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Managing Water in the West

Klamath River Basin Study

Evaluating Strategies to Address
Gaps in Water Supply and Demand

February 23, 2015



U.S. Department of the Interior
Bureau of Reclamation

Meeting Agenda

- **Introductions**
 - Approach for developing strategies to address future gaps in water supply and demand
- **Overview of the Klamath River Basin Study**
- **Discussion of adaptation strategies**
- **Next steps**

Overview of the Klamath River Basin Study

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Basin Studies

- **Purpose**
 - Work with state and local partners in 17 western states to evaluate future water supply and demand gaps in a changing climate
- **Basin Studies include:**
 - Assessments of the risks and impacts of climate change on water resources, and
 - Development of potential adaptation strategies to reduce gaps in water supply and demand

Klamath River Basin Study Area

- Equal 50 percent cost share by Reclamation and non-federal cost-share partners
 - Oregon Water Resources Department
 - California Department of Water Resources



Phases of the Klamath River Basin Study

Basin Study Elements

Phase 1:
Water Supply and
Demand Assessment

Assess current and projected water supply and demand, including the impacts of climate change

Phase 2:
System Reliability
Analysis

Analyze how the basin will respond to water supply and demand projections according to identified metrics

Phase 3:
Development of
Adaptation Strategies

Develop adaptation strategies to reduce any identified imbalances

Phase 4:
Evaluation of Adaptation
Strategies

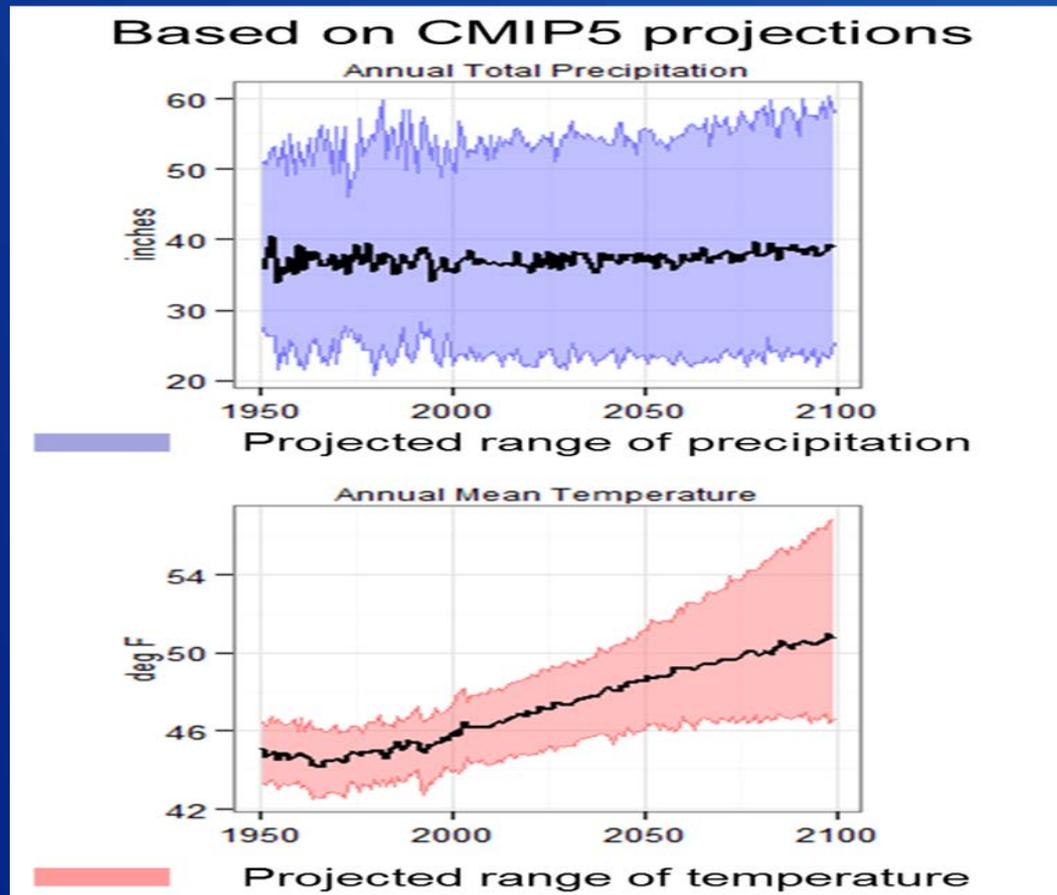
Evaluate adaptation strategies, findings, and recommendations as appropriate

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Water Supply Assessment

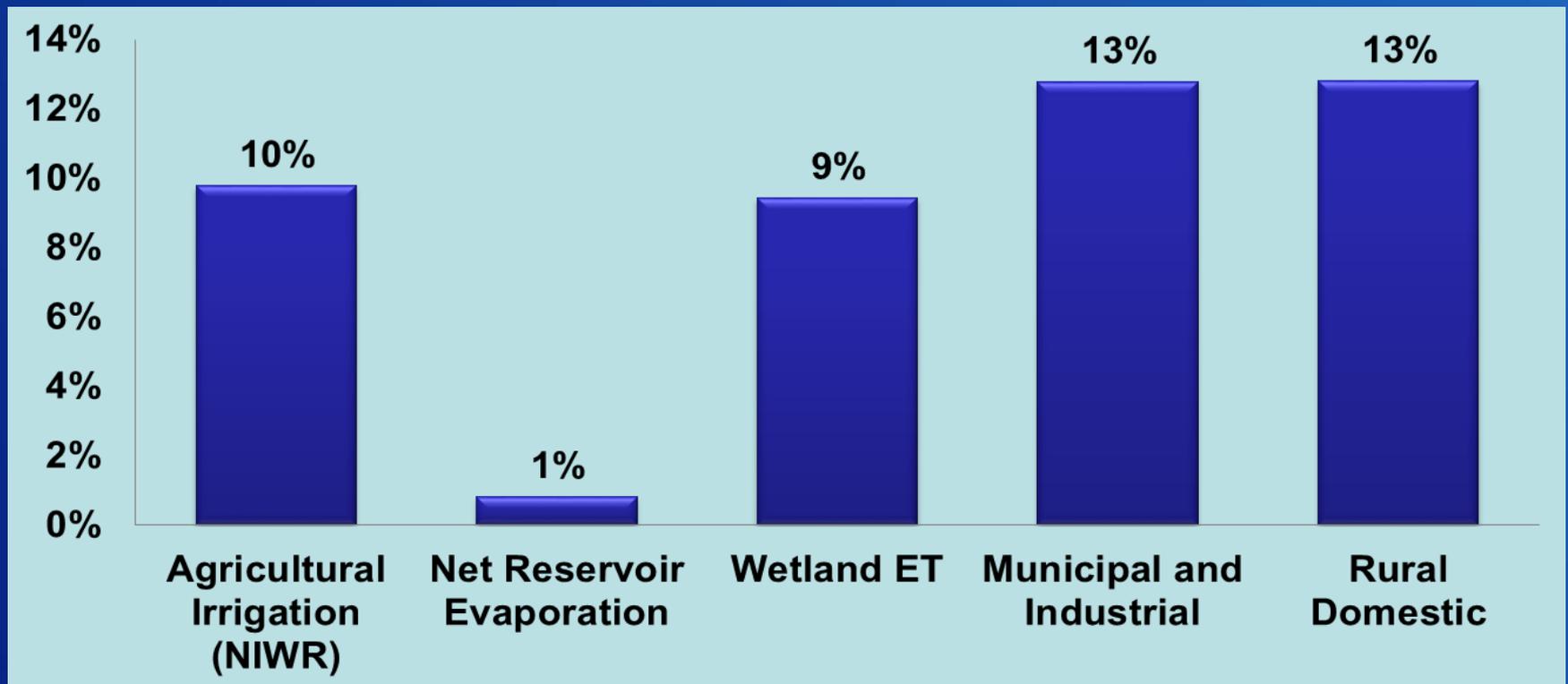
- Projected increases in temperature in all seasons
- Projected wetter winters and drier summers
- By the 2050s, annual temperature will be largely outside the range of historical variations
- By the 2050s, annual precipitation will be largely within the range of historical variations

Water Supply Assessment - CMIP5 Projections



Water Demand Assessment

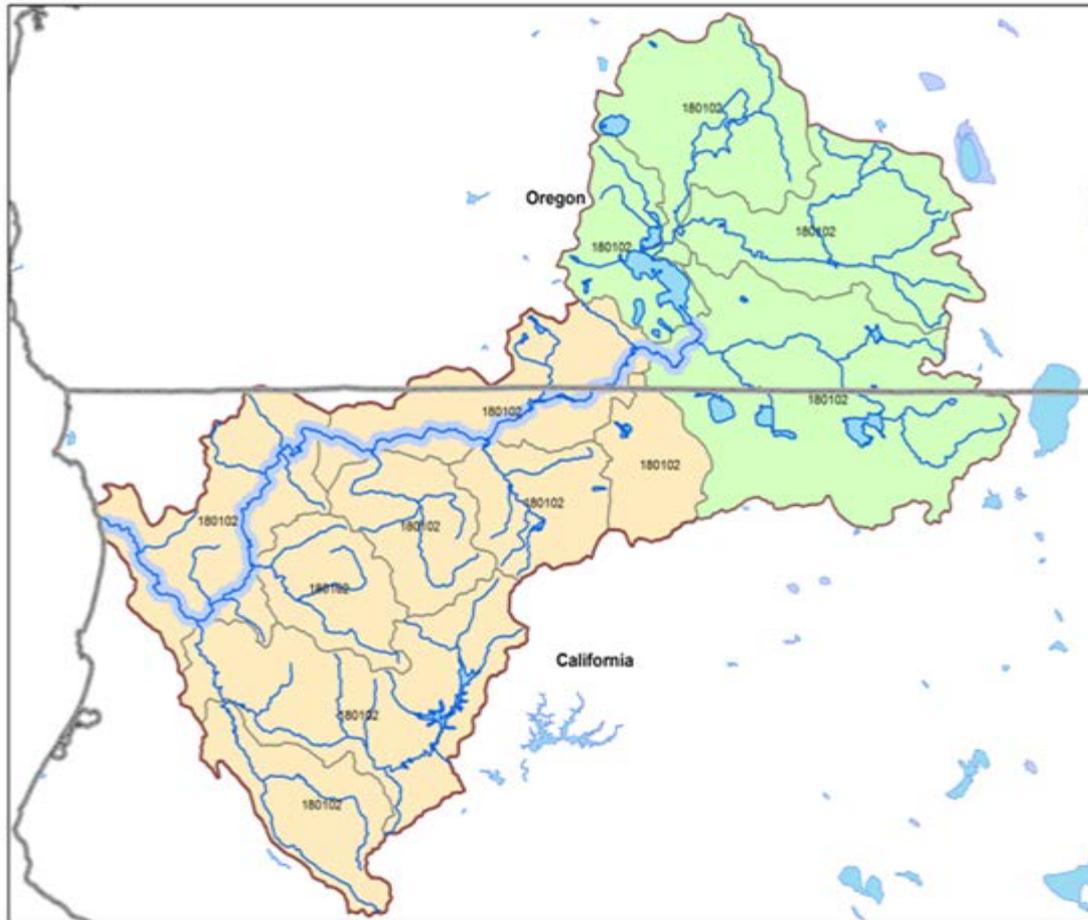
- Projected changes in consumptive water demands (2030s)



System Risk and Reliability Analysis

- Identify historical reliability of water supply and existing shortages
- Identify how water supply reliability might change in the future
- Identify measures that are used to quantify historical and future water supply/demand gaps

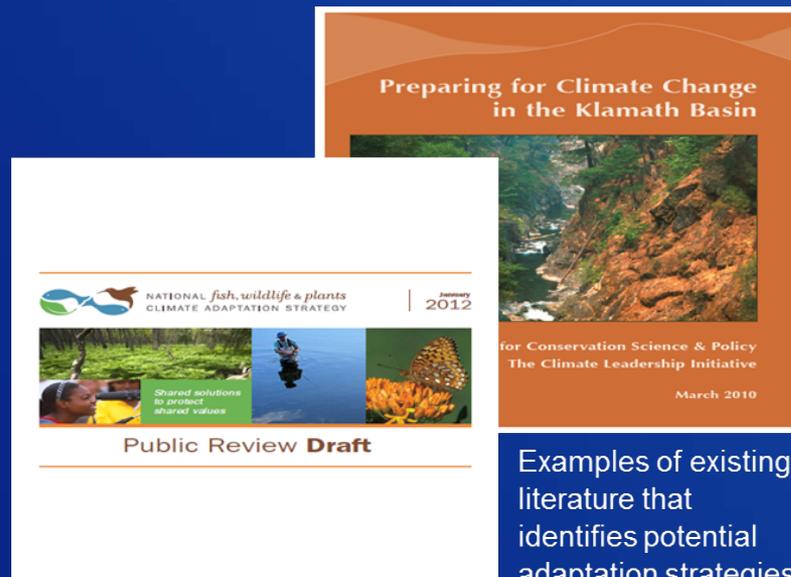
Klamath River Basin Water Supply



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Identification of Adaptation Strategies Trade Off Analysis

- Compile identified strategies from existing studies and solicit additional potential strategies
 - Screen strategies for those that can be evaluated (qualitative and quantitative) in model framework
- Evaluate selected strategies



Examples of existing literature that identifies potential adaptation strategies

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Strategy Examples

Modify crop use/acreage



Increase Instream
Flows



River Restoration



Increase Storage



KBRA Implementation



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Organizing and Categorizing Strategies



- All strategies submitted to the Basin Study will be reviewed and organized into categories

Increase Supply

Decrease Demand

Modify Operations

Governance & Implementation

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Approach for Evaluating Strategies

- **The Basin Study is intended to explore a broad range of adaptation strategies, but will not result in the selection of a particular proposed strategy or set of strategies**
- **Evaluation will be done at an “appraisal” level**
- **Strategies will be evaluated quantitatively or qualitatively**

Input Opportunity

- **Proposed Adaptation Strategy Categories**
 - **Increase Water Supply**
 - **Reduce Water Demand**
 - **Modify Operations**
 - **Governance and Implementation**

Increase Water Supply

- **Examples**
 - **New/Increased Storage**
 - **Reduce Water Conveyance Losses**
 - **Recycled Water**
 - **Others?**

Reduce Water Demand

- **Examples**
 - Improve water use efficiency
 - Reduce evaporative losses
 - Reduce M&I and rural domestic demands
 - Others?

Modify Operations

- **Examples**
 - **Groundwater management**
 - **System operational efficiency**
 - **Conveyance system improvements**
 - **Water acquisition and transfers**
 - **Others?**

Governance and Implementation

- **Examples**
 - **Restoration projects**
 - **Protect existing critical habitat**
 - **Develop partnerships for landscape scale planning (settlement agreements)**
 - **Improved measurement and monitoring of surface and groundwater**
 - **Others?**

Next Steps

- **Submit potential adaptation strategies**
 - **Complete strategy submittal form by March 16, 2015**
 - **Mail hard copy to:**
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Bldg. 67, 5th Floor West
PO Box 25007 (86-68210)
Denver, CO 80225-0004
 - **Email to: sha-mpr-klamathbasin@usbr.gov**
- **Draft chapter will be available for review late spring 2015**