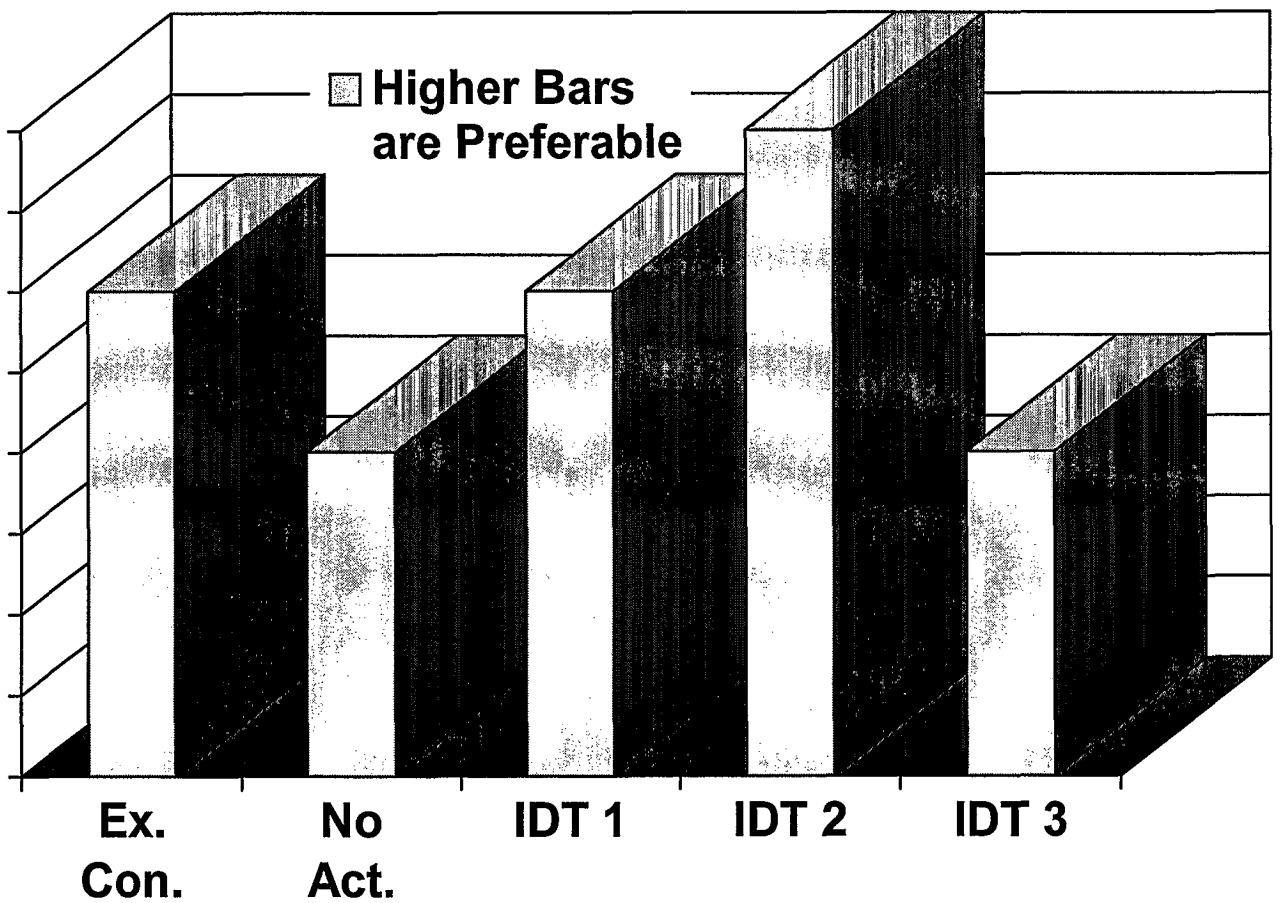
# *In-Delta Water Quality*



# *In-Delta Water Quality*

*Measure of salinity and flow circulation for four areas of the Delta (West, South, Central, North) focusing on quality for in-Delta agricultural uses*

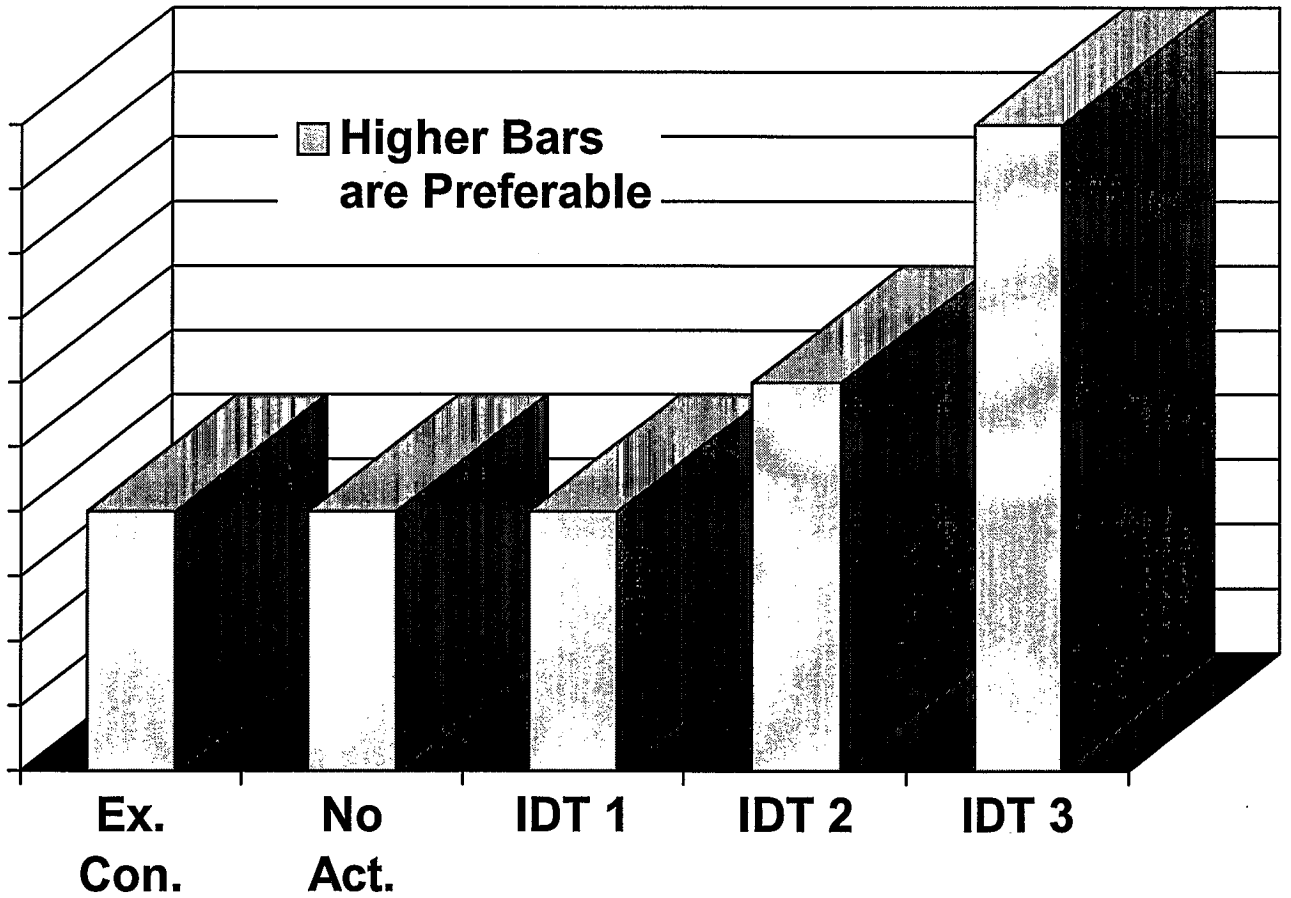
- Alt. 1 - Same channel configuration as existing; salinity varies less than 10%
- Alt. 2 - More direct connection to Sacramento River generally lowers salinity 30% to 60% in Central Delta, minor So. Delta improvements
- Alt. 3 - Less cross Delta flow generally increases salinity 20% to 60% in South Delta



D—048672

# Export Water Quality

## SWP/CVP



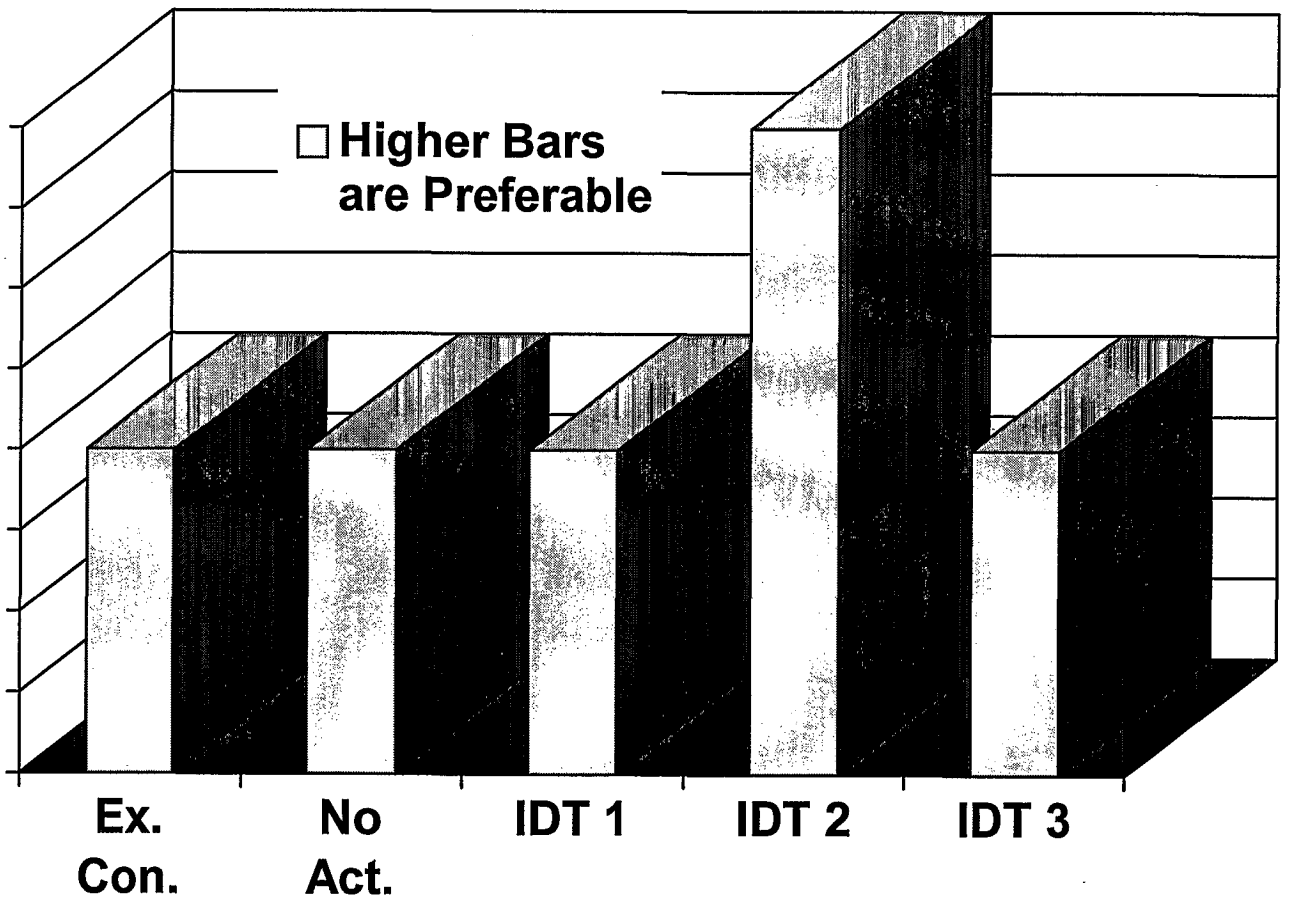
# *Export Water Quality (SWP/CVP)*

*Measure of salinity, bromide, and total organic carbon for four export diversion locations from the Delta (North Bay Aqueduct, Contra Costa Intake, SWP export, CVP export)*

- Alt. 1 - Channel configuration same as existing; TDS/Bromide/TOC within about 10% of existing
- Alt. 2 - 25%-35% lower TDS/Bromide/TOC due to increased cross Delta flow from Sac. River
- Alt. 3 - 40%-60% lower TDS/Bromide/TOC with direct connection to Sac. River

# Export Water Quality

## Contra Costa



# *Export Water Quality*
## *(Contra Costa)*

- Alt 1 - Channel configuration same as existing; TDS/Bromide/TOC within about 10% of existing
- Alt 2 - TDS/Bromide/TOC approx. 45% lower (at Rock Slough) than existing due to increased cross Delta flow from Sac. River
- Alt 3 - Little difference from existing condition; lower quality than Alt. 2 due to decrease in cross Delta flow from Sac. River

# *Some Other Improvements for Water Quality*

- Toxic Reduction and other Source Controls; (urban, ag., mine drainage)
- Timing of Discharges
- Watershed Coordination
- Water Use Efficiency; (water & water quality)



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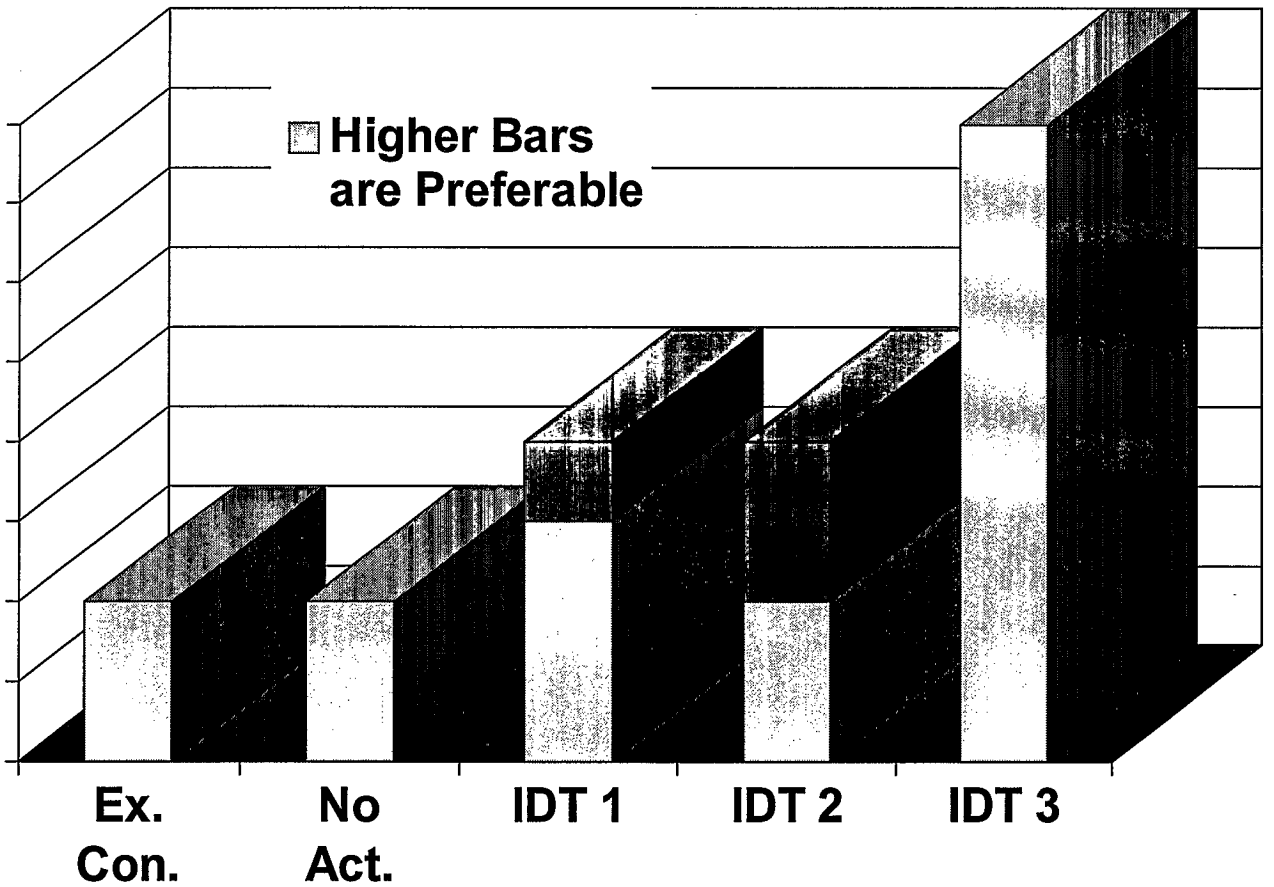
# Diversion Effects on Fisheries *(minimize entrainment)*



# *Diversion Effects on Fisheries*

## *(minimize entrainment)*

*Direct effects on fisheries due to the export diversion intake and associated fish facilities (Location, Size, etc.)*

- Alt. 1 - Slight improved from existing; consolidated fish screens but somewhat offset by higher diversions
- Alt. 2 - Similar to Alt. 1; somewhat less certain since Hood diversion is better for d/s fish but poorer for u/s fish
- Alt. 3 -Consolidated screens and about 80% reduction in So. Delta exports significantly reduces fish entrainment

# *Some Other Improvements for Fish*

- Tidal wetlands
- Shaded Riverine Habitat
- Fish Flows
- Fish Structures and
- Toxic Reduction
- Levee Setbacks (meaner zones)
- Levee Associated Habitat
- Water Use Efficiency; (water & water quality)



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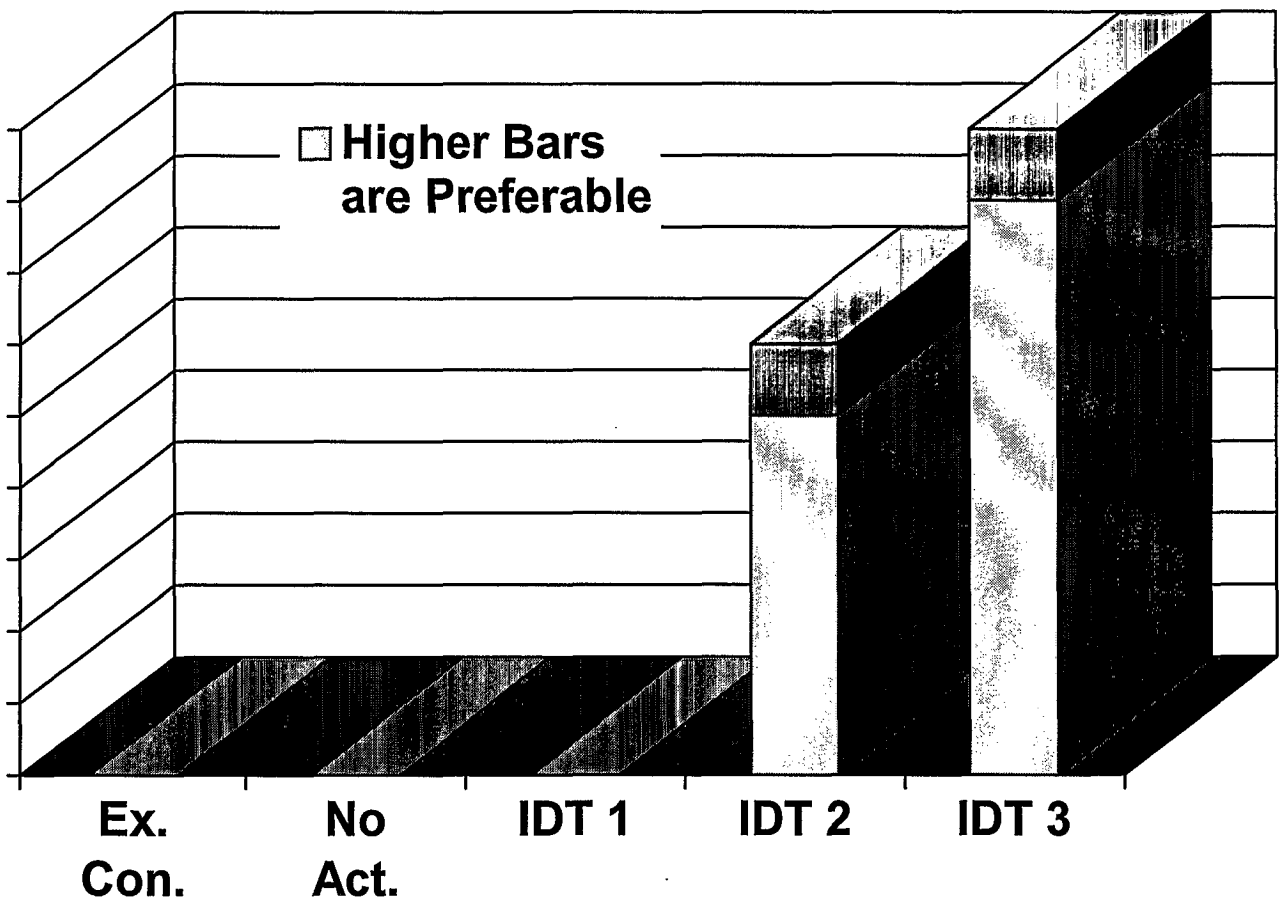
# Delta Flow Circulation

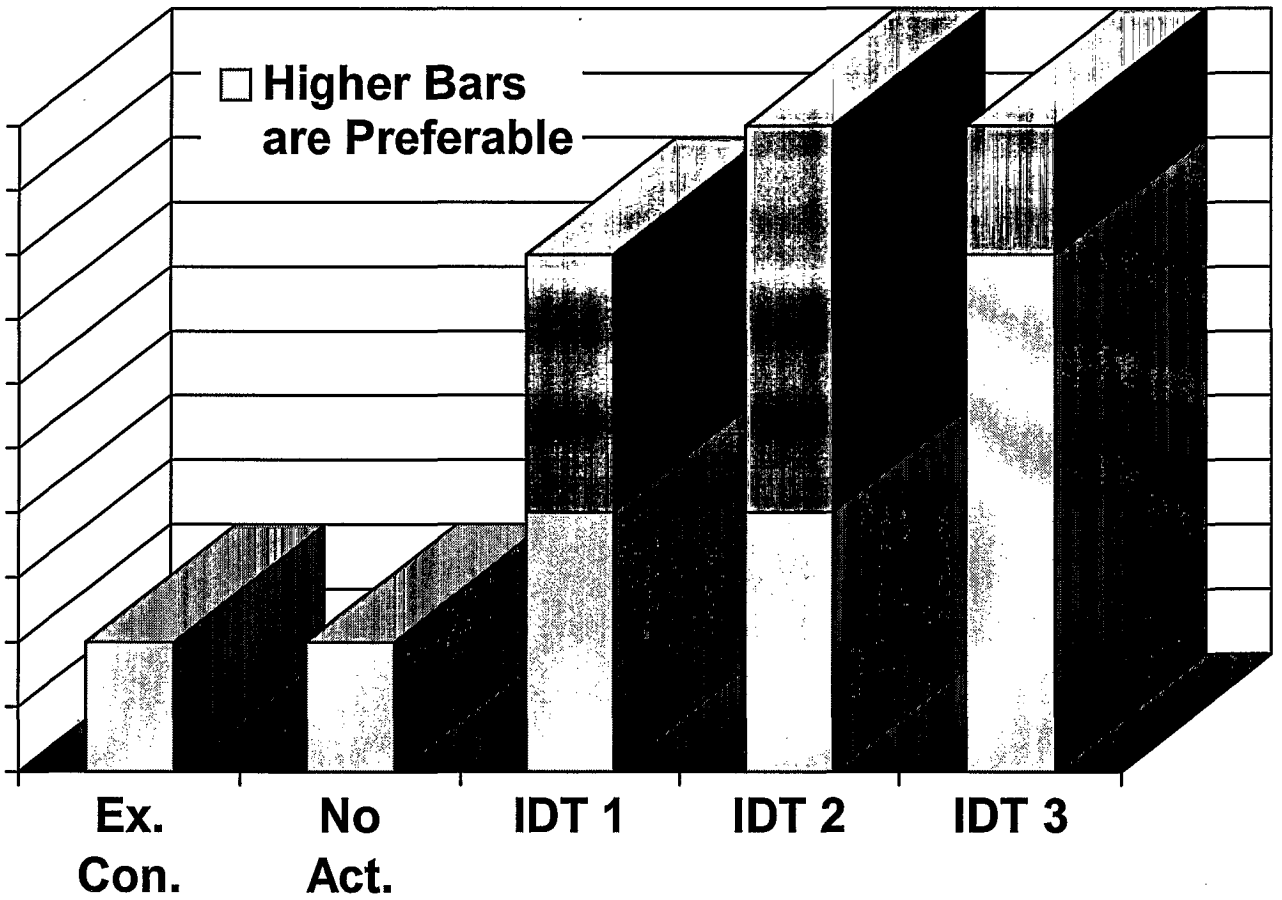


# Delta Flow Circulation

*Direct and indirect effects of water flow circulation on fisheries due to export diversions and changes in cross-Delta water conveyance facilities*

- Alt. 1 - Similar to existing due to channel config. ;slightly worse due to larger diversions
- Alt. 2 - Greatly improved due to net increase in Delta flow out of SJ River and cross Delta flow from Sac. River
- Alt. 3 - Most natural flow conditions; net flow out of SJ River and reduced cross Delta flow compared with Alt. 2

# Water Supply Opportunities

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# *Water Supply Opportunities*

*Measure of the change provided by the alternatives for water supply for environment, agriculture, and urbanand*

Storage plays major role in determining opportunities for each alt.:

- Alt. 1 - Highly dependent on operational assumptions (more subject to E/I ratio)
- Alt. 2 - Highly dependent on operational assumptions (more subject to E/I ratio)
- Alt. 3 - Less dependent on operational assumptions (less subject to E/I ratio)

# *Some Other Improvements Water Supply Reliability*

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



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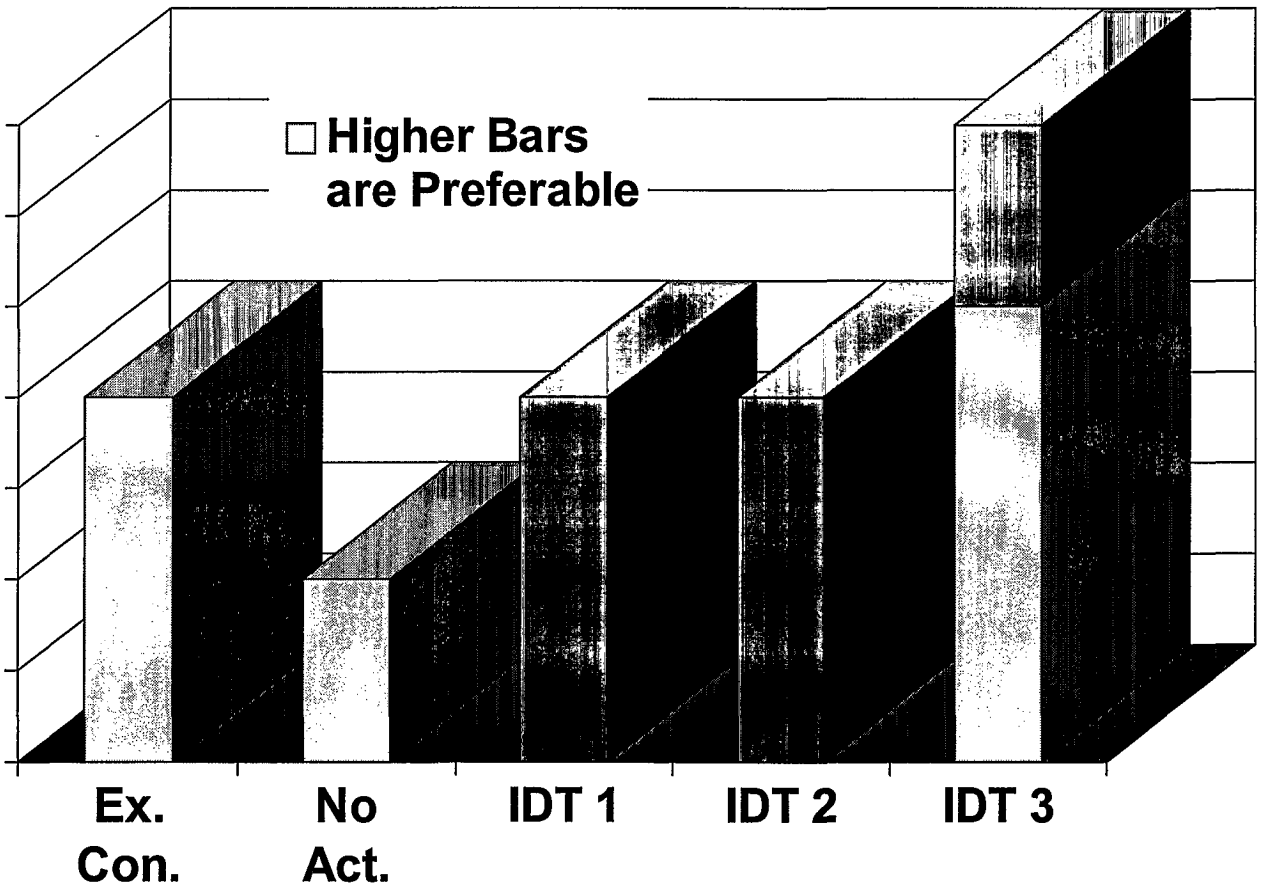
# *Water Transfer Opportunities*

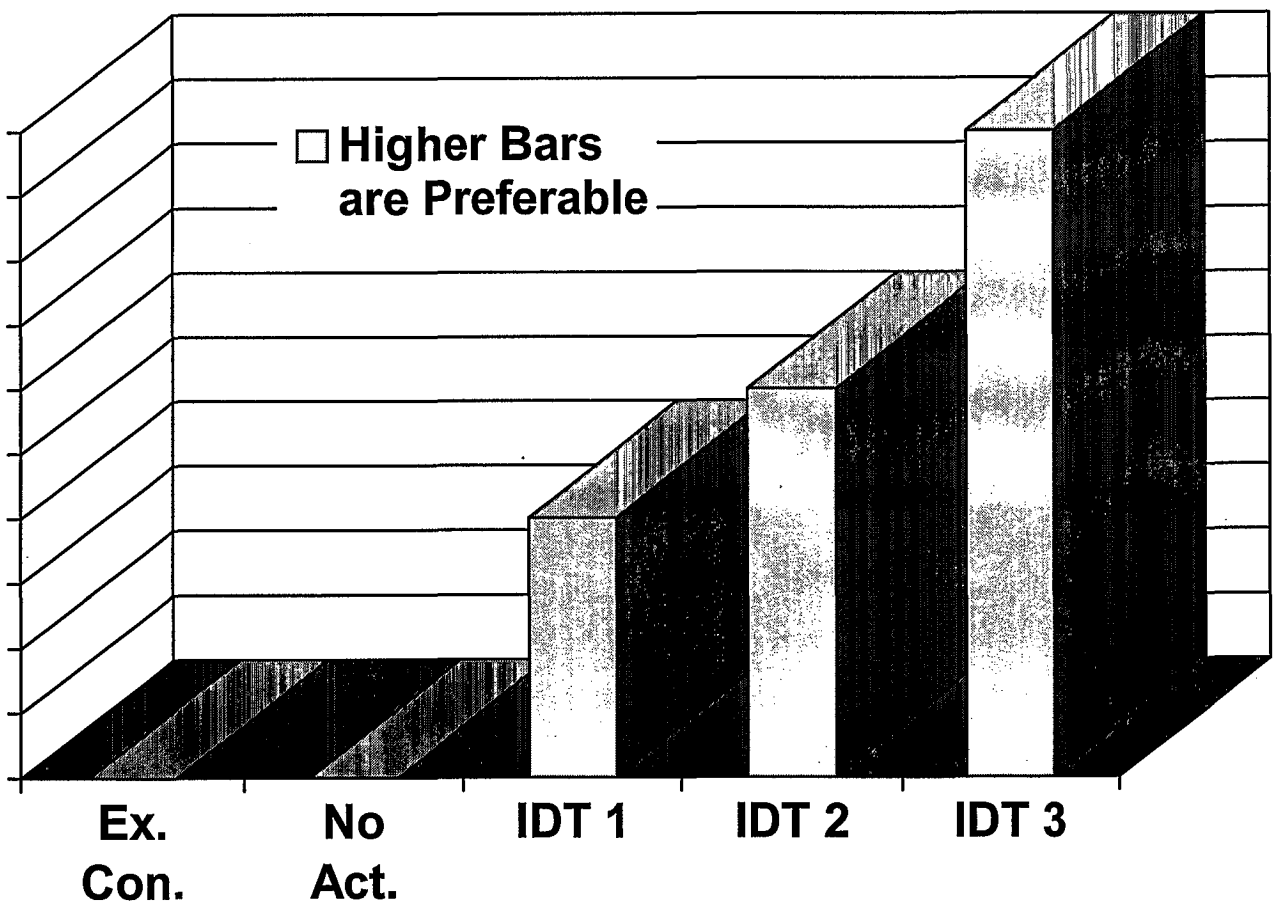


# *Water Transfer Opportunities*

*How well each alternative can carry water that may be generated through market sales or trades at different locations in the system*

- Alt. 1 - Similar to existing condition; diversions still subject to E/I ratio
- Alt. 2 - similar to existing conditions and Alt. 1
- Alt. 3 - Much greater capacity to move water (especially in dry periods) since diversions are free of E/I ratio

# Operational Flexibility



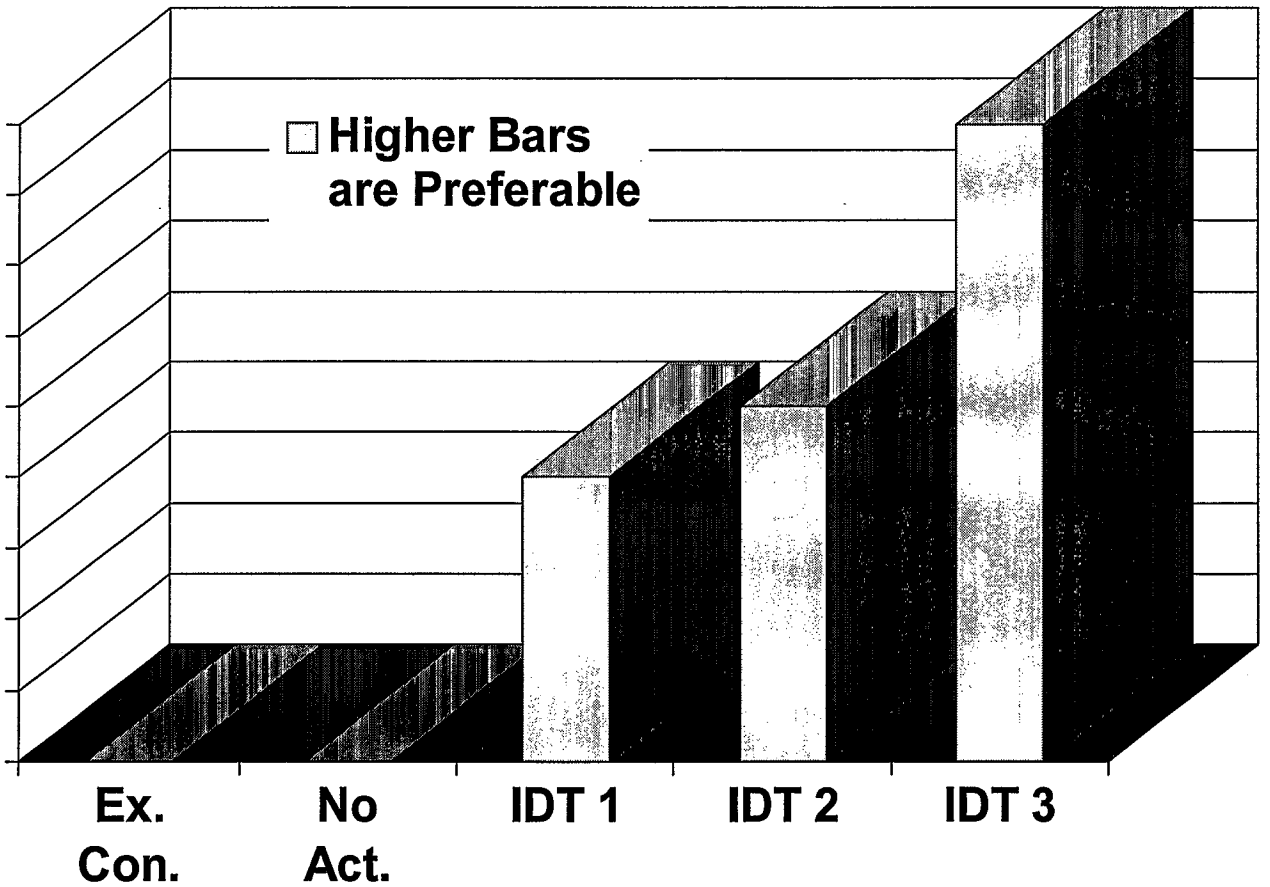
# Operational Flexibility

*How well each alternative can shift operations as needed from time to time to provide the greatest benefits to ecosystem, water quality, and water supply reliability*

- Alt. 1 - Increased storage and improvements in So. Delta = better flexibility over existing
- Alt. 2 - Channel improvements allow additional timing of diversions and increased flexibility over Alt. 1
- Alt. 3 - Direct diversion from Hood is less constrained by conditions in Delta = increased flexibility over Alt. 2

# *Risk to Export Water Supply*

## *(Minimize)*



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# *Risk to Export Water Supplies*

*Measure of which alternatives best reduce the risk to export water supplies from a catastrophic earthquake*

- Alt. 1 - Significantly lower risk than existing due to levee improvements and increased storage
- Alt. 2 - Somewhat lower risk than Alt. 1 due to major channel improvements that help diversion timing
- Alt. 3 - Significantly lower risk than Alt. 2 since diversion and conveyance from Hood is much less subject to levee failure

# *Some Other Improvements for Flexibility and Redcued Risk*

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



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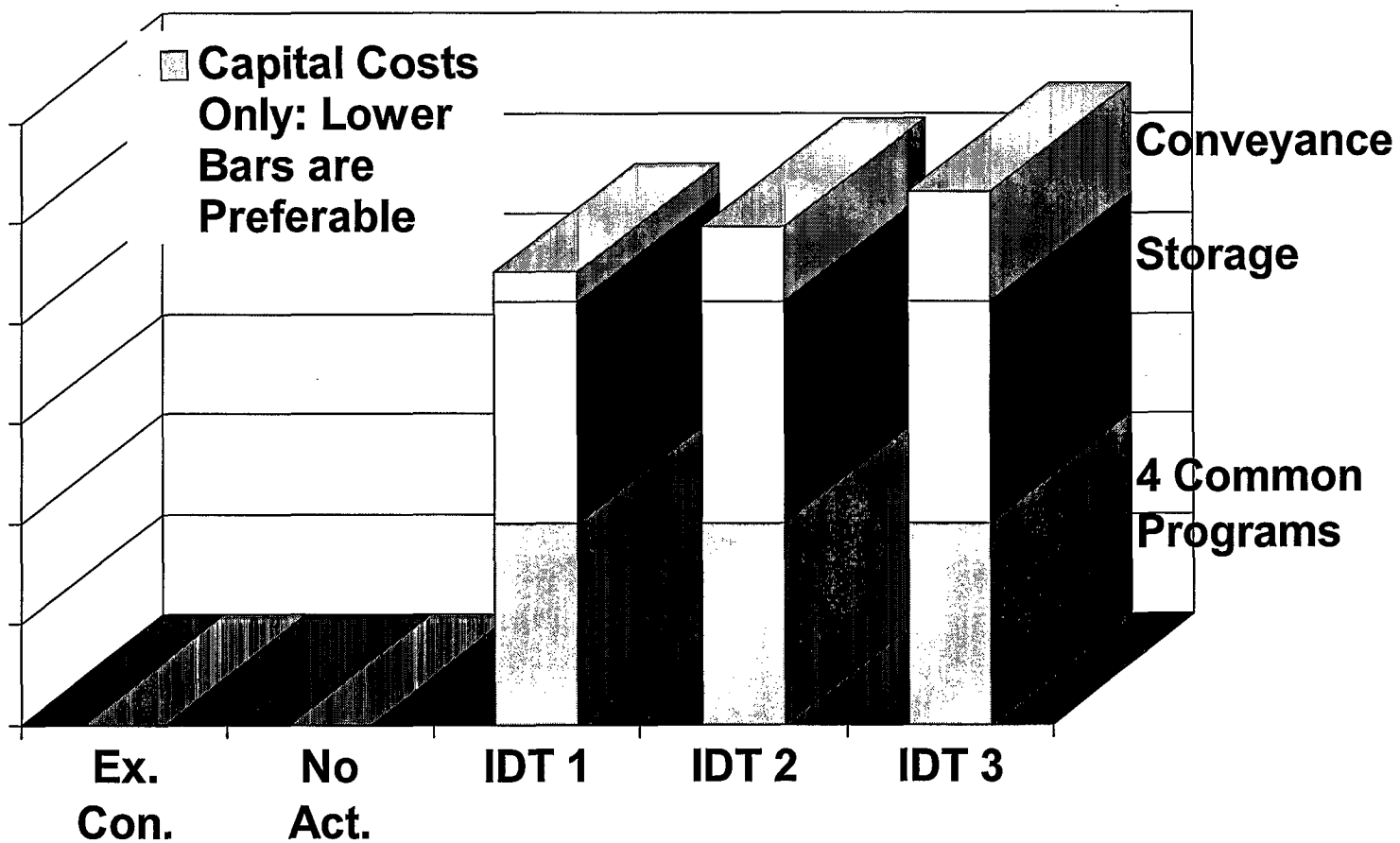
# Total Cost



# Total Costs*

*Includes capital cost and reoccurring annual costs to the Program:*

- *Study, design, permitting*
- *Construction*
- *Mitigation and acquisition*
- *Operation and maintenance*
- *Monitoring*
- *Other first costs and annual costs*

* Social costs addressed elsewhere

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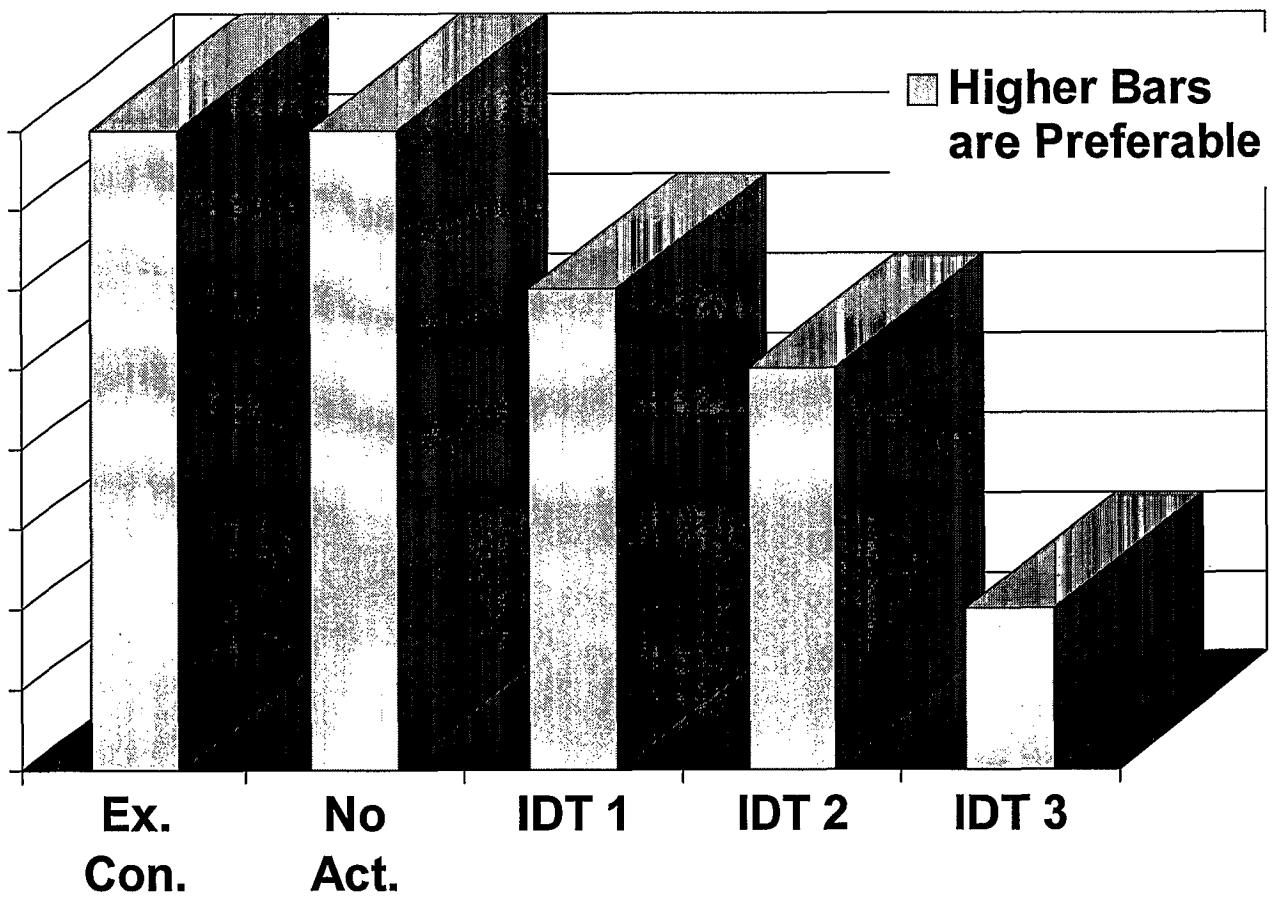
# Assurances Difficulty



# Assurances Difficulty

*An estimate of how hard an assurance package will be to formulate and get consensus among agencies and stakeholders*



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