Building the Columbia River Drought Insurance Program
June 6, 2007
Policy Advisory Group Meeting

Presented by
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Columbia River Unit Supervisor
Summary

1. Legislative Direction—“Solve the Interruptible Problem”
2. How big is the problem? How many interruptibles?
3. How often do droughts occur? How severe of a drought do we plan for?
4. What are our supply side options?
5. What are our demand side options?
6. Building a Drought Insurance Program (‘07-09 biennium)
RCW 90.90.020(3)(c): “The department of ecology shall focus its efforts to develop water supplies for the Columbia river basin on... A new uninterruptible supply of water for the holders of interruptible water rights on the Columbia river mainstem that are subject to instream flows or other mitigation conditions to protect stream flows.”
• 339 interruptible water rights in the Columbia 1-mile corridor (~1500 cfs, ~260,000 ac-ft)

• 41 Interruptible water rights outside the Columbia 1-mile corridor (~85 cfs, ~15,000 ac-ft)

• Other water rights subject to “mitigation conditions” (e.g. Quad Cities Permit, changes/transfers)

*Replacement water is only needed the weeks in which interruption will occur.*
WAC 173-563 adopted in 1980 set instream flows on the Columbia River

Rule uses a trigger (60 MAF forecast @ Dalles) and adopted flows

Director can reduce adopted flows by 25% under an OCPI determination

2001 only time instream flow enforcement program implemented

Other droughts in history would have triggered program (e.g. 1977)

Other low flow years (e.g. 2005) did not trigger the program, but 1980 flows not met during these years

What will climate change do? Frequency and severity of droughts?
Minimum Outflows and Flow Target for McNary Dam

- Instream flow
- Instream flow (77%, 2001 OCPl)
- BIOp flow
- Minimum outflow for low year (2005)
- Minimum outflow for low year (2001)
- Minimum outflow for low year (1993)
- Minimum outflow for low year (1977)
- Modified streamflow for low year (1929)

Average flow, kcfs:

Months
Minimum Outflows and Flow Target for McNary Dam

Average flow, kcf

Months

Instream flow
Instream flow (77%, 2001 OCPI)
Minimum outflow for low year (2001)
2001 Drought Case Study

- March 1st forecast @ Dalles = 55.4 MAF
- Approx. 330 water right holders notified, weekly updates to 1-800#
- Ecology developed a drought program for 2001
- Ecology used permitting staff to verify compliance with program requirements (meters + 80% of users field verified)
2001 Drought Case Study

• 2001 Supply Side Strategies
  o Paid BPA $1 million for 40,000 ac-ft of leased water from “load buydown”
  o Director made OCPI determination and reduced instream flows by 23%
    - Reduced weeks of interruption from 17 to 12 weeks

• 2001 Demand Side Strategies
  o Encouraged early changes/transfers
  o Required conservation to 80% of a full water duty (3.1 ac-ft)
  o Limited expansion of water rights (<last 3 years)
  o Other intangibles (apple market collapse, Enron-affected power market)
• Proactive vs. Reactive?

• How much to plan for?

• Sources of supply (supply side solutions?)

• How much Risk should users assume? (demand side solutions)

• Summary of approach for ’07-09 biennium
Building a Drought Insurance Program?
Proactive Planning: How Much to Plan for?

Total Water Interrupted in Low Flow Years at McNary Dam

<table>
<thead>
<tr>
<th>Year Interrupted</th>
<th>Volume of Water (acre-feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>202,963 af</td>
</tr>
<tr>
<td>1993</td>
<td>41,508 af</td>
</tr>
<tr>
<td>2001</td>
<td>(192,831 af)</td>
</tr>
<tr>
<td>2003</td>
<td>21,898 af</td>
</tr>
<tr>
<td>2005</td>
<td>12,746 af</td>
</tr>
</tbody>
</table>

Additional Notes:
- WAC 173-563-030
- In 2001, the Director made an OCP determination and reduced the instream flow by 23%.
- 33,000 af BPA load buy-down/Lake Roosevelt Drawdown
- Demand savings
- Supply options
• Lake Roosevelt Drawdown (33,000 ac-ft)
• Other storage options
• Critical Flow Adjustment via OCPI
• Dry year lease auctions
• Drought year partnership options (e.g. BPA)
• Emergency Wells (Yakima Basin Model)
Building a Drought Insurance Program?
Supply-Side Solutions (Timing)

Instream flow periods changed by OCPI at McNary Dam

“OCPI potential”
Lake Roosevelt Drawdown Availability

“NAS recommendation on no further withdrawals during drought”

Average flow, cfs

Jan 1-7
Jan 16-23
Feb 1-7
Feb 16-22
Mar 1-7
Mar 16-23
Apr 1-7
Apr 16-25
May 1-7
May 16-23
June 1-7
June 16-23
July 1-7
July 16-23
Aug 1-7
Aug 16-23
Sep 1-7
Sep 16-23
Oct 1-7
Oct 16-23
Nov 1-7
Nov 16-23
Dec 1-7
Dec 16-23

Months

Instream flow
Instream flow (77% of 2003 OCPI)
• Encouraging changes and transfers: water markets
• Crop duty reductions
• Irrigation efficiency and conservation promotion
• Acreage limitations
• Metering and compliance
Building a Drought Insurance Program?

Approach Summary: Long-Term Need

1. About 200,000 ac-ft combined supply and demand side options for parity with 2001 program

2. About 275,000 ac-ft in supply side options for no interruptibility in any drought and flexibility to deliver water where and when it is needed

<table>
<thead>
<tr>
<th>Storage (af) (Supply-Side)</th>
<th>OCPI (af) (Supply-Side)</th>
<th>Conservation (af) (Demand-Side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>2001</td>
<td>2001</td>
</tr>
<tr>
<td>33,000</td>
<td>86,283</td>
<td>73,548</td>
</tr>
<tr>
<td>1977</td>
<td>No July/Aug?</td>
<td>None?</td>
</tr>
<tr>
<td>35,000</td>
<td>9151</td>
<td>0</td>
</tr>
<tr>
<td>1929?</td>
<td>No OCPI?</td>
<td></td>
</tr>
<tr>
<td>260,000</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
1. (Supply) Lake Roosevelt Drawdown (33,000 ac-ft in 2008?)

2. (Supply) Dry year lease auction (ac-ft TBD)
   a. $1 million to run auction in 2007
   b. Coordination with auction partners (WRC, WWT, DFW)
   c. 10 and 20 year dry year leases
   d. Run auction in Fall 2007
   e. Negotiate and secure lease options for 2008

3. (Supply) OCPI (not in July/August) (9,151 ac-ft based on 2001)

4. (Demand) Parity with 2001 program (73,548 ac-ft based on 2001)
5. Total drought program available = 115,699+ ac-ft (192,831 ac-ft in 2001). Difference is OCPI choice (77,132 ac-ft).

6. 77,132 ac-ft deficit to be made up from dry year lease auction and small storage/conservation projects in 2008 funding cycle.
Questions?