COLUMBIA RIVER PROGRAM

2011 WATER SUPPLY & DEMAND FORECAST

Policy Advisory Group Meeting

May 6, 2009
• 2011 Supply
  o Legal / Regulatory / Treaty Issues
  o Availability, Drought Susceptibility
  o Climate Change

• 2011 Demand
  o Ag Demand
  o Municipal / Industrial Demand
  o Power Demand
  o Instream Flow Demand
  o Demand Exerted By Climate Change
Three Tier Approach - SUPPLY

Tier 1:
Supply (High Level, All WA States and Canada)

Tier 2:
Supply (Columbia Basin 29 Counties)

Tier 3:
Supply Columbia River
Tier 2 Example

- Water Budget (2006)
- Variability
  - Historic
  - Future
  - Drought Risk
- Climate Change
  - Yakima Basin
  - Walla Walla Basin
  - Wenatchee Basin
  - Okanogan Basin
## Tier 2 Example

<table>
<thead>
<tr>
<th>Code</th>
<th>WRIA</th>
<th>River Basin</th>
<th>Established</th>
<th>Amended</th>
<th>Closure</th>
<th>Control stations</th>
<th>Characterist. of closure</th>
<th>Closure period</th>
<th>High flow diversion period</th>
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<tbody>
<tr>
<td>173-532 WAC</td>
<td>32</td>
<td>Walla Walla</td>
<td>12/14/1977</td>
<td>8/2/2007</td>
<td>Yes</td>
<td>Mill Creek at Kooskooskie</td>
<td>Seasonal</td>
<td>June 1—November 30</td>
<td>Dec 1—May 31</td>
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<td></td>
<td>Yes Walla Walla River at Detour Rd</td>
<td>Seasonal</td>
<td>June 1—November 30</td>
<td>Dec 1—May 31</td>
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<td></td>
<td></td>
<td>Yes</td>
<td>Yes Touchet River above Dayton</td>
<td>Seasonal</td>
<td>May 1—November 30</td>
<td>Dec 1—Apr 30</td>
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<td></td>
<td>Yes</td>
<td>Yes Touchet River at Bolles</td>
<td>Seasonal</td>
<td>May 1—November 30</td>
<td>Dec 1—Apr 30</td>
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<td>No</td>
<td>Icicle Creek near Leavenworth</td>
<td></td>
<td>Jan 1—Aug 14; Nov 1—Dec 31</td>
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<td></td>
<td></td>
<td>No</td>
<td>Wenatchee River at Peshastin</td>
<td></td>
<td>Jan 1—Aug 31; Nov 1—Dec 31</td>
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<td></td>
<td></td>
<td>No</td>
<td>Wenatchee River at Monitor</td>
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<td>Jan 1—Sep 14; Nov 1—Dec 31</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>No</td>
<td>Mission Creek near Cashmere</td>
<td></td>
<td>Jan 1—Jun 30; Aug 15—30; Nov 1—Dec 31</td>
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<td></td>
<td></td>
<td>No</td>
<td>Chiwawa River near Plain</td>
<td></td>
<td>Jan 1—Feb 14; March 15—Aug 14; Nov 1—Dec 31</td>
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<td></td>
<td>No</td>
<td>Nason Creek near Mouth</td>
<td></td>
<td>Jan 1—Aug 31; Nov 1—Dec 31</td>
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<td></td>
<td>No</td>
<td>Peshastin Creek at Green Bridge Rd</td>
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<td>Jan 1—July 31; Nov 1—Dec 31</td>
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<td></td>
<td>Yes</td>
<td>Chumstick Creek at North Rd</td>
<td>Permanent</td>
<td>Until the Department adopts a rule establishing instream flows or determines that instream flows or a closure are not required</td>
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<td>173-546 WAC</td>
<td>45</td>
<td>Entiat</td>
<td>8/3/2005</td>
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<td>No</td>
<td>Lower Entiat River near Entiat</td>
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<td>May 1—July 15</td>
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<td></td>
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<td>No</td>
<td>Upper Entiat River near Ardenvoir</td>
<td></td>
<td>No surface water available above the instream flows</td>
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<td>No</td>
<td>Med River at Ardenvoir</td>
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<td>Apr 16—June 30</td>
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<td>173-548 WAC</td>
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<td>Methow</td>
<td>12/28/1976</td>
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<td>No</td>
<td>Methow River near Pateros</td>
<td>Year-round</td>
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<td></td>
<td>No</td>
<td>Methow River near Twisp</td>
<td>Year-round</td>
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<td></td>
<td>No</td>
<td>Methow River at Winthrop</td>
<td>Year-round</td>
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<td>No</td>
<td>Methow River at Little Boulder Creek</td>
<td>Year-round</td>
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<td>No</td>
<td>Early Winters Creek near Mazama</td>
<td>Year-round</td>
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<td>No</td>
<td>Chewuck River near Boulder Creek</td>
<td>Year-round</td>
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<td></td>
<td>No</td>
<td>Twisp River near Twisp</td>
<td>Year-round</td>
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<td></td>
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<td></td>
<td></td>
<td>Yes</td>
<td>Certain streams and lakes</td>
<td>Permanent</td>
<td>Year-round</td>
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<td>173-549 WAC</td>
<td>49</td>
<td>Okanogan</td>
<td>7/14/1976</td>
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<td>No</td>
<td>Okanogan River at Malott</td>
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<td></td>
<td></td>
<td>No</td>
<td>Okanogan River near Tonasket</td>
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<td></td>
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<td></td>
<td></td>
<td>No</td>
<td>Similkameen River at Nighthawk</td>
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<td></td>
<td></td>
<td>Yes</td>
<td>All perennial streams except above</td>
<td>Seasonal</td>
<td>May 1—Oct 1</td>
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</tbody>
</table>
Supply Side - Columbia Mainstem

- Water Budget
- OCR vs. non-OCR Supplies
- Columbia River Webmap
Supply Side - Tributaries

- Water Budget
- OCR vs. non-OCR Supplies
- Columbia River Webmap

Yakima River Basin

Yakima River Total → To Columbia River

Yakima River Basin Trust Water

River Mile

0 5 10 15 20 25 30 35 40
Three Tier Approach - DEMAND

Tier 1:
Demand (High Level, All WA States and Canada)

Tier 2:
Tributary Demand
(Columbia Basin 29 Counties)

Tier 3:
Demand
(1 Mile Corridor + Projects)
Demand Side - AGRICULTURE

- WSU Kickoff Meeting Scheduled for May
- Academic Peer School / Group Pending
- Ag Advisory Group Kickoff for June
  - WSDA
  - USDA
  - DNR
  - Office of Farmland Preservation
  - Washington Farm Bureau
  - American Rivers
  - Columbia Snake Irrigators Association
  - Columbia Basin Development League
Proposed Elements of the Ag Study

- WSU as lead contractor.
- Peer school/group (to be determined)
- PAG collaboration / input on Scope of Work
- State Agency collaboration / input
- Proposed contract by July 1, 2009
- Study is expected to last approximately 2 years
- Scope elements:
  - CAFTA
  - NAFTA
  - International Ag. Stats
  - Washington Wine
  - Biofuels
  - USDA Farmgate Stats
  - Odessa
  - Water Right Applications
  - Interruptible Conversion
  - Climate Change Demand
Demand Side - MUNICIPAL

- Sources of Information on Muni Demand Through 2030
  - OFM Projections
  - USGS Projections
  - Watershed Planning Projections
  - Water System Plan Projections

- Effect of DOH Conservation Rule

- Incentives for Drought Conservation

- External Advisory Group
  - Same as Ag Group, Efficiencies, PAG coordination?
Demand Side - POWER

- Sources of Information on Power Demand for Water Through 2030
  - BPA, Corps
  - Northwest Power Planning Council
  - PUD’s
- I-937
- Project Coordination
- External Advisory Group
Demand Side — INSTREAM FLOW

- Tributary and Mainstem Availability and Variability
- Regulatory Environment
  - WAC (Instream Flow Rule)
  - BiOp (Columbia River Mainstem)
  - SOAC (Yakima Basin)
  - SWSL (Surface Water Source Limitation)
  - None of the Above
- Species of Concern / Interest
- Priority Stream Reaches
- Critical Life Stages
- External Advisory Group
Example Flow Variability Graphic

To be Completed for Tributaries and Columbia Mainstem

River Flow (cfs)

Jan  Feb  Mar  Apr  May  Jun  July  Aug  Sept  Oct  Nov  Dec

- Instream Flow Target
- Wet
- Average (Instream Flow WAC)
- Dry

1 cfs @ 30 days = 60 ac-ft
A Quantification of Instream Need

- When are flows not met?
- By How Much?
- In what type of water year?
**Is a Project “Good”?**

**When is Water (not) Available?**

**At what “cost” to fish?**

**At what “benefit” to fish?**
2011 Goals

- Reasonable Range of Possibilities for the Future
- OCR will select target goal for water supply development
- OCR will identify areas where need for water supply projects is greatest
- Broad External Support on Process
- Broad External Support on Target
- Look again in 5 years