status and trends of local land use decisions;
5. Synthesize data to support program-wide performance assessments;
6. Utilize statewide land use data to analyze the effect of proposed changes to Oregon's land use laws; and
7. Provide an on-line data repository for land use, natural resource, economic, and other information.

**C. PROPOSED INFORMATION RESOURCE MANAGEMENT IMPROVEMENTS**

The Department proposes five improvement clusters that will result in expanded IT capacity:

**1. Program operation enhancements**

Plan for and manage IT infrastructure based on the life-cycle and asset-management standards of DAS IRMD, and develop and maintain data bases about status of local land use planning and grants from data held by the Department and local governments.

**2. On-line information services**

Expand and adapt tools and functionality of the Coastal Atlas to serve statewide program applications using web-based information delivery and access systems; emphasize shared linkages with other state agencies but focus on land-use information not provided elsewhere.

**3. Geographic information services**

Develop in-house GIS capability to provide geo-spatial data to local governments and other agencies to support land use planning, including urban growth boundaries, planning and zoning categories, flood hazards, landslide hazards, soils, hydrology, transportation, PLSS, and other data necessary to accomplish planning and development functions statewide.

**4. Program assessment capabilities**

Support initiatives to review and assess effectiveness of the statewide planning program and to identify needed improvements to state laws or policies.

**5. Archive conversion and synthesis.**

Modernize the Department's database and records by converting to digital documents

**D. NEEDED RESOURCES**

**1. Staff**

**a. Add IT Services Manager (IS-7, GF)**

Add one position to provide overall leadership of the agency IT Team, work with all customers, staff, and other partners to develop an Enterprise-wide Information Resources Management Strategic Plan for infrastructure, software, hardware, service delivery, communications, data, policy and procedures. The IT Services Manager will represent the Department in interagency planning and coordination and provide overall system planning and evaluation.

**b. Redirect existing IS-6 (GF)**

Redirect an existing IS position to GIS development and service, web-portal design, and communications; and to improve information services to field offices, local governments, and other Enterprise partners.

**c. Retain existing IS-5 (FF)**

Retain an existing IS position for coastal GIS and database development, planning, and service delivery.

**d. Add IS-4 Information Services FTE (GF)**

Add one position to increase data management capacity and enable the agency to capitalize on currently under-utilized database investments. The IS Services position will support Departmental IT users to address operational and business needs, system requirements, security, and communications. The IS-4 will oversee IT installation and construction projects in all field offices and will work with vendors on existing or new technology.

**e. Add FEMA Map Modernization program (4 FTE, FF)**

Using four positions, add four positions:

- Team Leader (IS-7) to manage staff resources, participate in strategic and systems planning, and to ensure inter-jurisdictional cooperation and integration among all partners and other state enterprise initiatives.
- Two Information Services Specialists (IS-5) to work with local government customers to assess information requirements, and to identify information needs and upgrades.
- Administrative Specialist (AS-1) to provide operations support, customer assistance, internal project tracking, and liaison with other program units.

**f. Add IS-6 Coastal Atlas (1 FTE FF)**

Add one position, using federal funds, to continue Atlas development, create new tools, improve customer service, and to provide assistance Department-wide for on-line information services.

**2. IT Investments:**

**a. Information System Management**

Develop an IT Asset Management Policy and Life-Cycle Plan; replace out-of-date hardware and upgrade software.

**b. System Updates**

Enhance and modernize DLCD Intranet and file service management.

**c. Communications**

Improve communications and data exchange among field offices and central office.

**3. GIS and geospatial database integration:**

**a. Periodic Review On-Line**

Populate and provide access to an on-line local government periodic review database.

**b. Farm and Forest database management**

Convert Farm/Forest databases to GIS for spatial display.

**c. Digital Archive and Retrieval System**

Catalogue and integrate GIS data generated by local jurisdictions and provided to the agency as grant products and plan amendments.

**d. Operational Integration of GIS**

Develop turn-key applications to enable staff to utilize GIS data for specific tasks.

**e. Training**

Provide limited staff training in GIS and database use.