Oregon
Theodore R. Kulongoski, Governor

Department of Land Conservation and Development
635 Capitol Street, Suite 150
Salem, OR 97301-2540
(503) 373-0050
Fax (503) 378-5518
www.oregon.gov/LCD

July 23, 2010

TO: Land Conservation and Development Commission

FROM: Richard Whitman, Director
Jim Rue, Deputy Director
Teddy Leland, Operations Services Manager
Jon Dunsmore, Network Administrator

SUBJECT: **Agenda Item 13e, July 22-23, 2010 LCDC Meeting**

COMMISSION REVIEW OF INFORMATION RESOURCES MANAGEMENT PLAN

I. AGENDA ITEM SUMMARY

This item includes an opportunity for the commission to review and acknowledge the department's 2011-13 Information Resources Management Plan and authorize the department to submit this plan to the Department of Administrative Services (DAS), Enterprise Information Strategy and Policy Division (EISPD).

For more information about this agenda item, contact Teddy Leland at (503) 373-0050, ext. 237, or e-mail Teddy.Leland@state.or.us.

II. RECOMMENDATION

The department recommends that the commission review and acknowledge the 2011-13 Information Resources Management Plan proposed by the department. The plan may undergo further minor refinements as it is prepared for submission to DAS.

III. PROPOSED INFORMATION RESOURCES MANAGEMENT PLAN

Information technologies, processes, and products are essential to the DLCD mission in three ways:

Constituent Services: Information products are the heart of technical and planning services to local government land use programs and to the public. DLCD is responsible for some unique sets of information, such as urban growth boundaries, and is uniquely positioned among state agencies to acquire, synthesize, and apply a wide variety of information to complex planning situations at the local level.

Internal Management: Information and information technologies are critical to efficient internal operations and business management practices within the department. These practices range from grants-management and budgeting to acquiring and archiving a wide range of information to support program services and agency operations.

Public Accountability: Information is essential to ensuring that the department and the statewide land use program are accountable to the Governor, the Legislature, and the public. The department must have the capacity to capture, assess, synthesize, and report a wide variety of data and information to answer questions about program performance in achieving land use benchmarks and objectives. Information is also required to assist the Governor and the Legislature in creating policies based on accurate and timely information.

The department's Information Resources Management Plan provides the framework for the department to implement and maintain a robust information technology capacity supporting Oregon's statewide planning enterprise. This framework also ensures departmental information technology enables efficient sharing of information and technology across the Oregon's land use enterprise partners and customers.

The Information Resources Management Plan also describes how information technologies have been used in the department and how they could be applied in the future to improve the execution of the department's mission.

In summary, the Information Resources Management Plan describes the Information Technology Strategic Plan and vision for the department. This plan must be provided on August 2, 2010, to the Department of Administrative Services, Enterprise Information Strategy and Policy Division.

IV. COMMISSION OPTIONS

The commission may:

1. Accept the department's Information Resources Management Plan as described; or
2. Provide advice to the department to revise or modify the Information Resources Management Plan.

ATTACHMENTS

A. 2011-13 Information Resources Management Plan

OREGON DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT

Information Resources Management Plan

2011 – 2013 Biennium

June 2010

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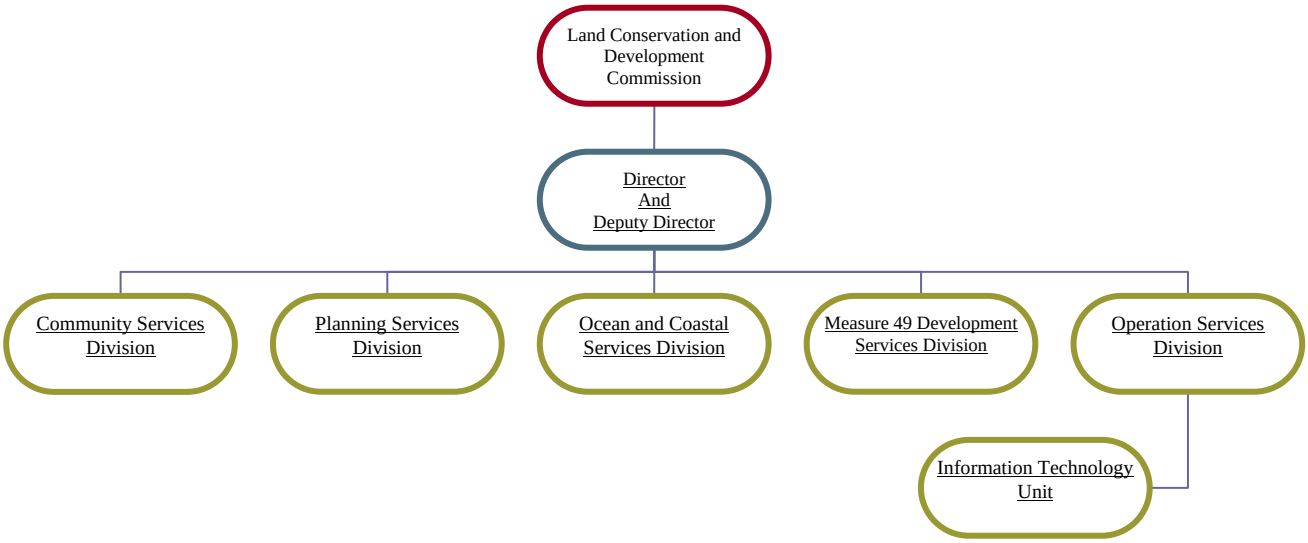
Oregon Department of Land Conservation and Development
Richard Whitman, Director

635 Capitol St. NE
Suite 150
Salem, OR 97301
(503) 373-0050
http://www.oregon.gov/LCD/

For additional information about this IRM Plan, contact
Jon Dunsmore
jon.dunsmore@state.or.us

DLCD Organizational Chart



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…."[1] 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."[2]

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 statewide planning enterprise. The statewide planning enterprise relies on the actions and decisions of nearly three hundred local government partners and on many other state and federal agencies in DLCD's mission to: help communities and citizens plan for, protect and improve the built and natural systems that provide a high quality of life. As stewards of Oregon's visionary land use planning program, we foster sustainable and vibrant communities and protect our natural resources legacy in a dynamic partnership with citizens and communities.

Over the past decade, many of these partners have invested in information technology that greatly improves access to information for decision-making and increases the quality of customer service. It is clear that technology provides potential to improve the state's planning enterprise. To date, however, DLCD lags far behind local, state and federal agency partners and other 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.

During 2006 and 2007, the passage of Measure 37 placed real-time demands on DLCD's IT capacity, particularly geographic information system (GIS), and revealed that the department simply does not have the necessary capacity to meet public expectations for information and assistance, to meet the legislature's need for information and analysis, and to efficiently manage high-volumes of data-demanding workloads. The department had to turn to outside entities such

[1] 1973 Oregon Legislative Assembly, Senate Bill 100; codified as Oregon Revised Statutes 197.010(1).
[2] Ibid.

as Portland State University, the University of Oregon, and the Oregon Department of Agriculture to provide basic information management and assessment work related to Measure 37 claims and claim authorizations' impact on land use. This collaborative effort to meet basic information management needs continued with the passage and processing of Measure 49 claims. The department continues to collaborate with its partners in determining mechanisms to meet this need.

Information technologies, processes, and products are essential to the DLCD mission in three ways:

Constituent Services: Information products are the heart of technical and planning services to local government land use programs and to the public. DLCD is responsible for some unique sets of information, such as urban growth boundaries, and is uniquely positioned among state agencies to acquire, synthesize, and apply a wide variety of information to complex planning situations at the local level.

Internal Management: Information and information technologies are critical to efficient internal operations and business management practices within the department. These practices range from grants management and budgeting to acquiring and archiving a wide range of information to support program services and agency operations.

Public Accountability: Information is essential to ensuring that the department and the statewide land use program are accountable to the Governor, the Legislature, and the public. The department must have the capacity to capture, assess, synthesize, and report a wide variety of data and information to answer questions about program performance in achieving land use benchmarks and objectives. Information is also required to assist the Governor and the Legislature create policies based on accurate and timely information.

Purposes of DLCD's Information Resources Management (IRM) Plan

- Provide a framework to implement and maintain a robust information technology capacity to support Oregon's statewide planning enterprise.
- Ensure that information technology (IT) within the department and throughout the planning 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 Information Technology Planning

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

A. DLCD MISSION STATEMENT

To help communities and citizens plan for, protect and improve the built and natural systems that provide a high quality of life. As stewards of Oregon's visionary land use planning program, we foster sustainable and vibrant communities and protect our natural resources legacy in a dynamic partnership with citizens and communities.

B. DLCD Goals and Objectives

Strategic Goals

1. **Secure Oregon's Legacy.** Preserve coastal, farm, forest, riparian and other resource lands. Promote sense of place in the built and natural environments. Protect unique and threatened resources by guiding development to less sensitive areas.

2. **Promote sustainable, vibrant communities**. Integrate land use, transportation and public facilities planning; provide for housing choices; and encourage economic development.

3. **Engage citizens and stakeholders** in continued improvements of Oregon's land use planning program. Support regional perspectives and strengths. Ensure equitable application of regulatory programs. Develop strong, collaborative partnerships with citizens and communities.

4. **Provide timely and dynamic leadership.** Develop and coordinate strategic initiatives with other state agencies and local governments. Seek solutions that address immediate and long-range challenges, including climate change, in collaboration with local governments, community and academic partners.

5. **Deliver resources and services that are efficient, outcome-based and professional.** Provide local governments with services and resources to support their comprehensive planning process. Communicate with the public in a timely and transparent manner. Focus on communications, staff training and administrative systems to ensure continued improvement of customer service.

Operational Goals

1. Optimize development decisions and provide buildable lands
2. Make community transportation systems work better
3. Protect farm and forest resources
4. Streamline DLCD land use planning activities

5. Improve public involvement and access to land use planning information

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

Sustainability Goals

1. Promote Sustainable Development
2. Secure Oregon's natural resource legacy
3. Employ Sustainable Practices In Daily Operations

C. OREGON'S LAND USE ENTERPRISE PARTNERS AND CUSTOMERS

Throughout the statewide land use enterprise, partners and stakeholders make development and conservation decisions every day. The quality of the interactions between 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 most of these enterprise partners, and plays an important role in facilitating the flow and application of land use and related information within this network. The department lacks the IT resources or capacity to fulfill this role, except in the coastal zone, where federal funds have been available to provide limited support in 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 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 effective operation of Oregon's Statewide Planning Program.

2. Local Governments

Oregon's cities and counties implement the planning program through local land use plans, zoning ordinances, development ordinances, design review standards, and other regulations. Cities and counties rely on spatially explicit information provided through Geographic Information Systems (GIS). GIS assists in providing 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 also use information from other sources and require assurance of its accuracy and reliability.

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.

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, changes in 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 Legislative 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 that is sometimes spatially explicit and/or time-sensitive, to make decisions that meet business objectives.

5. Agriculture and Natural Resource-Based Economies

Natural resource-based industries continue to be pillars of Oregon's economy and culture. 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 concerning urban growth, transportation, housing, and development. Resource-based economic sectors have a stake in the land use enterprise include agriculture, forestry, mineral and aggregates, commercial fisheries, aquaculture, tourism, and recreation, among many others.

6. Housing and Development Economies

A key function of the land use enterprise is to ensure that communities can provide a range of housing types at pricing levels to meet market demand 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. Many of these data and economic indicators are tracked through and modeled using electronic databases.

7. State Agencies

State agencies have distinct responsibilities and authorities for activities or issues that have or may impact 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.

Business Oregon: Identification of and marketing industrial and other employment lands, infrastructure investment needs; recruitment for needed employees; 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.

Emergency Management: Maintain statewide emergency-services system, natural hazards mitigation; coordinated and facilitate emergency planning, preparedness, response and recovery activities.

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 may have information influencing land use and development:

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.

Water Resources Department: Water users, water impoundments, groundwater critical areas, etc

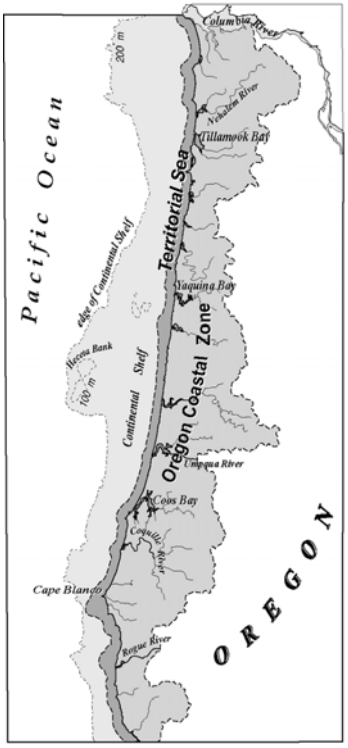
Energy Department: Renewable resources specifically wave energy planning.

Public Utility Commission: Utility rights of way, key facilities.

8. Federal Agencies

Federal agencies play a significant role in the land use enterprise because of extensive land ownership and management authorities and through the investment of federal grant programs. More than 53 percent of Oregon's land area is owned and managed by federal agencies and not subject to the state planning program. 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: Floodplain 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, USACOE: 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 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

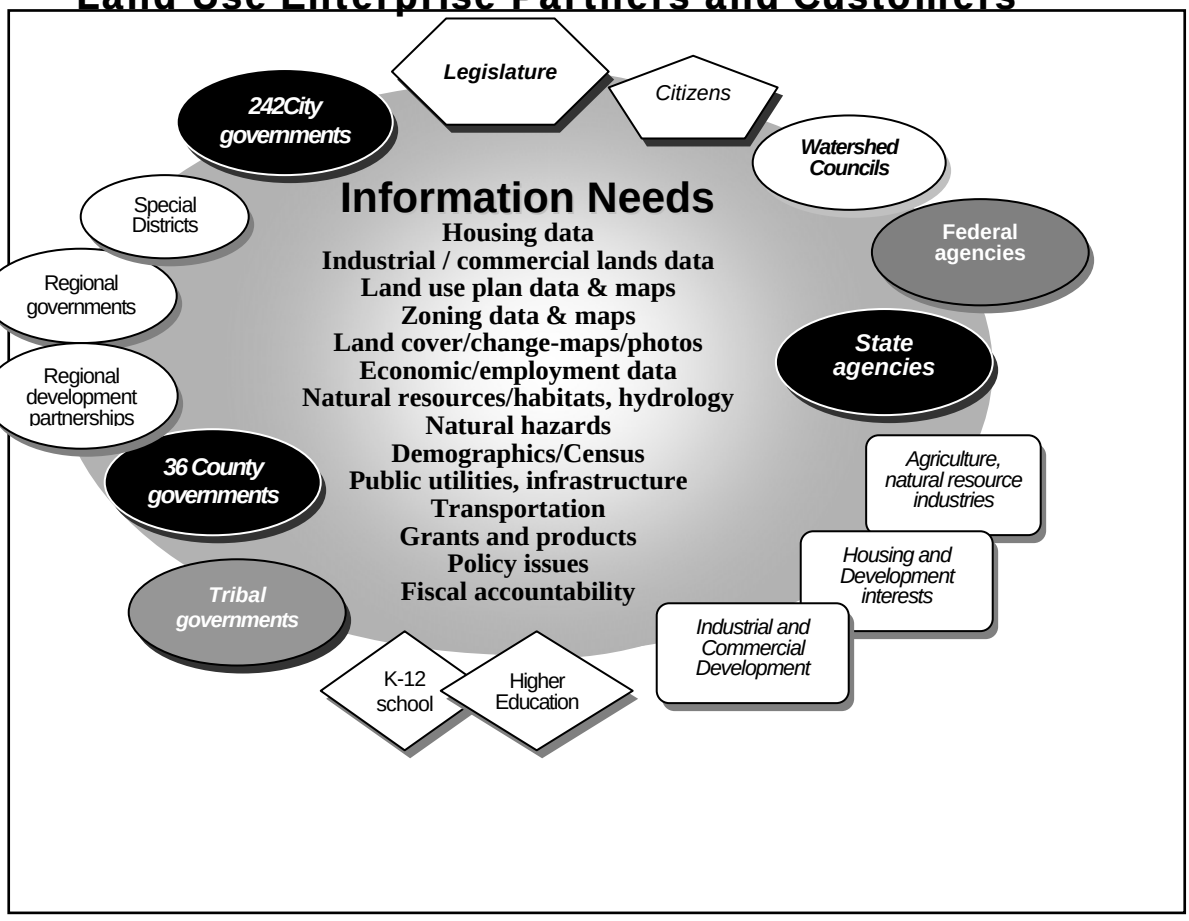
authorities of these districts are all coordinated through county or city comprehensive plans and ordinances.

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 maintained by the department.

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.

Land Use Enterprise Partners and Customers



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.

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

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 associated with 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.

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, land owners, 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.
- 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. DLCD 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:

- Provide reliable communication capabilities for field offices.
- Assist local government land use planning efforts through management of general fund grants and work products.
- Assist local government land use planning efforts through management of 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 (IT) has developed rapidly over the past two decades, which is less than half the time period in which Oregon's land use program developed and matured. Most 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 and ability to meet customer expectations, affect risk management, and affect operational efficiency and innovation. Lack of IT capacity has affected 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 limited GIS capabilities have largely resulted from the use of federal grants and funds in the Coastal Zone.

1. 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.

a. 2007-09: (< 2.5%)

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

Federal Fund: $64,135
General Fund: $218,199
Total IT: $282,334

b. 2009-11: (< 2.5%)

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

Federal Fund: $63,386
General Fund: $158,025
Other Fund: $9,284
Total IT: $230,695

2. Coastal Information Technology Initiatives

a. The Oregon Coastal Atlas (www.coastalatlas.net)

The Oregon Coastal Atlas is an on-line data archive initiated 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 Federal Geographic Data Committee through a cooperative agreement with Oregon State University.

The Atlas hosts a variety of information from many state and federal agency sources. In turn, it 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. In addition it is a popular outlet for beach water quality monitoring results and a resource for information on coastal access locations. Atlas user tracking showed almost three million page views in its most recent year of 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.

b. IT Services for Coastal Projects

The OCMP created a special website, OregonOcean.info, for use by the department, the Governor's Office, Oregon Department of Fish and Wildlife and Oregon State University in communicating and coordinating public processes with the public in support of work on marine reserves, nearshore research, territorial sea planning, and seafloor mapping. This website is hosted on a OCMP server and has received an average of over 100,000 page view per month since it's launch in February 2010. It is an example of the kind of IT service increasingly expected by the public.

c. Local GIS Capacity Development

The OCMP continues to provide federal funds to coastal jurisdictions to support the development of local GIS capacity. In addition, the OCMP has stepped up its outreach to provide on-site technical assistance for GIS to local governments. 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, with the help of DLCD's Ocean and Coastal Division, 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 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 thereby increasing customer service to its stakeholders.

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 continued its improvement during the 2009-2010 biennium. A commitment to regular replacement and upgrades is essential to maintaining a strong IT foundation. Infrastructure consists of computer hardware, software, and staff expertise.

a. Hardware

All DLCD staff are equipped with desktop computers or laptops. The department needs to adhere to the life-cycle replacement plan currently in place for these devices, replacing general desktops a minimum of every 4 years. Significant replacement difficulties and expense will arise if lifecycle replacement is not maintained. Replacement difficulties also create additional workload for the department-wide IT positions and eventually programmatic staff capacity for assisting local jurisdictions is impacted.

b. Software

Workstation operating systems and applications need to be updated and/or replaced at regular intervals. System upgrades will involve the purchase of new software licenses.

c. Staffing

The agency currently has two IT positions to manage all the IT resources department-wide, IT strategic planning, and service issues of approximately 80 staff located in Salem and in six field offices. This is below the minimum number of staff for effective support and continued maintenance of the agency and will not support continued efforts of the department in meeting the increasing technological needs of the department and its local government partners.

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. File System Management

The department does not currently have a robust file system infrastructure in place. Due to lack of IT capacity in hardware and positional support, proper research and implementation has not been possible. In order to meet other needs, a strong content management system such as an Electronic Records Management System (ERMS) will need to be pursued.

b. Record-keeping

The department must keep pace with digital records and communication requirements established by federal and state rules and regulations. The department is slowly but steadily moving its systems to digital format. Examples include the implementation of a digital asset management system, and a tracking database for Measure 49 claims,

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 has used federal funds to create a database to assist in managing federally funded grants to coastal local governments. General funds need to be used 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. An intranet needs to be developed and maintained for the department.

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."*[3]

The *Business Case for Statewide GIS Coordination*[4] 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.*[5]

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

[3] Executive Order NO. EO-00-02 Establishing the Oregon Geographic Information Council
[4] Oregon Geographic Information Council, April 2004
[5] Available at *http://www.gis.state.or.us/docs/2001FinalGISPlan.doc.*

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.

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 plain 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. Urban Growth Boundary Database: Beginning in 2008, the department began maintaining a data set of urban growth boundaries (UGBs), a land use planning designation required for all urban areas. DLCD is responsible for monitoring local government UGB amendment activity; and the department verifies, maintains, updates, utilizes, and distributes this data.

3. *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. 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.

4. *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, this data is 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 this data.

5. Measure 37/49 Claim Tracking and Reporting Database: The department has developed and is maintaining a database to aid in the tracking and reporting of Measure 37 claims. This database streamlines the processing of all claims and provides immediate reporting capabilities on the status of claims. The department is currently linking data on claim authorizations with GIS; however, the department has no capacity to display all Measure 37 data on a county-by-county basis in GIS.

6. 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 prepare for the prevention, mitigation and management of emergencies or natural disasters that present a threat to the lives and property of citizens of and visitors to Oregon; 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 improve and modernize maps for a wide variety of natural hazards e.g., floods, earthquakes, severe winter storms, wildfire, and drought. The results of this initiative will significantly improve the currency, accuracy, quality, and utility of hazard information used by local governments, state agencies, realtors, developers, insurance carriers, and private individuals for making investment, regulatory, and emergency response decisions.

DLCD TECHNOLOGY PROFILE:

Current DLCD Servers				
-Server Type-	**-Technical Specifications-**	**-Operating System-**	**-Server Duties-**	**-Planned Replacement Time*-**
HP Proliant DL360 G5	Intel Xeon 1.86GHz, 4GB RAM	Windows Server 2003 R2 Standard	File server	3rd quarter 2014
HP Proliant DL385	AMD Opteron 2.41GHz, 4GB RAM	Windows Server 2008 R2 Standard	Active Directory Domain Controller, WDS, DNS, CenDir Sync Server	3rd quarter 2012
HP Proliant DL385	AMD Opteron 2.41GHz, 8GB RAM	Windows Server 2008 R2 Standard	Remote Desktop Services Server	2nd quarter 2013
HP Proliant DL385	AMD Opteron 2.41GHz, 4GB RAM	Windows Server 2003 R2 Standard	Terminal Services Sever	3rd quarter 2012
HP Proliant DL320 G4	Intel Pentium D 2.80GHz, 1GB RAM	Windows Server 2003 R2 Standard	Microsoft Exchange 2003	3rd quarter 2012
HP Proliant DL320 G4	Intel Pentium D 2.80GHz, 4GB RAM	Windows Server 2003 R2 Standard	Backup Exec Server, Symantec Management Server, WSUS	1st quarter 2013
HP Proliant DL360 G5	Intel Xeon 2.66GHz, 8GB RAM	Windows Server 2008 R2 Enterprise	Exchange 2007 Mailbox Server, Hyper-V Server	4th quarter 2013
Virtual Server	Virtual Server	Windows Server 2003 R2	BlackBerry Enterprise Server, Microsoft Exchange OWA	Not in replacement plan currently
Virtual Server	Virtual Server	Windows Server 2003 R2	Coastal Web Server	Not in replacement plan currently
HP Proliant DL360 G5	Intel Xeon 1.60GHz, 4GB RAM	Windows Server 2003 R2 Standard	Active Directory Domain Controller, DHCP/DNS Server	2nd quarter 2013
HP Proliant	AMD Opteron 2.41 GHz, 4GB RAM	Windows Server 2008 Standard	VMWare Virtual Host Server	3rd quarter 2012
HP Proliant ML310 G4	Intel Pentium D 2.80GHz, 2GB RAM	Windows Server 2003 R2	Apache HTTP Web Server, MP3 Audio Streaming	2nd quarter 2012
Gateway	Intel Pentium III 800MHz, 512MB RAM	Windows NT 4	Legacy Filemaker 5 Pro Server	Not in replacement plan currently
Dell PowerEdge 2600	Dual Intel Xeon 3.06 GHz, 3GB RAM	Windows Server 2003 R2 Standard	Coastal Atlas Web Server	Not in replacement plan currently

* This is based on current life-cycle plan and is subject to budget availability.

Current DLCD Desktop Hardware		
-Quantity-	**-Model-**	**-Planned Replacement Time*-**
6	HP xw4300 workstations	2nd quarter 2010
20	HP dc7700 desktops	4th quarter 2010
49	HP dc7800 desktops	2nd quarter 2012
3	HP xw4600 workstations	4th quarter 2012
9	HP 6000 desktops	2nd quarter 2014
2	Lenovo T43 laptops	3rd quarter 2010
7	Lenovo T60 laptops	3rd quarter 2010
5	Lenovo X60 laptops	4th quarter 2010
1	Dell Precision M6300 laptop	4th quarter 2010
3	Dell Latitude D830 laptops	4th quarter 2012
9	Dell Latitude D630 laptops	4th quarter 2012
1	Dell Latitude E6400 laptop	4th quarter 2013
1	Dell Latitude E6500 laptop	4th quarter 2013

*This is based on current life-cycle plan and is subject to budget availability.

Desktop Application Portfolio:

Adobe Acrobat Elements 7.0	Microsoft Office Professional 2003
Adobe Acrobat Professional	Microsoft Visio Standard 2007
Adobe InDesign CS	Microsoft Windows XP
ArcGIS 9.x	Microsoft Windows 7
Brio (Brio Intelligence Explorer)	Paradox
DameWare NT Utilities	Symantec AntiVirus 10.x
FileMaker Pro 5.0v1	wc3270 Telnet

Server Application Portfolio:

BlackBerry Enterprise Server	Microsoft Windows Server 2008 R2
FileMaker Pro 5 Server	Symantec AntiVirus 10.x
Microsoft Exchange Server 2007	Symantec Backup Exec 12.x
Microsoft Windows Server 2003 R2 Standard	Symantec Ghost Solutions Suite

Information Technology Unit Capacity:

- Network Administrator - ISS7
- Information Resource Specialist - ISS4

IT-related contracts:

- Measure 49 Database contract
- Interagency agreements support Measure 49 activities
- Printer maintenance and support contract

IT-related projects / initiatives:

- The department is currently in the process of testing Microsoft Windows 7 with plans of having full deployment by the end of 2011.

IT-related Performance Measures:

- The department has developed an internal IT specific key performance measures related to lifecycle replacement.

IV. DLCD's Information Resource Management 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. DLCD's IRM Objectives

a. Improve Citizen Productivity (citizen to government)

- Increase the accessibility and availability of information and information services to citizens.
- Raise public awareness and understanding of the land use program.
- 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.
- Enhance contracting and granting procedures.
- Lead a planning process to prepare a comprehensive plan for ocean wave energy development.

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 in the land use program.
- Provide leadership support to actively engage effective communication and information transfer among state agencies, federal agencies, tribal governments, and local and regional governments.

3. Department Operational Objectives

a. Customer Service

- Continue to provide the highest level of customer service possible to users inside and outside the agency.
- Streamline, where possible, the agency's electronic systems to minimize downtime and increase overall performance for the end-users.

b. Infrastructure

- Improve infrastructure and IT services through system upgrades and standardization.

- Develop an effective business continuity plan, including a thoroughly tested disaster recovery plan, to cope with unforeseen interruptions or disasters that cause data or services to be unavailable.

c. Life-cycle

- Continue to manage IT infrastructure consistent with the life-cycle and asset-management standards of DAS Enterprise Information Security and Policy Division.

d. Databases

- Evaluate and create where possible, 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.

e. 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.

f. 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.

g. Accountability

- Link and account for internal agency programs and activities through internal key performance measures regarding lifecycle replacement and regular internal review of operational policies and processes.

h. Program Evaluation

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

i. 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

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 take lead 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 is not proposing adding information technology capacity in the 2011-13 biennium. However, the department continues to need technological capacity which includes:

1. Geographic information services

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

2. On-line information services

Continue to 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. Operational support

Expand department-wide and Geographic Information Systems' support through establishment of new positions providing these specific services.

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 databases and standardize user interface for input, manipulation and reporting.

D. IT INVESTMENTS:

1. Information System Management

Develop a DLCD intranet and file server management.

2. System Updates

Standardize system desktops and applications through continued dedication to the life-cycle replacement plan.

3. Data warehouse
Develop and implement a centralized database and content management system.

4. 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 training in GIS and database use to local jurisdictions and state agency partners where possible.