OREGON BUSINESS PLAN WATER INITIATIVE

For Discussion at 7th Annual Leadership Summit

RECOMMENDATIONS

1. **Endorse a long term vision of Oregon water managed as a valuable and critical asset by all Oregonians for all Oregonians, providing safe and sustainable water for all beneficial uses.**
2. **Accelerate the transition to a water management system that supports this vision by 2050**
   - **Water is managed as finite resource based on hydrologic reality,**
   - **Water planning is integrated with energy, transportation, habitat and land use planning,**
   - **Water management aims to achieve multiple benefits, and**
   - **Water allocation occurs through an efficient market.**
3. **Prepare for key decision points in 2014 as foundation for realizing this vision**
   - **Increase public awareness and education around water, and assess water priorities and values.**
   - **Establish systems for data collection that will support water management based on supply and demand realities, and inform integrated and adaptive management decisions.**
   - **Encourage multiple benefit, multiple partner projects that exemplify integrated management solutions.**
   - **Stimulate development of water technologies and best practices that enable Oregon's integrated water management, while advancing new technologies into the global marketplace.**

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Problem Statement

In the future, water supply and water quality will be increasingly critical prerequisites for sustaining Oregon's healthy economy, population, environment, and quality of life. Clean water is essential to human life and ecological function, and supplies are finite. Oregon is blessed with relatively abundant water resources and has been a leader in sound water management, protecting instream flows, requiring all new water rights to be consistent with land use plans and working together through watershed councils and soil and water conservation districts to restore watershed health.

Today's competition for water needed by cities, farms, industry and healthy ecosystems may increase with the uncertainties posed by potential climate change, growing demand from business and population increases, and land development in water-short areas. Changed timing and intensity of floods, droughts, and other extreme events may stress current infrastructure and operations, resulting in increased damage, loss of life and livelihood. These challenges may grow more urgent over time as other regions face more severe water shortages and extreme events. Recent studies suggest that there is a 50 percent chance Lake Mead, a key source of water for millions of people in the southwestern United States, will be unusable for water supply or power generation by 2021 if the climate changes as predicted and future water usage is not curtailed. Neighboring states may seek to develop water to meet their needs creating enormous external pressure to export our resources and potentially adversely affecting surface and groundwater historically relied upon here. Yet, with proper planning for the future, Oregon could achieve tremendous competitive advantages and opportunities through our water resources.

Recent policy initiatives and activities in Oregon demonstrate a growing recognition of the need and support for a statewide water strategy framework for regional water management solutions. Businesses, local governments, tribes and water users are developing new approaches to water use and management ranging from the major water conservation efforts by individual companies, to stream flow restoration through water markets in the Deschutes, to water-land use integrated planning in the Umatilla, and water conservation and reuse in the Rogue and.

At the State level, the Water Resources Commission and Water Resource Department initiated a Water Conservation and Supply Initiative in 2005, which received state funding for 2007 and 2008.

The initiative provides a first step in long term water resource planning by assessing water demand and inventorying potential conservation projects and water storage sites. It is developing momentum and welcomes collaborators. New community water planning grants have been made available. The Water Conservation, Reuse and Storage Grant Program established by SB1069 is reviewing its first applications for planning-level feasibility studies for water conservation, reuse, and storage projects. The Governor's Office has developed a Headwaters-to-Ocean (H2O) concept, with public input and guidance from an advisory group, which highlights water quantity and quality issues and aspirational objectives in anticipation of the 2009 Legislature.

The Oregon Department of Economic and Community Development (OECDD) is reorganizing its Community Development Division to focus strategic infrastructure investment using community development block grants and its revolving loan fund. They have completed a comprehensive prioritized statewide infrastructure inventory, including water, sewer and stormwater facilities, which is now available online. OECDD continues to work with other state and local agencies to develop improved water infrastructure finance systems.

Statewide Water Roundtables were convened at five locations in fall 2008 by OSU Institutes for Water and Watersheds and Natural Resources, Oregon Sea Grant Extension, and the Oregon House Committee on Energy and the Environment, which provided regional stakeholder perspectives on water management.

The Oregon Business Plan should encourage all Oregonians to take advantage of the six-year window of opportunity (to 2014) to develop a shared vision and action strategy tied to two key public decision dates: (1) the Columbia River Treaty Review currently being conducted by the U.S. Army Corps of Engineers, the Bonneville Power Administration and B.C. Hydro which could affect our water supplies; and (2) the sunset date for mandate and funding of the Oregon Plan for Salmon and Watersheds, which will affect Oregon's ability to fund watershed restoration.

These are not the only drivers for needed action, nor are these the only activities which have been recently initiated to improve water management. However, they do set a logical timeframe (six years over three legislative sessions) for development of a shared vision and action strategy to address the long term challenges facing Oregonians and Oregon's waters. At the state level, in order for Oregon to protect its water rights in the interstate and international context, Oregon needs to honestly evaluate existing and possible future uses of its water resources, and determine the water needs of those uses

To meet these challenges and seize the opportunities, Oregon needs a comprehensive vision, policy and plan for water stewardship. Course adjustments are necessary and will take time and a conscious effort by all Oregonians.

Challenges

Even though Oregon's large population centers are located in what is considered "the rainy Northwest", all of Oregon faces major challenges to its ability to supply safe, sustainable water services to agriculture, businesses and citizens:

Population is projected to increase by 41% in Oregon by 2030, an estimate which doesn't consider potential in-migration forced by climate change and other factors throughout the US. Oregon's water infrastructure needs are expected to double over the next 20 years – construction, operations, and maintenance – while unit costs are increasing without addressing higher service level or environmental objectives.

Aging Infrastructure. A large percentage of our existing water infrastructure is in poor shape, requiring multi-billion dollar investments just for maintenance as it nears the end of its engineered life. Most natural conveyance and storage systems in Oregon have been heavily modified in order to achieve various flood control, irrigation, navigation, hydropower, and recreation and water supply benefits. These systems may not be able to continue to meet the future needs and values expected by Oregon's citizens.

Fragmented Management. Water does not respect state and local government boundaries. Regulatory policies for shared water systems differ among Washington, Oregon, Montana, California and Idaho. There is limited agreement among Pacific Northwest states on Columbia River Basin management. The Columbia River Treaty between the U.S. and Canada must be renegotiated, renewed, or terminated by 2024 provided 10 years' notice is given (i.e., by 2014). Even with an interstate compact, management challenges continue in the Klamath Basin. Multiple federal and state agencies regulate water use. Tribal governments hold reserved water rights and other treaty rights. The interplay among these disparate regulatory systems makes water management difficult. There is concern among some about the growth in "exempt" wells. Reallocation of water to meet new demands is difficult and time-consuming, although Oregon has been active in reallocating water to instream use. And, amidst this patchwork, hundreds of different public and private water and wastewater systems provide myriad water services.

Lack of Adequate and Accessible Data. Lack of data limit our ability to make sound management decisions, and to make use of modeling and adaptive management techniques. Data are needed on current water supply, water use and current and future water needs to serve Oregon's citizens. In addition, there is a lack of information on groundwater quantity and quality, and environmental flow requirements for key species and communities.

Uncoordinated Planning. Energy, water, transportation, and land use planning in the state are closely inter-related. Policies implemented in one of these arenas have consequences – some unintended or unanticipated – in the other realms. County planners need information that they rely on the State to provide, but the State lacks the resources to collect or manage such data. Such gaps can lead to additional costs, economic burdens, and decreased quality of life for Oregonians.

Over-Allocation. Oregon's currently available surface water supply is fully or often over-allocated during the low flow summer and fall months. Across the state, there are times of the year when instream needs exceed the streamflows available to meet them. At the same time, pressures on groundwater are increasing, resulting in impacts to both the quantity and quality of groundwater supplies. If groundwater appropriations continue at the historical pace, they could be over-allocated in many basins in the very near-term, as they already are in seven Critical Ground Water Areas.

Loss of Aquatic Species and Communities. Oregonians' demands on streamflow during critical times of the year have contributed to impacts on aquatic species and their habitats. Native populations of salmon, steelhead and trout have declined dramatically in Oregon and are currently at only a fraction of their historic levels. Riparian habitats, and their associated species and communities, have been drastically reduced and altered in composition and structure. Numerous species are listed under the federal Endangered Species Act, under which millions of dollars have been invested in habitat restoration and other mitigation.

Climate Change. Projected changes and variability in temperature and precipitation patterns, arising from global climate change pose future uncertainty and risk to Oregon's water resources. These include potential loss of glacial sources, reduced snowpack, increased runoff intensity, saltwater intrusion, reduced recharge, and storage and flooding challenges. Existing water management

systems have been designed based upon historic hydrologic conditions - the "stationarity assumption", that past conditions will predict future conditions. This assumption may prove to be invalid, and past conditions may not augur future conditions, increasing the risk of water service disruption.

Markets/Funding. Under state and federal law, all water belongs to the public. Markets can efficiently allocate scarce resources like water, providing appropriate signals and incentives to users, assuming that rights for water are clearly defined and current water rights are protected. An important question is whether markets could provide incentive to improve efficiency of water allocation in Oregon.

State and local government and all water managers lack the resources they need to manage water resources and infrastructure in an integrated way. The State receives little compensation in the form of permit filing fees for use of its water resources. Only hydroelectric water right holders pay a fee for use of the water itself. Other users pay various water utilities solely for capital investments, operation and maintenance costs for service delivery and nothing for use of the water itself. But in return, the state's economy is grown by the use of its water by the public and private sectors. Should the State continue to allow the use of this precious resource for free, or should all users pay for what they use? This might include a future fee assessed by the Water Resources Department for any permitted or certificated water right which could provide funding assistance for future water projects to improve water management, without relying on the State general fund.

Vision for 2050

Oregon continues to provide safe and sustainable water supplies for people, communities, businesses, energy production, food and crop production, manufactured goods, aquatic ecosystems and other environmental services. Oregon's water is viewed as a valuable and critical asset by all Oregonians for all Oregonians, and is managed accordingly. Oregon's water infrastructure (built, modified, and natural) consistently provides these services.

Where We've Been	Recent Advances	Where We Might Go
Water viewed as unlimited	Water quantity viewed as limited; hydrologic reality estimated	Water viewed as finite resource and management tied to hydrologic reality
Water allocation sole focus	Management for water quality and instream uses; Discussion of water's relationship to energy, transportation, and land use planning	Integrated water, energy, transportation, habitat and land use planning and management
Increase access and storage to meet demand	Occasional demand management projects	Demand management, improved conservation and reuse, along with access and multiple benefit storage (e.g. ASR)
Single purpose management	Occasional multi-purpose projects	Multi-purpose management
First in time, first in right allocation	Limited market trading taking place	Market allocation
Water treated as a "free" good	A few actively used methods for valuing water	Water valued, including financial incentives & disincentives

To achieve this vision and needed course adjustment, the Oregon Business Plan encourages Oregonians to follow these principles:

- Implementation of adaptive, integrated, and sustainable water management systems, assuring that water services match the values of Oregonians and the long-term needs of end users on the local, regional and statewide scale, within the context of legal frameworks.

- Assurance of ecosystem health while maintaining a sound economy.
- Emphasis on policies, systems and projects that realize multiple benefits.
- Adoption of best management practices, applied to water infrastructure management to assure efficient, environmentally sound services.
- Investment in new infrastructure, made on the basis of least cost planning (highest benefit gain for investment), with priority placed on demand management, conservation, and reuse.
- Collaboration among governments, special districts, communities, non-profits, private companies, and all water stakeholders to meet shared water-related needs and respond nimbly to changing demands and opportunities.
- Productive and efficient water use, assured by rational application of technology, best practices, adaptive management, data analysis, and market pricing.

The Business Case

Access to ample and quality water supply is a strategic global advantage for businesses operating in the state, and hence is a significant enabler for growth and attractor for new businesses. Oregon businesses are concerned about water policy because all businesses need sufficient water quantity and quality to attract high-quality employees, produce goods and provide services, whether directly such as for food and other crops, manufacturing, or indirectly such as for recreational, aesthetic, and tourism benefits. Water is embedded in all products manufactured in Oregon, from traditional farm products grown with irrigation water, to computer chips. New housing developments, golf courses, ski resorts, utilities, and energy production depend upon water supplies. Sufficient quantities of good quality water are often important factors in business relocations to Oregon. Relatively abundant clean water gives Oregon a competitive advantage nationally and internationally, especially in the face of climate change. A statewide plan to ensure consistent water quantity and quality reduces risk and uncertainty for in-state businesses and markets, which strengthens Oregon's economy.

Predictable residential water supply allows job growth throughout the state. A healthy agricultural sector provides consistent locally available food supply, assuring food security and safety. Many service providers rely upon dependable water supply as an ingredient of their value-added services, whether for health care, financial services, real estate or hospitality. Environmentally sound built and natural environments sustain the high quality of life for which Oregon is renowned. Overall, these factors help to attract and retain employees – an essential for business success in this global economy.

From an industrial perspective, water has been cheap and plentiful, but with scarcity and demands from customers and suppliers for sustainable production practices, companies are implementing immediate changes and investigating long term significant conservation measures. Oregon industries have individually reduced their water supply demands by hundreds of millions of gallons per year, and there is the potential for reductions of upwards of 1 billion gallons per year in some instances.

The Oregon Business Plan focus on sustainability as Oregon's competitive advantage underscores the business opportunities presented by renewed focus on water resources. A 2004 Report to the Oregon Department of Economic and Community Development identified water resources as an area of both academic research expertise in Oregon, as well as a focus of innovative technology development. Oregon companies, farms and communities are developing and deploying new distributed systems to handle wastewater and stormwater on-site, new filtration systems and water

conservation technologies. The worldwide market for water technologies, from supply and purification to waste treatment, is reaching $400-billion-a year and water technology development is a key component of the clean technology investment movement. Bloomberg reports that water outperformed oil as an investment sector from 2003-2006. Oregon could become a living laboratory for the development and application of the new sustainable water infrastructure of the future, exporting it worldwide.

Strategic Focus

The following summarizes areas for strategic focus, policy, and actions needed to achieve the vision. The list is not prioritized. It is expected that priority setting will be an iterative, periodic process conducted by a broadly representative working group. Figure 2 summarizes in graphic form.

1. Water Markets for Efficiency and Strategic Advantage

- Value water as a "sustainable good" rather than an "inexhaustible good".
- Value water as an asset based on its value to all Oregonians, recognizing that there are higher and lower value uses of water, even within a particular designated use (e.g. agricultural) and within the context of legal frameworks.
- Over time, selectively remove barriers to development of an efficient water market, and clearly define water rights.
- Pricing to foster conservation and allocate scarce resources.
- Capture water's value to fund needed infrastructure and management systems.
- Establish "user pays" policy for all beneficial uses.
- State incentives or subsidy management to encourage best practices and investments consistent with water vision and principles.

2. Coordinated, Integrated Institutional and Regulatory Systems

- Develop institutional framework needed for integrated water resource management, with appropriate integrated water basin authority within a state-lead framework.
- Land use planning should continue to look at all of the potential effected resources and only allow growth when the local resource has the capacity to maintain the growth.
- Facilitate/encourage adaptive management.
- Recognize and leverage regional variation in needs, capacity, and solutions.
- Establish and maintain ongoing community-based input and management.
- Facilitate public-private partnerships.
- Enable demonstration projects and laws that allow users to show what can be accomplished through more flexible, responsive management.
- Plan and manage interface above with federal systems.

3. Least Cost Planning, Demand Management, Conservation, and Reuse

- Revise building codes to further beneficial use of gray water and conservation, including the use of rain gardens and rainwater harvesting.
- Establish incentives to promote demand management, conservation, and reuse.

- Evaluate and optimize use of all potential water supplies including reservoir and flood management, natural storage, conservation and reuse to foster best practices.
- Consistent access to infrastructure funding for investments in capital and O&M based upon least cost plans and other criteria consistent with water vision and principles.

4. Climate Change, Uncertainty and Risk

- Flexible regulatory mechanisms and adaptive management to address uncertainties within a predictable framework.
- Monitor and assess potential effects on water due to climate change.

5. Management for Water Quality

- Develop and facilitate best practices to concurrently maximize both water quality (human health, drinking water, and ecosystem standards) and quantity.
- Connect and create opportunities for multiple benefit, multiple partner projects, including identification of and increased access to incentives.
- Address non-point source considerations.
- Integrate land use, transportation, and energy policies with objectives for management of water quality functions.

6. Management for Habitat and Hydrologic Function

- Protect, restore and maintain habitat and ecological communities to meet needs year round and to enable ecosystem services such as natural water capture, conservation, and storage .
- Protect, restore, and maintain streamflow and water availability to support aquatic life.
- Integrate land use, transportation, and energy policies with objectives for management of habitat and hydrologic functions.

7. Data Analysis, including Collection, Management, Reporting, and Access

- Statewide baseline assessment of water supply, storage, demand and use, including groundwater, surface water, snow pack and glacier storage.
- Statewide baseline assessment of water infrastructure (built, modified, and natural) conditions, including review of all existing water provider capital improvement and master plans.
- Statewide baseline assessment of water needs that are critically important to key aquatic species and communities (environmental flows, including seasonal).
- Establishment of monitoring best management practices for adaptive management decision-making.
- Establishment and long-term funding of monitoring network.
- Establishment, funding, and maintenance of monitoring database, with public access to data.

8. Public Awareness and Education

- Increase awareness and appreciation of the value of water.
- Increase awareness of the potential effects of climate change on water systems.
- Increase understanding of and access to options, practices, and tools, for entities and individuals, including

    - Water conservation and reuse needs, approaches, and technology.
    - Water education educational materials for all stages of education and life.
- Increase collaboration and public involvement in water policy and management.
- Maintain and enhance public access and recreation associated with Oregon's aquatic features.

9. Columbia Basin Compact

- Establish Oregon's equitable share of and management responsibilities for Columbia River water.
    - Bring all parties involved in the Columbia/Snake Basin together to develop a comprehensive water plan for the northwest.
    - Negotiate interstate compact to protect Columbia River and assure equitable allocation of its water.

10. Technology Development

- Identify technology needs and promote pilot and demonstration projects that test these technologies as solutions.
- Promote growth of water management technology as an emerging industry in Oregon.

Recommended Actions

Recommended Near Term Actions are those which could be undertaken and implemented within the next 6-10 years. They are foundational for the vision and may include experimental and demonstration projects. Near Term Actions are recommended in this paper in outline form for further definition and focus in 2009. Long Term Actions may be undertaken in a 15-40+ year time horizon, and are described only in general terms in this document since the specific actions, their priority and implementation paths will be determined by results from the implemented Near Term Actions.

Near Term and Long Term Actions are not exclusively "new activities", nor are they meant to be Oregon Business Plan activities only. Collaboration with, endorsement of, and support for both ongoing and newly begun activities will be essential.

The following outline of actions is not an exhaustive list but rather a sampling of known multiyear activities and projects which serve as both candidates and examples in that they match the vision and principles.

Near Term (2009-2014)

1. Community water value determinations that prioritize benefits and identify ranges of dollar value for those benefits, along with influencing factors.
2. Promote conservation and reuse
    a. Revise the recycling tax credit incentive as a part of the state's Business Energy Tax Credit program to include materials that are returned to the original process which will encourage potential re-uses of process water in industrial facilities.
    b. Building code changes, model ordinances, and incentives (multiple government levels) to manage gray water use in new and renovated buildings.
    c. Develop/distribute training and public information materials about these changes.

3. Asset inventory of demand and conservation at a scale adequate for planning (estimated to cost several million $ and include scenario modeling).
    a. Builds on existing efforts such as the Oregon Water Supply and Conservation Initiative that are currently underway.
    b. Taps into planning conducted by water utilities and irrigation districts, including Capital Improvement Plans (CIP).
    c. Includes groundwater systems analysis and understanding, including Deschutes and Klamath basins and Cascades aquifer systems, to address the role of nonrenewable groundwater resources in water supply.
4. Monitoring network
    a. Data collection sufficient for analysis of groundwater and surface water flows and withdrawals.
5. Pilot, demonstration, and model projects and technologies that exemplify or are foundational to implementing Strategic Focus (examples)
    a. Removing junipers to conserve groundwater, for use as a biofuel source, and to promote East side of Cascades forest health.
    b. Multiple Benefit/Partner Reuse projects
        i. Projects that include innovative technologies; industrial, agricultural, and research partners; restoration of connected ecosystems and hydrologic (including groundwater) systems; and instream water quality improvements to realize multiple benefits.
    c. Multiple Benefit/Partner Drinking Water Supply Projects
        i. Surface water storage increases that realize multiple water quality and habitat benefits, coupled with conservation efforts implemented to reduce demand.
        ii. Municipal water supply planning (i.e. facilities and CIP) projects that examine how overall use of surface water/ground water resources affects others in the surface water/ground water basin, considers changing land uses and management needs in the basin, and fosters a collaboration of water managers.
        iii. Water rights exchanges and associated infrastructure which realize instream flow and fisheries benefits along with drinking water supply; multiple political and basin partners.
    d. Multiple Benefit/Partner Habitat and Ecosystem Projects
        i. Restoration of ecosystems (aquatic, riparian, and terrestrial) that lead to improved water quality, natural storage, and environmental flows.
    e. New City Water Management and Land Use Planning
        i. Master Planning projects that integrate water, wastewater, stormwater master plans for developing area, and incorporate ecosystem services and sustainable solutions into codes and standards, and governance master plan that identifies opportunities with neighboring jurisdictions in surface water/ground water basin.
6. Compilation of water management trends, challenges, and solutions, and development of tools, technologies, and best practices made available throughout the state
    a. Is an enabler for successful application of the "adaptive management" principle.
    b. Compilation includes trends in terms of agricultural products and related water use.
    c. Compilation would be readily accessible to public and updated on an ongoing basis.
7. Public awareness, education, and stakeholder feedback
    a. Encourage and promote water supply agencies to conduct water use awareness campaigns on a periodic basis, in complement to or as a part of their Water Management and Conservation Plans.

b. Encourage and promote water supply and demand education for k-16 public education system.
c. Encourage and promote ongoing general public awareness and education through a comprehensive strategy, which allows an ongoing dialogue to provide feedback on water resource management along with education.
d. Collaborate with national utility and education associations and their state chapters (e.g. American Water Resource Association, American Water Works Association, Water Environment Federation, American Society of Civil Engineers, Oregon Science Teachers Association, Oregon Museum of Science and Industry) to develop suitable materials, sponsors, and implementation plans for a, b, and c above.

8. Input to major policy initiatives, such as renewal of funding for the Oregon Plan for Salmon and Watersheds.
9. Assessment of environmental flow requirements for key aquatic species and communities.
10. Feasibility study for the development of a Columbia River Basin (CRB) Compact among the CRB states, to consider water allocation, quality, environmental flows, transboundary groundwater and out-of-basin transfers and provide a foundation for renegotiation of the Columbia River Treaty with Canada.

Long-term (2014-2050)

1. Long Term Planning
    a. Long term regional water master planning involving multiple government/utility partners and stakeholders, and multiple surface water/ground water basins.
    b. Identify and implement organizational components and appropriate scale
    c. Continued public and stakeholder involvement
    d. Development and use of various funding sources
2. Projects for which near-term planning and long-term implementation support Strategic Focus and are consistent with espoused principles

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Figures

Figure 1. 2000 Oregon Annual Water Withdrawals

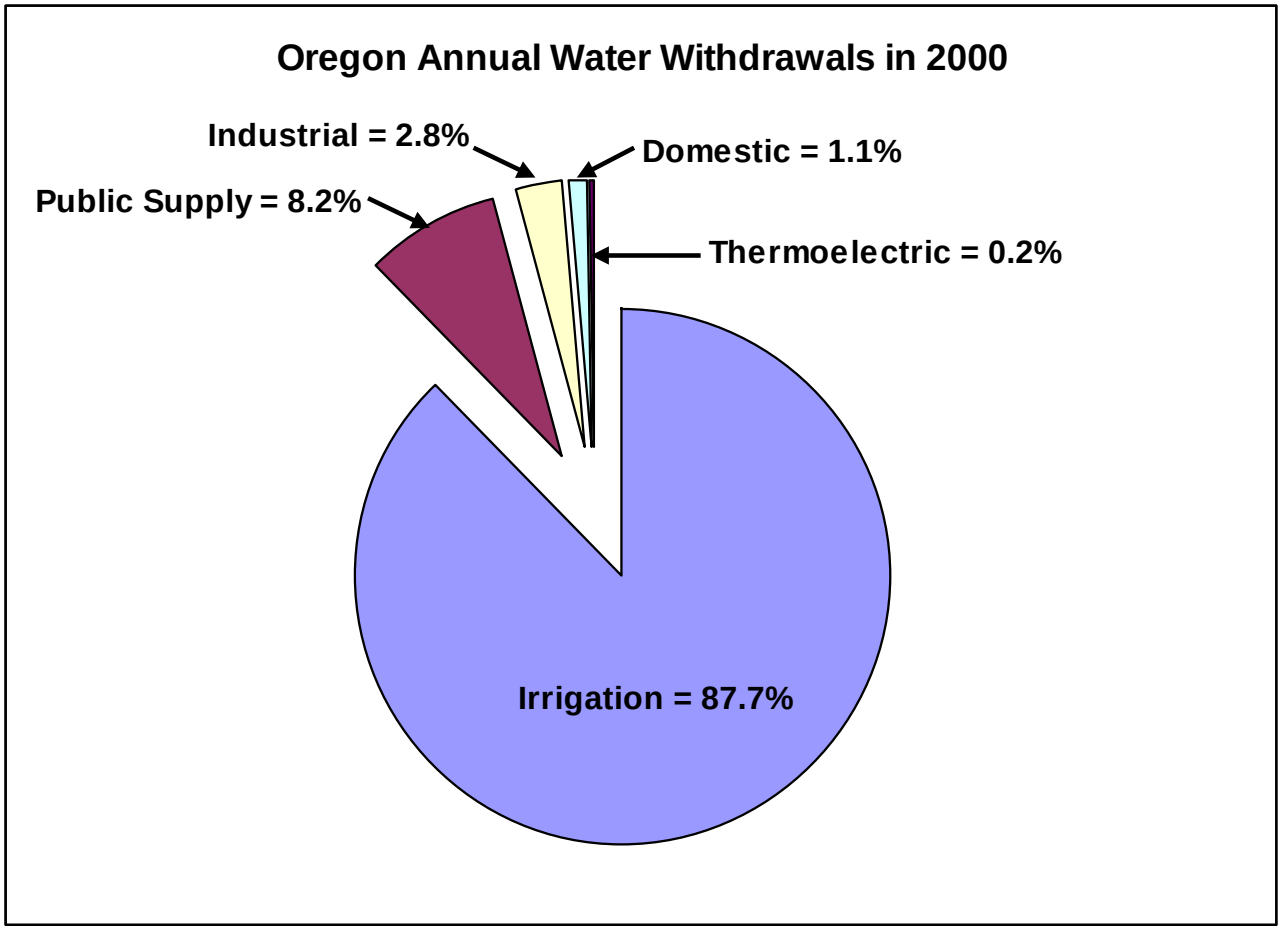

Figure 2. Issues Map, Oregon Business Plan Water Working Group