

Applying the IDT's Alternatives Against the Solution Principles

The following outlines factors that could be considered in comparing the Interagency Development Team's (IDT) alternatives 1, 2, & 3 against the Solution Principles.

Reduce Conflicts in the System

Will the alternative significantly reduce conflicts among beneficial uses of water.

Fisheries and diversions

The common programs all help reduce the conflict in all three alternatives by improvements for fish such as:

- Tidal wetlands
- Shaded Riverine Habitat
- Fish structures and gravel management
- Toxic Reduction
- Levee Setback (meander zones)
- Levee Associated Habitat.

Alternative 1 slightly reduces the conflict with new fish screens at the South Delta pumps and increased capacity to manage pumping to reduce fisheries impacts.

Alternative 2 with the South Delta pumping features, with major channel improvements and screens on the Sacramento River will further reduce the conflicts by providing increase pumping management and screens for salmon.

Alternative 3 with the same South Delta pumping features as alternatives 1 and 2, plus an isolated facility which reduces the export diversions in the South Delta about 80 percent, significantly reduces the diversion effects on fisheries over Alternatives 1 and 2.

Habitat and land use and flood Protection

The common programs all help reduce risk to the environment, water quality, land use, and water supply in the Delta improvements such as:

- Improved environmental conditions and reduced conflict with fisheries.
- Improved water quality
- Improved levee conditions and emergency response
- Improved water use efficiency.

Alternative 1 uses improved levee conditions and emergency response to protect the existing levee system for all beneficial uses.

Alternative 2 also provides major channel improvements in the north Delta that will further reduce the risk of flooding in the north Delta and provide some additional protection for water supply due to improvements in diversion timing.

Alternative 3 also includes the levee protection features in Alternative 1 and has the least risk to water supply since diversion and conveyance from Hood is much less subject to levee failure.

Water supply availability

The common programs all help reduce the conflict between beneficial uses by improving water supply reliability by:

- Improving environmental conditions and reduced conflict with fisheries.
- Improving water quality
- Improving transfer capability

Alternative 1 with increased pumping capacity in the South Delta and surface and ground storage increases the amount of water supply but water supply transfer opportunities is limited to the existing condition.

Alternative 2 with the same storage as alternative 1 produces about the same additional supply and some improvement in water transfer over alternative 1.

Alternative 3 with the same storage as alternatives 1 and 2 and much better transfer opportunities improves the water supply reliably the most.

Water quality

The common programs all help reduce the water quality conflicts for beneficial uses by improvements such as:

- Toxics reduction and other source control on urban, agriculture, industrial, and mine drainage.
- Timing of discharge to reduce the concentration of pollutants.
- Watershed coordination to improve water quality throughout the Delta watershed.
- Water use efficiency to reduce demands on and improve water quality of the Delta

Alternative 1 with existing channels will slightly improve in-Delta and export water quality by reducing concentrations of TDS, Bromides and TOC's.

Alternative 2 which produces a greater cross Delta flow from the Sacramento River to the South Delta pumps, lowers salinity levels in the central and south Delta, reduces TDS, Bromides and TOC's at the SWP/CVP and Contra Costa intakes.

Alternative 3 provides a direct connection of the SWP/CVP to the better water quality in the Sacramento River, but provides less flow across the Delta which results in increased salinities in the South Delta. At the Contra Costa intake at rock slough the TDS, Bromides, and TOCs will remain about the same as the existing condition (unless a direct connection is made from the Contra Costa intake to the isolated facility).

Overall staff assessment:

Alternative 3 provides the greatest opportunities to reduce conflict.

Equitable

Does the alternative focus on solving problems in all problem area?

With each alternative incorporating all four common programs and storage and conveyance options, all alternatives address some portion of all objectives. All alternatives include the four common programs and the same storage options. Each alternative also includes new fish screens and the ability of the South Delta export pumps to operate at full capacity.

Alternative 1

- Some improvement on South Delta export diversions impacts on fisheries.
- Minor or no improvement on Delta flow circulation.
- Little improvement on the ability to transfer water.
- Minor improvement to in-Delta and export water quality
- Some improvement on operational flexibility

Overall staff assessment:

Alternative 1 provides the least equity of the three alternatives

Alternative 2

- Most improvement over Alt. 1 and 3 of water quality in-Delta and at Contra Costa intake.
- Same improvement of water quality at the CVP/SWP intake as Alt. 1.
- Some improvement of to fish diversions and Delta flow circulation over Alt. 1.
- Improvement of water supply flexibility and opportunities over Alt. 1.
- Risk to export supplies slightly improved over Alt 1.

Overall staff assessment:

Alternative 2 provides slightly better equity than alternative 1

Alternative 3

- The majority of in-Delta water quality remains that same as the no action alternative.
- Some degradation of water quality in the South Delta over existing condition.
- Export water quality for the SWP/CVP improve dramatically.
- Water quality for the Contra Costa intake remains the same as existing condition.
- Significant improvements in diversion effects on fisheries over Alt 1 an Alt 2.
- Water supply opportunities about the same as Alt 2, except Alt 3 is much less influenced by operational policies.
- Water supply opportunities are the greatest for Alt 3.
- With two intakes in different locations the Alt 3 has the greatest operational flexibility.

Overall staff assessment:

Alternative 3 provides better equity than alternative 2 and 3

Affordable

An affordable solution will be one that can be implemented and maintained within the foreseeable resources of the Program and stakeholders.

Alternative 1 - The formulation of Alternative 1 may make it more difficult to allocate benefits, and therefore costs, than the other alternatives; it is comprised primarily of the four common programs plus storage.

- May require a larger proportion of public funding than the other alternatives due to difficulty allocating benefits/costs.
- Continuous and identifiable revenue stream may be more difficult establish than Alt. 3.
- Total cost is roughly 10% less expensive than Alt. 2 and 15% less expensive than Alt. 3. However, the benefits to the resource areas are generally considerably lower than Alt. 3.

Overall staff assessment:
Affordability is considered to be **fair**.

Alternative 2 - The formulation of Alternative 2 may make it slightly easier to allocate benefits and costs than Alt. 1.; water supply opportunities are somewhat better.

- May require a larger proportion of public funding than Alt. 3 due to difficulty allocating benefits/costs.
- As with Alt. 1, continuous and identifiable revenue stream may be more difficult to establish than Alt. 3.
- Total cost is roughly 6% less expensive than Alt. 3. However, the benefits to the resource areas are generally considerably lower than Alt. 3.

Overall staff assessment:
Affordability is considered to be **fair**.

Alternative 3 - The formulation of Alternative 3 may make it easier to allocate benefits and costs than the other alternatives. The alternative has significantly higher potential benefits for fisheries, export water quality, and water transfer opportunities.

- May result in more identifiable revenue sources than the other alternatives.
- Considering benefits to fisheries, export water quality, and water transfers, the alternative may be the least expensive solution compared to the other alternatives.

Overall staff assessment:
Affordability is considered to be **good**.

Durable

A durable solution will have political and economic staying power and will sustain the resources it was designed to protect and enhance.

Alternative 1

- Operational flexibility is not as good as the other alternatives.
- Uses primarily the Ecosystem Restoration Program Plan (ERPP) for ecosystem improvement but continued diversion from South Delta may require additional future physical or operational changes to protect the fisheries.
- Does less for water supply reliability; may be more future need for system changes.
- Potentially more reliance on public funding may make this alternative less durable.

Overall staff assessment:
Durability is considered to be **poor**.

Alternative 2

- Operational flexibility is somewhat improved over Alt. 1.
- Adds additional mechanisms (Hood fish screens, more flexibility in timing diversions, etc.) than Alt. 1 to the ERPP.
- May be more funding sources than Alt. 1.

Overall staff assessment:
Durability is considered to be **fair**.

Alternative 3

- The alternative is more adaptable to potential changing future conditions and has better overall operational flexibility than the other alternatives.
- Removing the majority of exports from the South Delta adds substantially to ecosystem improvement provided by the ERPP.
- The Hood diversion and conveyance to the export pumps is much less vulnerable to potential changing hydrological and other physical uncertainties (i.e. potentially higher sea levels, etc.).
- May have more funding sources than the other alternatives due to easier allocation of benefits and costs.
- Legal, operational provisions to ensure that objectives continue to be met in an equitable way for the long-term should be similar to the other alternatives but a level of distrust will be difficult to overcome; addressed primarily in the Implementable solution principle.

Overall staff assessment:
Durability is considered to be **good**.

Implementable

An implementable solution will have broad public acceptance, legal feasibility and will be timely and relatively simple to implement compared with other alternative.

Each Alternative:

- Has legal or practical precedents or a series of steps which could taken to enable implementation
- Has institutional feasibility
- Would likely require similar institutional changes

Alternative 1

- None of the alternatives have broad acceptance across all geographic areas and interest groups.
- Is relatively simple to implement compared with other potential solutions.

Overall staff assessment:
Implementability is considered to be **good**.

Alternative 2

- No broad acceptance across all geographic areas and interest groups.
- Not quite as simple to implement as compared with Alt. 1 but is similar.

Overall staff assessment:
Implementability is considered to be **good**.

Alternative 3

- No broad acceptance across all geographic areas and interest groups.
- Not as simple to implement as compared with the other alternatives.
- Assurances may be more difficult to obtain than the other alternatives.

Overall staff assessment:
Implementability is considered to be **fair**.

No Significant Redirected Impacts

A solution will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in its entirety, in the Bay-Delta or other regions of California.

Each Alternative:

- Has been designed to minimize negative long-term economic impacts at the regional level.
- Compensate for or mitigate unavoidable negative impacts to the greatest extent practicable.

Overall staff assessment:
No Significant Redirected Impacts is
considered to be **good** for each alternative.
