2015 IRP Technical Process Draft Results

Southern California Water Dialogue
September 23, 2015
Phase 1: IRP Technical Update Process and Schedule

- **February**: Oral Report
  - Establish IRP Committee
- **March**: Public Outreach Workshop
- **June**: Update IRP Committee
- **September**: Consider Adoption

**Member Agency Technical Process**

**Technical Review and Update**

**Analysis**

**Draft Report**
Phase 2: IRP Policy Implementation Update Process and Schedule

- **Board**
  - Board Deliberation on Policy and Implementation

- **Member Agency**
  - Member Agency Process

- **Public**
  - Public Outreach and Input

2016:
- Jan
- Feb
- Mar
- Apr
- May
- Jun
- ...

Published Report
Four Key Framing Questions

- What is our current outlook on supplies and demands?
- What happens if we do nothing?
- What happens if we continue developing the current 2010 IRP targets?
- What potential changes to the current 2010 IRP targets are needed?
What is Our Current Outlook on Supplies and Demands?
Conservation Savings
Conservation Savings* Projected on 1990 Base Year

*Does not include conservation from Price Effect
Retail Demands
Total Retail Demands

Key Assumptions

- Updated demographic forecasts
  - SCAG RTP 12
  - SANDAG Series 13

- Retail M&I Demand
  - New econometric model

- Agency provided demand forecasts
  - Agricultural
  - Seawater Barrier
  - Replenishment
Near-Term Demand Adjustment

Key Assumptions

- Capture observed reduction in demand
- Estimate behavioral and structural elements
- Adjust climate effects and other conservation savings elements to avoid double-counting of reductions in the forecast
Retail Demands Post-Conservation
Historical and Projected

Range of Total Retail Demands (Million Acre-Feet)

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>3.79</td>
<td>3.86</td>
<td>3.93</td>
<td>3.99</td>
<td>4.03</td>
</tr>
<tr>
<td>Avg</td>
<td>4.18</td>
<td>4.26</td>
<td>4.34</td>
<td>4.41</td>
<td>4.46</td>
</tr>
<tr>
<td>Max</td>
<td>4.46</td>
<td>4.56</td>
<td>4.64</td>
<td>4.72</td>
<td>4.78</td>
</tr>
</tbody>
</table>
Local Supplies
Total Average-Year Local Supplies
2015 IRP Draft Forecast

Million Acre-Feet

Calendar Year

2016 2020 2024 2028 2032 2036 2040
### Total Range of Local Supplies

#### 2015 IRP Draft Forecast

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Min</th>
<th>Avg</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>2.02</td>
<td>2.30</td>
<td>2.62</td>
</tr>
<tr>
<td>2025</td>
<td>2.09</td>
<td>2.35</td>
<td>2.64</td>
</tr>
<tr>
<td>2030</td>
<td>2.11</td>
<td>2.38</td>
<td>2.67</td>
</tr>
<tr>
<td>2035</td>
<td>2.17</td>
<td>2.40</td>
<td>2.69</td>
</tr>
<tr>
<td>2040</td>
<td>2.18</td>
<td>2.41</td>
<td>2.71</td>
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</tbody>
</table>
Imported Supplies
SWP Existing Conveyance Scenario
Draft Forecast Table A + Article 21

Total Range of SWP Supplies
(Million Acre-Feet)

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Avg</td>
<td>0.84</td>
<td>0.84</td>
<td>0.84</td>
<td>0.84</td>
<td>0.84</td>
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<tr>
<td>Max</td>
<td>1.55</td>
<td>1.55</td>
<td>1.55</td>
<td>1.55</td>
<td>1.55</td>
</tr>
</tbody>
</table>
Storage Portfolio
Metropolitan’s Storage Programs

Central Valley/SWP Storage
San Luis Carryover
Semitropic
Arvin-Edison
Kern Delta
Mojave
CRA Storage
DWCV Advance Delivery
Lake Mead ICS

Local Storage
Diamond Valley
Lake Mathews
Lake Skinner
Conjunctive Use Programs
DWR State Project Reservoirs
# MWD Storage Programs Summary

Million Acre-Feet

<table>
<thead>
<tr>
<th></th>
<th>Storage Capacity</th>
<th>Put Capacity</th>
<th>Take Capacity</th>
<th>2016 Est. Starting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Valley &amp; SWP</td>
<td>1.63</td>
<td>0.54</td>
<td>0.56</td>
<td>0.42</td>
</tr>
<tr>
<td>Colorado River</td>
<td>2.39</td>
<td>0.65</td>
<td>0.60</td>
<td>0.22</td>
</tr>
<tr>
<td>In-Region</td>
<td>1.30</td>
<td>0.90</td>
<td>0.94</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>Total Dry-Year</strong></td>
<td><strong>5.32</strong></td>
<td><strong>2.09</strong></td>
<td><strong>2.10</strong></td>
<td><strong>0.77</strong></td>
</tr>
<tr>
<td>Emergency</td>
<td>0.63</td>
<td>0.63</td>
<td>0</td>
<td>0.63</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5.95</strong></td>
<td><strong>2.72</strong></td>
<td><strong>2.10</strong></td>
<td><strong>1.40</strong></td>
</tr>
</tbody>
</table>

*Shows maximum capacities, actual capacity varies based on contract terms*
What Happens if We do Nothing?

“Do Nothing” Case
Draft Water Balance
Reliability Measures
Potential Measures of Reliability

- Supply shortages
  - Frequency of shortage (a.k.a. probability)
  - Size of shortage
  - IRP reliability goal: “100% reliability under foreseeable hydrologic conditions”

- Storage thresholds
  - Minimum storage level
  - Average storage level
Summary of Shortage Probability
“Do Nothing” Case Draft Water Balance

<table>
<thead>
<tr>
<th>Year</th>
<th>Shortage</th>
<th>No Shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>8%</td>
<td>92%</td>
</tr>
<tr>
<td>2025</td>
<td>7%</td>
<td>93%</td>
</tr>
<tr>
<td>2030</td>
<td>21%</td>
<td>79%</td>
</tr>
<tr>
<td>2035</td>
<td>36%</td>
<td>64%</td>
</tr>
<tr>
<td>2040</td>
<td>59%</td>
<td>41%</td>
</tr>
</tbody>
</table>
Summary of Ending Dry-Year Storage

“Do Nothing” Case Draft Water Balance

<table>
<thead>
<tr>
<th>Year</th>
<th>Less Than 1 MAF</th>
<th>Greater Than 1 MAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>11%</td>
<td>89%</td>
</tr>
<tr>
<td>2025</td>
<td>16%</td>
<td>84%</td>
</tr>
<tr>
<td>2030</td>
<td>32%</td>
<td>68%</td>
</tr>
<tr>
<td>2035</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>2040</td>
<td>85%</td>
<td>15%</td>
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</tbody>
</table>
Observations

“Do Nothing” Case Draft Water Balance

- The “do nothing” approach is not sustainable
- Shortage probability and size both increase over time
  - Total retail demands increase over time
  - Constant or decreasing local and imported supplies
- Storage quantity decreases over time
  - Less water to store
  - Higher needs for storage to balance supplies and demands
- Significant resource investments are needed
What Happens if We Develop the 2010 IRP Update Targets?

Current IRP Approach
Draft Water Balance
<table>
<thead>
<tr>
<th>Water Use Efficiency</th>
<th>• Achieve a 20% reduction in GPCD as a region by 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Resources</td>
<td>• Develop ~100 TAF through incentives and partnerships</td>
</tr>
<tr>
<td>SWP</td>
<td>• Seek short, mid, and long-term Delta improvements</td>
</tr>
<tr>
<td>CRA</td>
<td>• Develop Dry-Year supply programs to fill the aqueduct when needed</td>
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</table>
Targeted IRP Development
Current IRP Approach

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thousand Acre-Feet</td>
<td>495</td>
<td>520</td>
<td>545</td>
<td>545</td>
<td>545</td>
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</tbody>
</table>

- Delta Improvements
- Local Augmentation
- Water Use Efficiency
Summary of Shortage Probability
“Do Nothing” Case Draft Water Balance

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<tbody>
<tr>
<td>2020</td>
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<td>93%</td>
</tr>
<tr>
<td>2030</td>
<td>21%</td>
<td>79%</td>
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<td>59%</td>
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</tbody>
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Summary of Shortage Probability
Current IRP Approach Draft Water Balance

<table>
<thead>
<tr>
<th>Year</th>
<th>Shortage</th>
<th>No Shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>2%</td>
<td>98%</td>
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<tr>
<td>2025</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>2030</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>2035</td>
<td>1%</td>
<td>99%</td>
</tr>
<tr>
<td>2040</td>
<td>2%</td>
<td>98%</td>
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</table>
Summary of Ending Dry-Year Storage
“Do Nothing” Case Draft Water Balance

- **2020**: 11% Less Than 1 MAF, 89% Greater Than 1 MAF
- **2025**: 16% Less Than 1 MAF, 84% Greater Than 1 MAF
- **2030**: 32% Less Than 1 MAF, 68% Greater Than 1 MAF
- **2035**: 60% Less Than 1 MAF, 40% Greater Than 1 MAF
- **2040**: 85% Less Than 1 MAF, 15% Greater Than 1 MAF
Summary of Ending Dry-Year Storage

Current IRP Approach Draft Water Balance

<table>
<thead>
<tr>
<th>Year</th>
<th>Less Than 1 MAF</th>
<th>Greater Than 1 MAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>3%</td>
<td>97%</td>
</tr>
<tr>
<td>2025</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>2035</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>2040</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Observations
Current IRP Approach Draft Water Balance

- Significant resource investments are needed to achieve the current IRP Targets
- Existing supplies need to be maintained
  - Colorado River Aqueduct
  - Local supply production
- Compared to the “Do Nothing” Case
  - Reliability measures improve
  - Storage measures improve
  - Challenges still exist in the shorter term
What Potential Changes to the Current IRP Targets are Needed?

- Adjust targets to address shorter term imbalances
- Adjust targets to ensure sufficient storage levels
- Ensure an adequate supply buffer
- Refine and improve implementation approaches and policy to ensure development
Next Steps
Next Steps – Water Tomorrow

Phase 1: IRP Technical Update
- Finalize Results: October 2015
- Public Outreach Workshop: October 22nd
- IRP Committee considers Technical Update adoption: December 2015

Phase 2: Investigate Policy Implications
- Kick-off: Early 2016