

Imperial IRWMP Scoping and Review of DWR Resources Management Strategies

Reduce Water Demand – Agricultural Water Use Efficiency Findings

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1.2 Agricultural Water Use Efficiency RMS

1.3 Findings

Until QSA requirements are met, other potential on-farm and system improvement/practices are held in reserve due to the uncertainty related to program water yield and verification.

Draft IID Plan preliminary findings were updated to provide the basis for consideration by the Demand Management Work Group and Water Forum. Potential water conservation efficiency and reclamation sources, quantities, and costs are shown in Table 1. These sources are in addition to those needed for QSA/Transfer Agreements water conservation. Water conservation opportunities were identified in IID's *Efficiency Conservation Definite Plan* (Definite Plan, IID 2007) and *System Conservation Plan and Delivery Measurement Description* (SCP, System Conservation Plan, IID 2009). Information from review and development of the Interim Water Supply Policy was used to update the 2007 Definite Plan information and numbers, where applicable. Descriptions of these sources are included in analysis section of this scoping report.

Table 1. Potential Water Sources Not Needed for the QSA/Transfer Agreements

	Maximum AFY	Average Cost Estimate (\$/AF)	Constraints
System Conservation Projects			
Full IID system automation	30,000	\$1,376	SCP Construction Schedule
Not-built QSA projects	8,000	\$590	
Additional canal lining	700	\$416	
<i>System Total</i>	<i>38,700</i>	<i>\$1196</i>	
Voluntary On-Farm Conservation Projects			
TRS, drip, linear move, etc	60,000	\$481	W\QSA programs, 322 KAC enrolled
Voluntary Fallowing (on an AWUE measure)			
Voluntary starting in 2018	100,000	\$500 & up	W\QSA programs, 400 KAC enrolled

Table Notes:

1. Full IID system automation and Not-built QSA project costs include \$67/AF for administration & \$90/AF for environmental mitigation.
2. On-farm conservation cost range varies with the farmer payment option.
3. On-farm & fallowing programs are likely mutually exclusive – cannot add 60 KAFY on-farm + 100 KAFY fallowing
4. Acreage constraint: QSA on-farm efforts require 300 KAC to meet targeted 200 KAFY; Voluntary Fallowing (above) requires 100 KAC to meet 100 KAFY; Voluntary On-farm projects (above) require 22 KAC to meet 60 KAFY; this would mean a total of 422 KAC enrolled in voluntary programs out of 475 KAC farmable acres in IID service area.

Definite Plan and System Conservation Plan Implementation. By 2026 and for the term of the QSA/Transfer Agreements, IID has to conserve the full 303,000 AFY under these plans at an average cost of around \$300 per acre-foot.

- Definite Plan and System Conservation Plan programs represent over \$300 million investment in on-farm and system improvements by IID and Imperial Valley growers and owners in return for the transfer and sale of water to agencies in the South Coast and Coachella Valley of up to 303,000 AFY of conserved water through increased agricultural (system and on-farm) water use efficiency that does not decrease agricultural production. Without an agreement regarding returns from the purchase of conserved water and protecting IID water rights, this level of investment would be neither possible (e.g., if these costs were to be distributed to the existing rate payers in the Imperial Region) nor politically acceptable.
- The most cost-effective conservation measures have already been implemented, or will be implemented to meet QSA/Transfer Agreements obligations as laid out in IID's Definite Plan and System Conservation Plan. Thus, potential conservation projects that remain are costly. In addition, the potential water yield is uncertain, because yield of the planned measures will not be known with certainty until the measures proposed for the QSA/Transfer Agreements have been implemented and the monitoring and measurement history is available.
- **Achievable System Efficiency Conservation and On-Farm Fallowing.** Of the potential water conservation projects only a limited amount of additional yield is achievable.
 - System efficiency conservation projects not currently planned for implementation as part of the Definite Plan and System Conservation Plan could provide as much as 38,700 AFY: 30,000 AFY from full system automation and 8,000 AFY from not-built QSA projects (both can be built in phases, but would have to be built in conjunction with System Conservation Plan construction), and 700 AFY from additional canal lining projects. The cost for system efficiency conservation is estimated to be \$1211 per acre-foot for 38,000 AFY and \$1196 per acre-foot for 38,700 AFY. These projects were identified from materials used in the review and development of the Interim Water Supply Policy and from the Definite Plan.
 - 38,700 AFY from full IID system automation may be available, but water yield will be uncertain until a history of operation for the Definite Plan and System Conservation Plan has been observed.
 - Of the identified not-built QSA projects, in the near- to mid-term canal lining could provide 700 AFY of water for MCI uses.
 - Cost for on-farm fallowing is estimated to be over \$500 per acre-foot for about 60,000 AFY of potential yield. Incentives that are 1) performance/result-based and/or 2) conservation practice payment incentives could be used to motivate farmers and/or landowners to participate. The degree of participation that might occur is unknown. This uncertainty makes it hard to quantify firm yield of additional water that could be apportioned to MCI uses. This is not an agricultural water use efficiency practice.

- **Infeasible Actions.** Agricultural conservation actions determined not applicable or feasible include:
 - Replacing concrete-lined canals with pipelines to reduce evaporation (about 650 AFY) is a non-feasible option due to high costs.
 - Reduction in tilewater is not considered a conservation opportunity, because of the leaching requirements to manage salts and maintain crop productivity.
 - Crop selection is a grower decision made in response to market conditions. Any related water conservation would be hard to verify and defend, and this is not considered an agricultural water use efficiency practice.
 - Yield reduction could involve eliminating one irrigation and one cutting on alfalfa, which might achieve 0.5 acre-feet per acre at a cost similar to water savings from fallowing (over \$500 per acre-foot). Potential exists to conserve up to 50,000 AFY from alfalfa, as over 100,000 acres of alfalfa are grown in the valley. However, the level of acreage enrolled in the QSA on-farm programs would likely limit enrollment in such a program. Enrollment would be influenced by the payment incentive offered, and would need monitoring for compliance. This could be part of a longer-term IWRWMP adaptive management strategy to be reconsidered once the Definite Plan on-farm efficiency program is fully implemented and an operational history is available by which to gauge the success of the agricultural water efficiency conservation efforts. Any practice that results in yield reduction is not considered an efficiency practice.
- **Voluntary Fallowing – not an agricultural water use efficiency practice.** A well managed in-valley fallowing program could provide water for new MCI uses; however, substantive political, economic and environmental constraints need to be addressed to ensure third-party effects and impacts are addressed.
 - Through 2017, IID will continue the Fallowing Program started in 2003 to meet interim IID/SDCWA water transfer and Salton Sea mitigation requirements under the terms of the QSA/Transfer Agreements. The Fallowing Program will require enrollment of five to 10 percent of farmable IID land in order to produce the 120,000 AFY to 150,000 AFY¹ needed for years 2011 through 2017. In 2018, the Fallowing Program will be discontinued. As a result, additional fallowing for purposes of MCI supply in the years before 2018 is likely to be constrained. After that time, fallowing could be implemented, and the resulting water use reduction quantified and apportioned to new MCI uses.
 - Acreage constraint: QSA on-farm efficiency conservation efforts are projected to require 300,000 acres to meet the 200,000 AFY target; voluntary fallowing would require 100,000 acres to provide 100,000 AFY; this would mean a total of up to

¹ Source: QSA by and Among IID, MWD and CVWD, Exhibit C
<http://www.iid.com/Modules/ShowDocument.aspx?documentid=882> (p39 of 44)

400,000 acres enrolled in voluntary programs out of 475,000 farmable acres in the IID service area.

- IID would have to develop programs and policies to accommodate temporary or long-term fallowing as part of a managed in-valley water exchange. Long-term fallowing would damage farming infrastructure.
- The cost of water from fallowing could vary (\$500/AF and up) and water yield is related to the amount of land fallowed by willing growers or owners, or of IID Western Farm Lands. Costs for fallowing IID Western Farm Land would be related to the cost for payment of the bonds on the land.
- No IID or Imperial County policies were identified that would prohibit fallowing for purposes of providing water for non-agricultural in valley uses, but significant political challenges and potential third-party and environmental effects must be addressed if expansion of current fallowing program were to be considered.

1.4 Recommendations

The preliminary recommendations from the *Draft IID Plan* are listed below for discussion by the Demand Work Group and Water Forum.

AWUE 1) Proceed with implementation of the Definite Plan and System Conservation Plan actions planned as part of the QSA/Transfer Agreements, evaluate the program once there is an operational history, and use an IRWMP adaptive management strategy to plan additional measures for implementation once the effectiveness of the program can be better measured – after 2020.

AWUE 2) Move forward to finance and construct the ‘not-built’ QSA projects as a near- to mid-term solution to provide measurable water for industrial use. These projects could provide up to 8,000 AFY for future MCI uses; to be included in some type of water exchange; or to cover water included in the Interim Water Supply Policy.

Aggressively develop a funding mechanism and policies that can be put in place to allow for use of this conserved water for purposes of mitigation for the potentially significant environmental impacts associated with increased industrial water demands for geothermal projects or other projects already in the Imperial County Planning queue.

AWUE 3) Set-aside on-farm efficiency conservation beyond that anticipated in the Definite Plan to meet QSA/Transfer Agreements requirements from further consideration as part of the IRWMP program; cannot be considered as a potential source for future MCI supplies.

Additional on-farm efficiency conservation has to be integrated with implementation of Definite Plan projects and/or should be part of a longer-term IRWMP adaptive management strategy to be reconsidered once the Definite Plan has been implemented and there is an operational history by which to gage the success of the agricultural water conservation efforts.

- AWUE 4) Review the development of an in-valley fallowing program that expands on or modifies the current Fallowing Programs.

Developing such a program should involve the full participation and input of the Imperial Region stakeholders. Fallowing for in-valley uses and economic development could provide a sure method to reduce agricultural demand and apportion water to new industrial uses but only if a program can be designed that is fair, equitable, mitigates for any third-party and environmental effects and is voluntary with the support of the farm community. This needs to be closely tied to the development of funding and policy alternatives.