• Quick Review of COA Splits

• Operations Not Covered by COA

• Modeling Results
COA Splits Reviewed

• COA Percentages are:
  – Storage Withdrawals for In Basin Use:  75% CVP/25% SWP
  – Export of Unstored Flows:  55% CVP/45% SWP
South Delta Export Constraints

• D1641
  – Sprint SJ pulse flow export constraint (1:1)
  – Export as % of Delta Inflow (35%/65%)

• BiOps
  – OMR (both USFWS and NMFS)
  – April-May I/E (NMFS)

• 50%/50% sharing of exports
  – Actual operations
  – Modeled under BDCP

• Frequency of South Delta constraints
  – increased with BiOps
  – projected to decrease with BDCP
High Spring Outflow Operations

• Decision Tree Criteria under Alt.4 H4 (HOS)
• Higher release contribution from SWP than COA sharing formulas indicate for outflow criteria.
• Modeled as follows:
  – Reduction in CVP and SWP exports to minimum
  – Additional flow from Oroville above COA requirement
  – No payback of any CVP COA debt
  – No assumption of purchased flows
Modeling Results

- * DWR BDO – Updated version of CALSIM (D-1485, D-1641, BiOp, Alt4-C3)

- ** CH2MHILL (NAA, Alt4-C1 (LOS), Alt4-C4(HOS))
Total CVP/SWP Annual Average Deliveries (1922-2003)

<table>
<thead>
<tr>
<th>Component</th>
<th>SWP SOD Deliveries</th>
<th>CVP SOD Deliveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-1485* w/o B2*</td>
<td>2,616 (43%)</td>
<td></td>
</tr>
<tr>
<td>D-1641 +B2*</td>
<td>2,529 (43%)</td>
<td></td>
</tr>
<tr>
<td>D-1641 +BiOps*</td>
<td>2,461 (42%)</td>
<td></td>
</tr>
<tr>
<td>NAA**</td>
<td>2,211 (47%)</td>
<td>2164 (46%)</td>
</tr>
<tr>
<td>ALT4-H1**</td>
<td>2376 (42%)</td>
<td></td>
</tr>
<tr>
<td>ALT4 H3-HR25*</td>
<td>2,326 (44%)</td>
<td></td>
</tr>
<tr>
<td>ALT4 H3-HR65*</td>
<td>2,324 (44%)</td>
<td></td>
</tr>
<tr>
<td>ALT4-H4**</td>
<td>2,250 (47%)</td>
<td></td>
</tr>
</tbody>
</table>

Proportion of Total Deliveries (TAF): (57%), (57%), (58%), (53%), (54%), (58%), (56%), (56%), (58%), (54%), (53%), (58%), (57%)
D-1485 through Alt4-HOS breakdown by User Classification and Year Type
Long-Term Average Deliveries

- **Total SWP**
- **SWP SOD M&I**
- **SWP SOD Ag**
- **Total CVP**
- **CVP SOD M&I**
- **CVP SOD Ag**
- **CVP Exchange Contract**
- **CVP SOD Refuge L2**

- **D-1485***
- **D-1641+B2***
- **D-1641+BiOps***
- **NAA (no CC)**
- **ALT4-H1 (no CC)**
- **ALT4-H4 (no CC)**

TAF

- Long-term average deliveries for various contracts and subcategories are shown in the graph.
Above Normal Year Deliveries

- Total SWP
- SWP SOD M&I
- SWP SOD Ag
- Total CVP
- CVP SOD M&I
- CVP SOD Ag
- CVP Exchange Contract
- CVP SOD Refuge L2

Legend:
- D-1485*
- D-1641+B2*
- D-1641+BiOps*
- NAA (no CC)**
- ALT4-H1 (no CC)**
- ALT4-H4 (no CC)**
NAA, LOS, & HOS
Delivery Splits
by Year Type
NAA Delivery Split

- **Total Deliveries (TAF)**
  - Long-Term Avg: 2,164 (46%) SWP, 2,164 (46%) CVP
  - Wet: 3,231 (54%) SWP, 2,788 (46%) CVP
  - Above Normal: 2,747 (53%) SWP, 2,398 (47%) CVP
  - Below Normal: 2,670 (57%) SWP, 2,026 (43%) CVP
  - Dry: 2,224 (55%) SWP, 1,839 (45%) CVP
  - Critical: 1,290 (51%) SWP, 1,246 (49%) CVP

- **NAA Delivery Split**
  - Total SWP Deliveries
  - Total CVP Deliveries
LOS Delivery Split

- **Total Deliveries (TAF):**
  - Long-Term Avg: 3,229 (58%)
  - Wet: 4,187 (58%)
  - Above Normal: 3,883 (58%)
  - Below Normal: 3,617 (61%)
  - Dry: 2,489 (56%)
  - Critical: 1,214 (48%)

- **Total SWP Deliveries:**
  - Long-Term Avg: 2,376 (42%)
  - Wet: 3,002 (42%)
  - Above Normal: 2,761 (42%)
  - Below Normal: 2,348 (39%)
  - Dry: 1,980 (44%)
  - Critical: 1,294 (52%)

- **Total CVP Deliveries:**
  - Long-Term Avg: 953 (24%)
  - Wet: 1,185 (24%)
  - Above Normal: 1,122 (24%)
  - Below Normal: 1,269 (28%)
  - Dry: 409 (16%)
  - Critical: 294 (18%)

- **Legend:**
  - Total SWP Deliveries
  - Total CVP Deliveries
Long-Term Average Delivery Split

- **Total SWP Deliveries**:
  - NAA (no CC): 2,164 (46%)
  - ALT4-H1 (no CC): 2,376 (42%)
  - ALT4-H4 (no CC): 2,250 (47%)

- **Total CVP Deliveries**:
  - NAA (no CC): 2,557 (54%)
  - ALT4-H1 (no CC): 3,229 (53%)
  - ALT4-H4 (no CC): 2,506 (53%)
Wet Year Delivery Split

- Total Deliveries (TAF)
  - NAA (no CC): 3,231 (54%)
  - ALT4-H1 (no CC): 4,187 (58%)
  - ALT4-H4 (no CC): 3,479 (55%)

- Total SWP Deliveries (NAA (no CC): 2,788 (46%))
- Total CVP Deliveries (ALT4-H1 (no CC): 3,002 (42%))
- Total CVP Deliveries (ALT4-H4 (no CC): 2,834 (45%))
Above Normal Year Delivery Split

- **NAA (no CC)**
  - Total Deliveries (TAF): 2,747 (53%)
  - Total SWP Deliveries: 2,398 (47%)

- **ALT4-H1 (no CC)**
  - Total Deliveries (TAF): 3,883 (58%)
  - Total SWP Deliveries: 2,761 (42%)

- **ALT4-H4 (no CC)**
  - Total Deliveries (TAF): 2,926 (53%)
  - Total SWP Deliveries: 2,599 (47%)
Below Normal Year Delivery Split

- Total Deliveries (TAF)
  - NAA (no CC): 2,670 (57%)
  - ALT4-H1 (no CC): 3,617 (61%)
  - ALT4-H4 (no CC): 2,536 (54%)

- Total SWP Deliveries
  - NAA (no CC): 2,026 (43%)
  - ALT4-H1 (no CC): 2,348 (39%)
  - ALT4-H4 (no CC): 2,164 (46%)

- Total CVP Deliveries
  - NAA (no CC):
  - ALT4-H1 (no CC):
  - ALT4-H4 (no CC):
Dry Year Delivery Split

- **Total SWP Deliveries**
  - NAA (no CC): 2,224 (55%)
  - ALT4-H1 (no CC): 2,489 (56%)
  - ALT4-H4 (no CC): 1,770 (48%)

- **Total CVP Deliveries**
  - NAA (no CC): 1,839 (45%)
  - ALT4-H1 (no CC): 1,980 (44%)
  - ALT4-H4 (no CC): 1,933 (52%)
Critical Year Delivery Split

- **NAA (no CC):** 1,290 (51%)
  - Total SWP Deliveries: 1,246 (49%)
  - Total CVP Deliveries: 1,294 (52%)
- **ALT4-H1 (no CC):** 1,214 (48%)
  - Total SWP Deliveries: 1,294 (52%)
  - Total CVP Deliveries: 1,242 (53%)
- **ALT4-H4 (no CC):** 1,084 (47%)
  - Total SWP Deliveries:NA
  - Total CVP Deliveries:NA
LOS & HOS
% Delivery Change
Compared with NAA
Wet Year Deliveries (% Change from NAA)

- Total SWP: 30%
- SWP SOD M&I: 21%
- SWP SOD Ag: 20%
- Total CVP: 8%
- CVP SOD M&I: 2%
- CVP SOD Ag: 1%
- CVP Exchange Contract: 0%
- CVP SOD Refuge L2: 0%
Above Normal Year Deliveries (% Change from NAA)

- Total SWP: 41%
- SWP SOD M&I: 38%
- SWP SOD Ag: 50%
- Total CVP: 15%
- CVP SOD M&I: 8%
- CVP SOD Ag: 31%
- ALT4-H1 (no CC): 41%
- ALT4-H4 (no CC): 38%

Bar chart showing the percentage change from normal deliveries for different categories.
Below Normal Year Deliveries (% Change from NAA)

ALT4-H1 (no CC)

ALT4-H4 (no CC)

Total SWP: 35%
SWP SOD M&I: 31%
SWP SOD Ag: 49%

Total CVP: 16%
CVP SOD M&I: 12%
CVP SOD Ag: 41%

CVP Exchange Contract: 0%
CVP Refuge L2: 0%
Dry Year Deliveries (% Change from NAA)

- Total SWP: -20%
- SWP SOD M&I: -20%
- SWP SOD Ag: -21%
- Total CVP: 8%
- CVP SOD M&I: 5%
- CVP SOD Ag: 4%
- CVP Exchange Contract: 23%
- CVP SOD Refuge L2: 15%

ALT4-H1 (no CC)
ALT4-H4 (no CC)
Critical Year Deliveries (% Change from NAA)

- Total SWP: -16%
- SWP SOD M&I: -16%
- SWP SOD Ag: -16%
- Total CVP: -5%
- CVP SOD M&I: 0%
- CVP SOD Ag: 5%
- CVP Exchange Contract: -2%
- CVP Refuge L2: 0%

ALT4-H1 (no CC)
ALT4-H4 (no CC)
NAA, LOS, & HOS
Comparisons under CC, SLR, and HR
Above Normal Year Deliveries

- Total SWP
- SWP SOD M&I
- SWP SOD Ag
- Total CVP
- CVP SOD M&I
- CVP SOD Ag
- CVP Exchange Contract
- CVP SOD Refuge L2