

FRESHWATER PREPARATION/ADAPTATION WORK GROUP (PAWG) DRAFT RECOMMENDATIONS

Key Impacts and Issues for Water Resources

For the Pacific Northwest, climate change models indicate that a likely effect on water resources will be reduced snowpack and earlier runoff. Although overall precipitation may remain the same, more may fall as rain than as snow, with rain events likely to be more intense. Given the earlier snowpack melt, streamflows may be lower in summer and early fall, with in-stream temperatures higher due to higher air temperatures. This set of circumstances is likely to create significant pressures on water resources and current tools and approaches used to manage water. That said, different watersheds across the state are likely to be affected differently by a changing climate.

The changes in climate experienced to date and expected future changes are likely to have significant effects on water supply, fish and wildlife, agriculture, flood and storm preparation, and hydropower (based on the timing and availability of water). Management systems for each of these sectors rely on past patterns of temperature and precipitation which are now changing and will continue changing for the next half a century or more. The past is no longer a reliable predictor of the future. Management systems that have been designed around past relatively stable climate patterns will not readily accommodate the expected new extremes. Climate change is already forcing water resource managers and planners to evaluate complex tradeoffs and adapt their systems in a changing and unprecedented environment. Adaptive management approaches are already being adopted in many contexts.

While climate change is likely to impact the net amount of water that a basin receives, it is the uncertainty, variability and timing that have the greatest impact on water supply infrastructure. The impacts of climate change will also be compounded by increasing urban and suburban populations which will continue to stress water resources and water management systems. Establishing the ability to continuously adapt as hydrologic regimes and water demands change will require time, planning, and creative long-term thinking.

A reliable supply of water is crucial for the communities, businesses, industries, ecology, and quality of life of Washington. Streams and aquifers rely on precipitation, which may be stored in snow, lakes or higher groundwater systems. As climate change shifts the timing and volume of streamflows, and reduces snowpack, more frequent low flows during the summer will make it more difficult to meet both in-stream and out-of-stream needs. Reduced groundwater recharge will also make it more difficult for water suppliers to meet the needs of consumers and preserve in-stream values in snowmelt-fed watersheds. Projected increases in air temperature will likely lead to warmer stream temperatures, especially during the summer. Temperature changes and changes in the volume and timing of streamflows are likely to create environmental conditions that are detrimental to Pacific Northwest cold water fish populations. Salmon are at particular risk. While increasing temperatures and rising CO₂ levels may enhance potential crop production, soil moisture is projected to decrease, and crops could suffer more days of heat and moisture stress. Increased winter flows and lower summer flows are likely to reduce the availability of irrigation water when it is needed the most.

Changes in precipitation relative to temperature change are uncertain. Increases in temperature may cause more precipitation to fall as rain instead of snow, leading to an increase in flooding in winter even if total precipitation remains the same. If winter precipitation increases in the future, as some models suggest, the risk of flooding would be compounded for flood management systems designed

to address historic events, and with major components aging. Likely climate change impacts on urban stormwater flooding are not well understood and require localized assessments and modeling. Many existing stormwater systems cannot handle out of the ordinary deluges, as have recently occurred in some urban areas. Shifts in the amount and timing of streamflow will affect hydropower.

Freshwater PAWG Recommendations

Between June and December 2007, the Freshwater PAWG, representing state agencies, local and tribal governments and various water resource interests, met to discuss preparation and adaptation to climate change in relation to the needs for water resources in Washington State. The PAWG developed four priority strategies encompassing a number of specific recommendations to address the potential impacts of climate change. Additional priority areas, such as stormwater, hydropower, water quality, and flood management, were not discussed by the PAWG due to time constraints. The Freshwater PAWG suggests that the state authorize its continuation through 2008 to refine the four recommendations and provide additional recommendations for other priority areas. In addition, the PAWG suggests providing a long-term venue for further comprehensive discussions about strategies for addressing climate change impacts on freshwater in Washington.

The Water PAWG offers the following recommendations, organized as four main strategies:

1. Water resource management strategy
 - 1.1 Identify and improve existing water resource policies, agreements and laws that limit the ability to manage and/or that exacerbate water resource challenges resulting from climate change
 - 1.2 Evaluate options to meet water demand (considering potential climate change effects)
 - 1.3 Restore and protect natural watershed functions
 - 1.4 Create programs and incentives to encourage the consolidation or cooperative management of public water systems
2. Water conservation and efficiency strategy
 - 2.1. Establish and fund a statewide water conservation program
 - 2.2. Define guidance or standards for water conservation and related energy efficiency
 - 2.3. Provide educational outreach on water conservation
3. Emergency preparedness and drought management strategy
 - 3.1 Fund the drought preparedness and emergency water supply projects accounts and modify the utilization requirements therein
 - 3.2 Remove the 10% allocation cap for non-agriculture uses for emergency drought relief
 - 3.3 Create Appropriate State-Wide Drought Management Strategies that Account for Evolving Drought Risks in a Warmer Climate
4. Water resources planning and information strategy
 - 4.1 Fund additional research and monitoring programs to improve understanding of available water supplies (surface and groundwater), water use, and linkages to climate variability and climate change.
 - 4.2 Incorporate climate change considerations into long range and emergency planning
 - 4.3 Provide outreach to the public and others to plan and prepare for climate change

Because the strategies overlap to some extent, the recommendations are separated in the interest of identifying specific discrete steps. Implementation steps for recommendations to address the strategies are described below. No priority is assigned by the numbering. The Water PAWG believes that preference should be given to actions likely to have the lowest cost and least environmental impact. Such actions generally can be implemented more quickly, with more agreement, and are less likely to be regretted at a later date. The Water PAWG also recognizes that all of these strategies may not be relevant to all areas of Washington. Water resources vary significantly within the State and the effects of climate change and approaches to adaptation are likely to vary as well. The Washington state Legislature and Departments of Ecology; Health; and Community, Trade, and Economic Development will play significant roles in implementing the following recommendations, in cooperation with local governments and watershed or other planning groups.

1. WATER RESOURCE MANAGEMENT STRATEGY

Description of the Strategy

This strategy focuses on addressing current approaches to water resource management and allocation within Washington in preparation for and adaptation to the impacts of climate change. It addresses current barriers as well as identifies potential new approaches and means for sustainable water management in relation to the challenges of climate change.

Goal of the Strategy

Given the significant potential effects of climate change on water availability (including timing and amount), many existing serious challenges in appropriate allocations of water are likely to be exacerbated. The goal of the strategy is to examine various approaches to manage water supplies to meet both in-stream and out-of-stream demands, including public health and safety, in an increasingly unpredictable future. Access to water in the state is governed by various laws, regulations, programs, and policies that have divided the resource among many competing uses including municipal drinking water supplies, energy and agricultural production, tribal rights, and fish and wildlife habitat. The major push in the past ten years to develop watershed plans in basins across the state, while beneficial, has not resulted in state-wide comprehensive water management strategies that account for climate change impacts. Even without specific effects of climate change, in many parts of the state, the demand for water has exceeded available supplies. This situation is likely to grow worse and require increasingly rapid and adaptable responses to water management in some areas. The state's current management structures and decision-making processes are likely to be inadequate for the magnitude, scope and speed of water management decisions necessary to address climate change impacts.

The specific recommendations of the Water PAWG are:

- 1.1 Identify and improve existing water resource policies, agreements and laws that limit the ability to manage and/or that exacerbate water resource challenges resulting from climate change**
- 1.2 Evaluate options to meet water demand (considering potential climate change effects)**
- 1.3 Restore and protect natural watershed functions**
- 1.4 Create programs and incentives to encourage the consolidation or cooperative management of public water systems**

Recommendation Implementation Steps

Recommendation 1.1 Identify and improve existing water resource policies, agreements and laws that limit the ability to manage and/or that exacerbate water resource challenges resulting from climate change

Given that the initial recommendations of this PAWG are by necessity very limited in scope, these preliminary efforts should be expanded and extended to encompass a wider range of important water resources issues that are likely to be affected by climate change, but which cannot be evaluated fully within the scope of the existing effort. For instance, our ability to adapt to the impacts of climate change on water resources as a whole, and to the regional variability of those impacts, will be directly affected by current water resources laws, policies, and agreements. In this context, the Governor and the Governor's Office are in a unique position to provide state-wide oversight and to take the leadership role in mandating, facilitating, and funding the evaluation of current water resources policies, agreements, and water laws with the objectives of:

- 1) Identifying additional areas of significant climate change vulnerability,
- 2) Motivating appropriate agencies, groups, or individuals to take action to reduce these vulnerabilities via long term planning, changes in water management policies, or other actions,
- 3) Institutionalizing the long-term and on-going process of climate change adaptation in the water sector.

Some specific examples of areas of concern that would benefit from additional study with high level oversight in state government (the Water PAWG, if it continues, would likely play a role in further fleshing out review of policies affecting operations of dams for hydropower, flood control, and reduced impact of any new dam operations on fish and wildlife):

- Comprehensively review dam safety and flood control operating plans to evaluate robustness in the face of changing climate and make operational changes as needed to reduce impacts (keeping in mind the need to maintain and in many cases improve dam operations to minimize impact on fish and wildlife populations, which will also likely be stressed by climate change).
- Request that climate change be explicitly included in the proposed Columbia basin comprehensive flood control review.
- Comprehensively evaluate the economic effects of changing hydropower resources due to altered run-off patterns from climate change in the context of changing fossil fuel markets, increasing cost-effective energy efficiency potential, and a growing portfolio of renewable energy sources such as wind power.
- Evaluate the sustainability of exempt wells in suburban development projects and other rapidly developing areas on a state wide basis.
- Evaluate and develop the means to achieve instream flow requirements in light of expected hydrological changes due to climate change.

One approach to do this is for agencies and representatives to evaluate existing implementation authority/ mechanisms that can be strengthened or adapted to promote sustainability and collaborative decision-making, including the following:

- Watershed plans and planning groups under 90.82 and 77.85
- Columbia Basin Water Management Program authorized in 2006
- Local or regional water management groups (e.g., Cedar River IFC; Green River Refill Committee; Yakima Basin groups; Walla Walla)
- Groundwater management plans
- State authorities (water masters; metering; enforcement/compliance; utility planning and service area obligations; trust water program)
- Local authorities (GMA; flood management plans; emergency response plans)
- Water conservation and efficiency statutes:
 - Plumbing Code (RCW 19.27.031)
 - Water Supply Facilities – Referendum 38 (Chapter 43.99E RCW)
 - Water Use Efficiency Rule (RCW 70.119.180)
 - Reclaimed Water Act (Chapter 90.46 RCW)
 - Water right permits for rainwater collection

Recommendation 1.2 Evaluate Options to Meet Water Demand (considering potential climate change effects)

The Department of Ecology should conduct/sponsor a study or evaluation, including a cost-benefit analysis and an assessment of environmental impact, that examines various options in use in Washington and elsewhere that improve the ability to meet demands for water. These may include examining approaches to flexibly transfer water among different users and uses of water, including pros and cons of water markets that create equity in the ability of various sectors to purchase water; options for addressing demonstrated water supply needs, including above and below ground to meet both in-stream and out-of-stream uses; and alternative water supply options such as desalination, greywater use and rainwater collection. The study should consider the potential development of an overarching infrastructure that provides a context and guidelines for water transfers and water supply development that supports the widest range of in-stream and out-of-stream uses.

Various storage studies—including the *2001 Report to the Legislature, Artificial Storage and Recovery of Groundwater* and those done as part of Chapter 90.82 RCW planning should be expanded to account for climate change impacts. Other options to be investigated as means to meet water needs should include:

- Modification of existing infrastructure to meet multiple purposes (e.g., water supply, flood control, in-stream flows)
- New and expanded incentives and requirements for water conservation
- Use of reverse osmosis technology to desalinate water
- New water storage options, whether in-stream or off-channel, above or below ground, through techniques such as:
 - aquifer recharge
 - natural water storage (e.g., beavers, wetlands)
 - new impoundment structures (e.g., new storage facilities currently being assessed through the Columbia River Water Management Program)

Recommendation 1.3 Restore and Protect Natural Watershed Functions

Natural watershed functions can provide a buffer against stream temperature increases while serving to maximize water retention and incremental release over the water year. The Departments of Ecology; Community, Trade, and Economic Development; Fisheries and Wildlife; Natural

Resources; and the Recreation and Conservation Office should use the tools they have available for planning and habitat restoration and protection to restore natural watershed functions that decrease peak flows and increase base flows. The Departments should work together to identify the minimum flows necessary to restore and protect habitat and aquatic resources. This may entail setting in-stream flows for targeted watersheds and establishing specific strategies to improve and protect flows. Depending on the watershed, this may have connections to the water supply options in Recommendation 1.2. Some potential options for restoring natural watershed functions may include

- Assess statewide status, needs, and opportunities to restore and protect natural watershed functions
- Restore flood plain connectivity,
- Continue to support the upgrading of roads to current standards, abandonment of roads not needed or that need to be move out of floodplains and replacement of undersized culverts or fish passage barriers,
- Allow floodwaters to inundate the surrounding land to recharge soil, and
- Acquisition of property
- Use of techniques to protect and restore soil storage capacity including canopy and duff re-establishment along with vegetation that slows and promotes water infiltration.

Recommendation 1.4 Create Programs and Incentives to Encourage the Consolidation or Cooperative Management of Public Water Systems

State agencies should create programs and incentives to encourage the consolidation or cooperative management of public water systems. If these strategies lead to an increase in water conservation and system efficiencies they would help systems to meet climate change, public health and safety, and water supply challenges.

2. WATER CONSERVATION AND EFFICIENCY STRATEGY

Description of the Strategy

Conserved water is likely to be the cheapest source of new water, with the least environmental impact. The state should develop and implement a coordinated program of water conservation and efficiency activities targeting multiple water use sectors within the state - agriculture, municipal water supply, wastewater, and public sector supply.

Goal of the Strategy

The goal of the conservation and efficiency strategy is perennial efficiency and a system of water use that rewards consistency, as well as adaptability. The state should reduce water and related energy demands and replace existing practices over time with “more” and “most efficient” practices and infrastructure. Energy efficiency reduces the need to produce hydropower for local use, thereby potentially providing greater flexibility in water supplies. The net efficiency savings can provide a buffer for those years where climate change and related water supply variability stress the state’s capacity and resources. As conservation and efficiency are incorporated into normal practices, the state will be better positioned to balance or adapt to changes in water supply or demand. The state could also consider using mandatory regulations and codes to improve water and energy efficiencies. The goal of the strategy is to develop a coordinated program that will:

- Reduce overall water use by targeted water use sectors,
- Increase water use efficiency and related energy efficiency,

- Support the development of water and energy efficient infrastructure,
- Provide funding and support for conservation initiatives,
- Include regulatory support with standards, targets and where appropriate enforcement,
- Provide the public with a common vision for water conservation and efficiency across the state and across multiple sectors of government and businesses.

The following are recommendation of the Water PAWG:

2.1 Establish and fund a statewide water conservation program

2.2 Define guidance or standards for water conservation and related energy efficiency

2.3 Provide educational outreach on water conservation

Recommendation Implementation Steps

Recommendation 2.1: Establish and Fund a Statewide Water Conservation Program

The Legislature should appropriate \$10 million to fund conservation activities across multiple sectors. With this funding a Cooperative Statewide Conservation Program would be established to competitively disperse funds, evaluate and track performance of expenditures, and disseminate lessons learned. State agencies would pool their resources and efforts to provide a coordinated front for all sectors and users of water resources ranging across municipal, industrial, and agricultural water use. Water conservation and efficiency activities to be supported and funded may include the following:

- Market initiatives and tax credits
- Conservation incentive programs
- Infrastructure development, redevelopment or replacement
- Compliance and enforcement strategies against water mis-use
- Development and application of new technologies, techniques and best management practices (e.g. goal setting, performance measures)
- Agricultural water use efficiency techniques, new technologies, and improved best management practices
- Landscaping techniques for urban settings such as urban forests, xeriscaping, etc.
- On-site use of stormwater and rainwater and low impact development techniques
- Retrofits of existing development for on-site use of stormwater and rainwater
- Use of basic water use service meters in communities
- Use of reclaimed water, grey water, industrial re-use

Additionally, the state should aggressively pursue federal resources to support management strategies and decisions [e.g., Senate bill, S. 1766, “The Low Carbon Economy Act,” which includes the creation of a Climate Adaptation Fund to facilitate planning, design, and construction of projects to conserve water and improve water use efficiency]

Recommendation 2.2 Define Guidance or Standards for Water Conservation and Related Energy Efficiency

???WHO??? The Department of Ecology or other agency should define where rules or standards are needed, and where best management practices and guidance is a sufficient or more appropriate alternative to achieve water conservation and efficiency across a range of sectors. Examples include:

- State agencies should promote sustainable development such as plumbing and infrastructure needed for appropriate use of reclaimed water, greywater and rainwater;

- The state should explore options/standards for decreasing energy and water use for wastewater treatment;
- The state should support stronger federal and state appliance efficiency standards;
- State agencies should provide incentives and support for municipal, industrial, and agricultural efficiencies
- State and municipal water supplies should identify and remove barriers to water conservation and efficiency

Recommendation 2.3 Provide Educational Outreach on Water Conservation

State agencies should provide education on water conservation and efficiency tools and techniques to a variety of audiences from a range of sectors.

- Outreach programs should encourage the adoption of more efficient water conservation equipment across a range of sectors.
- Agencies should provide incentives and education for communities to use less water and energy.

3. EMERGENCY PREPAREDNESS AND DROUGHT MANAGEMENT STRATEGY

Description of the Strategy

Some climate change forecasts predict that the Pacific Northwest will likely fluctuate between warmer and wetter and warmer and drier. This means that the state must prepare for routine extreme events of both types—drought and stormwater/flooding— more as chronic conditions than as emergencies. This means shifting the focus of the state’s activities to preparedness across all levels of government. It is clear that part of the state’s strategy needs to include revitalization and stable funding for the drought preparation account, active preparation and planning for drought in all sectors., and rethinking the need for and definition of drought. The strategy does not include specific steps toward a coherent state strategy toward flooding, which has generally been the responsibility of local and regional authorities, but the state should at least attempt to assure that flood management and response strategies across the state are updated to include higher risks from extreme events that climate change will likely bring.

Goal of the Strategy:

Climate change is expected to result in increased frequency, severity, and persistence of low or drought level water supply conditions in Washington State. The goal of the strategy is to enhance the state’s capacity to adapt to emergency water supply conditions by shifting emphasis from emergency response to proactive preparation and management. The recommendations of the Water PAWG are to:

- 3.1 Fund the drought preparedness and emergency water supply projects accounts and modify the utilization requirements therein**
- 3.2 Remove the 10% allocation cap for non-agriculture uses for emergency drought relief**
- 3.3 Create Appropriate State-Wide Drought Management Strategies that Account for Evolving Drought Risks in a Warmer Climate**

Recommendation Implementation Steps

Recommendation 3.1 Fund the Drought Preparedness (DPA) and Emergency Water Supply Projects Accounts and Modify the Utilization Requirements Therein

The Legislature should authorize bonding for \$10 million to fund the accounts. This would allow bonds to be sold on an “as-needed” basis to support a multi-year preparation and response. Use of the account would not require new legislation if applied within existing statutes and intent. Management and rule making authority for account use is delegated to Ecology per [RCW 43.83B](#). Based on prior uses of the account, adequate guidance is available ([Chapter 173-166 WAC](#)) to provide for early and effective use. Per that guidance, funds could be distributed to public bodies for agricultural, municipal, and fish and wildlife water infrastructure improvements to facilitate operation during drought water supply conditions. A significant number of smaller infrastructure improvements could be completed within an initial 5-year period. Examples include:

- Agriculture –
 - Emergency wells, improved water diversion and delivery
 - Agricultural drought relief at the family farm or direct irrigator level
- Municipal -
 - Small municipal systems upgrades, emergency wells and interties
 - More flexible application of “place of use” for water rights in emergencies.
- Fish and Wildlife -
 - Hatchery water supply,
 - Fish collection and passage facilities

Other considerations for the drought preparation funding should include options for loan programs for non-municipal supplies. Many water supplies in the state are non-profit but not legally a public entity these include homeowner and community associations. A “refillable” source of low cost funds targeted for emergency preparedness would encourage small utilities to make the needed infrastructure adaptations. Existing funding programs do not preclude these types of projects but they often fail to score high enough on the funding priority lists. Operator owned utilities and other small non-municipal utilities have a very limit set of funding resources. Long term infrastructure improvements often get overlooked for more immediate needs. A source of low interest loans can be an important incentive to encourage better long term assessments and preparations.

Recommendation 3.2 Remove the 10% Allocation Cap for Non-Agriculture Uses for Emergency Drought Relief

[WAC 173-166-090](#) (6) states that “no more than 10% of total available funds will be allocated for nonagricultural drought relief purposes, including the preservation of the state's fisheries during a biennium.” Stakeholders other than agriculture require emergency relief from drought. In the past, Ecology has dealt with the issues this cap creates by overriding this cap via an emergency rule and/or by transferring funds to the DPA, which does not contain such limitations. Removing the 10% cap will ensure all stakeholders are assisted during a drought emergency and will eliminate the need to expend valuable agency time on procedural tactics used to circumvent the cap. The Washington Legislature should remove this cap via an amendment to [WAC 173-166-090](#)

Recommendation 3.3 Create Appropriate State-Wide Drought Management Strategies that Account for Evolving Drought Risks in a Warmer Climate

The Department of Ecology should research the appropriate definition for “normal” to better define drought. Currently, per [RCW 43.83B.400](#) a “drought condition means that the water supply for a geographical area or for a significant portion of a geographical area is below 75% of normal and the water shortage is likely to create undue hardships for various water uses and users.” In a pre-climate changed water policy world, it was easy to calculate “normal” – it was simply the mean of the historic record. As climate changes, historical records are less predictive of water availability. This recommendation would require further research to create a formula that would define drought

to remove the bias associated with older historic data that is unrepresentative of typical conditions, even seen today. A new definition of drought would also be flexible. This flexibility will allow the state to declare drought in some regions and not in others based on different definitions of supply. Clarifying what “normal” means would not remove this flexibility. A rule that goes through the public process would demystify how the 75% of normal supply determination is calculated. Furthermore, such a rule would help push the trend away from emergency-based drought responses toward adaptive management-based planning.

4. WATER RESOURCES PLANNING AND INFORMATION STRATEGY

Description of the Strategy

The strategy promotes the need to plan for and gather better data about the effects of climate change on water resources. It recommends the integration of climate change into a variety of planning environments, including short and long-range water resource and emergency planning, and the conduct of science and information gathering research.

Goal of the Strategy

The strategy recognizes that the profound effects of climate change require planning from every perspective. The goal of the strategy is to incorporate climate change into long-range and emergency planning through mandates. Additionally, improved monitoring, scientific information gathering, and data management will be implemented. The strategy also aims to engage and educate a cross-section of entities that will be affected by climate change, including the public, planning groups, and local governments, with the intent of helping them plan for the future. The Water PAWG recommends the following:

4.1 Fund additional research and monitoring programs to improve understanding of available water supplies (surface and groundwater), water use, and linkages to climate variability and climate change.

4.2 Incorporate climate change considerations into long range and emergency planning

4.3 Provide outreach to the public and others to plan and prepare for climate change

Recommendation Implementation Steps

Recommendation 4.1 Fund additional research and monitoring programs to improve understanding of available water supplies (surface and groundwater), water use, and linkages to climate variability and climate change

The Legislature should augment current scientific research efforts, to establish a credible infrastructure of hydrologists and climate change scientists to provide increasingly finer resolution data and understanding (e.g., at watershed scales) of effects of climate change on water resources. This scientific infrastructure can also be used to study and develop data on hydrologic changes related to large-scale disturbances, such as fire and forest die-back.

The Legislature should direct state agencies to organize data, about water resources – including water use, water quality, return flows, extent of exempt wells, ground water availability, etc. and make this information available to a broad cross-section of users. A monitoring and data management program should be established to improve the monitoring of water rights, water use, water quality, ground water resources, return flows, exempt wells, and other areas, through improved metering and reporting. Agencies, in coordination with academic institutions, should monitor ice resources, such as glaciers, temperature, and precipitation in high elevations, and quantify their influence on the hydrologic cycle at the watershed scale. Better data such as floodplain maps should be developed for siting public and private infrastructure. Comprehensive

data can provide the basis for water management decisions (e.g., work in Columbia basin and Walla Walla Subbasin). Methodologies for better projecting outcomes related to climate change need to be developed and used by agencies in their work, such as for the design of infrastructure, and the development of TMDLs, for example. The state should also fund or support federal funding requests for improvements to weather forecasting for the state. This would help in emergency preparedness as well as water resource management and adaptation practices.

Recommendation 4.2 Incorporate Climate Change into Long-Range Planning

State and local agencies and others with responsibilities for planning should examine where climate change strategies can be incorporated.

State agencies including, Departments of Health; Community, Trade, and Economic Development; Ecology; and Fish and Wildlife should review and recommend to the legislature modifications based on water issues to the Growth Management Act (GMA), State Environmental Policy Act (SEPA), Shoreline Management Act (SMA), State Wildlife Management Plans, Coordinated Water System Planning, and Watershed Planning, to require the incorporation of climate considerations if needed. These state agencies will identify needed changes and the Legislature should provide funding to address the changes. For example, the agencies should revise the assessments done in watersheds to account for climate change impacts on both supply and demand sides, include climate change as an element in studies supported by state funding and in planning activities (e.g. related to water permitting). Corresponding to the planning horizon, the state should also provide population and economic forecasts to support water demand forecasting, and these could correspond to the climate change scenarios

Local governments and planning groups should be required to review and comment on existing comprehensive plans to identify, prioritize, and address issues related to climate change. Local drought response plans should be developed that include approaches for water use savings (including curtailment) during low supply periods. These could be incorporated into existing planning such as water utility planning and local government comprehensive plans. Assessment of potential changes in flood risk should be incorporated into land use planning. Water supply, watershed, and other significant water resource related planning activities should consider incorporating both “likely” and “worst case” scenarios relative to water availability and water demand.

Recommendation 4.3 Provide outreach to the public and others to plan and prepare for climate change

State agencies should ensure that information gathered as part of planning and water resources investigations is made accessible to the broadest audience possible. Planning will be required by many organizations to adapt to climate impacts and the more accurate the information and robust the tools, the more effective the planning. Agencies can do this by engaging more actively with watershed planning groups, as well as developing tools, fact sheets, and brochures and conducting training with local groups, schools, local governments, and others.