



**Review and Update on
LBDCP and DCP
Plus Plan**

January 5, 2017
CAWCD Board Meeting

**PROTECT
LAKE MEAD**

CAP
CENTRAL ARIZONA PROJECT
YOUR WATER. YOUR FUTURE.

Topics to be Covered

- Lower Basin Drought Contingency Plan
“LBDCP”
 - 3 Main Components of LBDCP
 - Water Use Reductions
 - ICS Program Flexibility
 - Accounting and Recovery of LBDCP
Water Use Reductions
- Arizona Implementation Plan – “DCP
Plus”



Background – 2007 Guidelines

- Seven Basin States agreement on Colorado River shortage sharing and conjunctive management of Lakes Powell and Mead – “2007 Guidelines”
- In effect through 2026
- Provide for voluntary reductions in deliveries to Arizona and Nevada when Mead falls below specified trigger elevations – CA not included in shortage reductions.
- Secretary to consult with Basin States at elevation 1025’ to discuss additional actions to protect Mead from falling below 1000’.



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Background - 2007 Guidelines

- Based on Reclamation’s August 24 Month Projection of Jan 1, Lake Mead elevation,
- Arizona and Nevada share Lower Basin shortages under the 2007 Guidelines

Lake Mead Elevation	Arizona Reduction	Nevada Reduction	California
1075’	320,000 AF	13,000 AF	0 AF
1050’	400,000 AF	17,000 AF	0 AF
1025’	480,000 AF	20,000 AF	0 AF



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Background

- When 2007 Guidelines were developed, hydrologic modeling projected ~ 10% chance of Lake Mead falling to elevation 1020' through 2026
- In 2015, updated modeling determined risk of Mead reaching elevation 1020' by 2026 had increased to ~ 25%, using "stress test hydrology" (most recent 25 years of observed hydrology in Colorado River Basin)
- In response to updated study, the Lower Basin States and United States focused on developing a plan to reduce the risk of Mead falling to elevation 1020' to about same probability anticipated when 2007 Guidelines were adopted.



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LBDCP

- LBDCP designed to reduce risks that have increased since 2007
- Overlay on 2007 Guidelines – in effect through 2026
- 3 Main Components:
 - Water Use Reductions and "Absolute Protect" of Mead elevation 1020'
 - ICS Program Flexibility
 - Accounting and Recovery of LBDCP Water Use Reductions

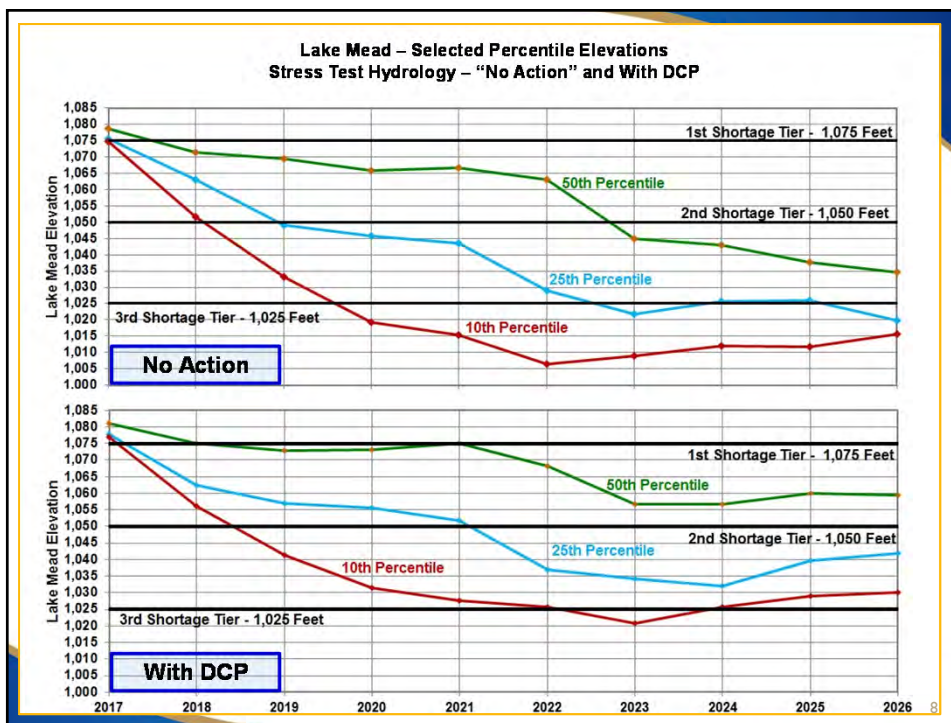


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LBDCP Water Use Reductions

Lake Mead Elevation	AZ [2007]	AZ [Plan]	AZ TOTAL	NV [2007]	NV [Plan]	NV TOTAL	CA [2007]	CA [Plan]	CA TOTAL	BOR	TOTAL
1090-1075	0	192K	192K	0	8K	8K	0	0	0	100k	300k
1075-1050	320K	192K	512K	13K	8K	21K	0	0	0	100k	633k
1050-1045	400K	192K	592K	17K	8K	25K	0	0	0	100k	717k
1045-1040	400K	240K	640K	17K	10K	27K	0	200K	200K	100k	967k
1040-1035	400K	240K	640K	17K	10K	27K	0	250K	250K	100k	1,017k
1035-1030	400K	240K	640K	17K	10K	27K	0	300K	300K	100k	1,067k
1030-1025	400K	240K	640K	17K	10K	27K	0	350K	350K	100k	1,117k
<1025	480K	240K	720K	20K	10K	30K	0	350K	350K	100k	1,200k

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LBDCP – Absolute Protect

- Whenever any August 24-month study projects the elevation of Lake Mead to be below 1030' in the subsequent two years, the Lower Basin States and the United States agree to consult to determine what additional measures are required to protect Lake Mead from falling below elevation 1020'



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Intentionally Created Surplus

- 2007 Guidelines created Intentionally Created Surplus ("ICS") Program
- Authorizes Arizona, California and Nevada to store intentionally unused Colorado River water in Lake Mead (as ICS credits) for later delivery
- Encourages conservation of existing consumptive uses
- Provides an immediate benefit to Lake Mead elevations
- Provides a future water supply to contractor creating ICS



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Intentionally Created Surplus

- The 2007 ICS Program:
 - Imposes annual limits on how many ICS credits may be created by each Lower Basin State
 - Imposes total ICS accumulation limits for each Lower Basin State
 - Imposes limits on when ICS can be recovered (delivered out of Lake Mead)
 - Assesses evaporative losses to ICS



ICS Flexibility

Rules related to ICS	2007 Guidelines	LBDCP
Recovery of ICS	No recovery below elevation 1075'	Recovery above 1045' and, under certain conditions, above 1025'
Evaporative Losses	ICS credits assessed a 3% evaporative loss each year they remain in Lake Mead, when Mead is above 1075'	Existing EC ICS – no additional evap losses. ICS created from 2017-2026, 5% initial year, 3% year following creation, and 2% second year following creation
Maximum ICS Accumulation Limit	AZ- 300 kaf; NV- 300 kaf; CA- 1.5 maf	AZ- 500 kaf; NV- 500 kaf; CA- 1.7 maf
Annual ICS Creation Limit	AZ- 100 kaf; NV- 125 kaf; CA- 400 kaf	A basin state may use available ICS creation capacity from another state if permission given

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ICS Flexibility

- A Lower Basin State may use its available ICS credits to offset a LBDCP water use reduction.



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Accounting Related to LBDCP Contributions

- LBDCP water use reductions are accounted for as storage in Lake Mead as either:
 - *Drought Contingency Plan ICS* (DCP-ICS) – All LBDCP water use reductions that meet the rigorous test for qualification as Extraordinary ICS, i.e., demonstrated reduction in existing beneficial consumptive use, will be accounted for as DCP ICS. Also, existing ICS credits that are used to offset a LBDCP water use reduction can be converted to DCP-ICS; or
 - *System Water* – If the entity taking LBDCP reductions opts not to create DCP-ICS, if there is not sufficient capacity in a state's ICS account, or if the water use reduction does not meet the rigorous test for creation of ICS.



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Recovery of DCP-ICS

- DCP-ICS can be recovered (taken back out of Lake Mead) through 2057, if and when Mead elevations recover to 1,110'
- During 2027-2057, DCP-ICS may be recovered above Mead elevation 1075' with a 20% cut for the benefit of the Lake, or the recovered DCP-ICS must be returned within five years.
- Through 2057, a Lower Basin State may temporarily access (borrow) some of its accrued DCP-ICS at elevations below 1075' and above 1025', with an absolute obligation to return the water by the end of the following year.



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AZ Implementation -DCP Plus Plan

- ADWR has been leading the effort to achieve consensus among various Arizona entities to support the state legislation that will be required to implement the LBDCP.
- AZ legislature will need to authorize the State of Arizona to execute a forbearance agreement.
- Parties at the table include: ADWR, CAWCD, AMWUA, Gila River Indian Community, Tohono O'odham Nation, Cities of Phoenix and Tucson, SAWUA, Yuma agricultural districts, private water utilities, Mohave County Water Authority, Salt River Project and Reclamation.



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DCP Plus Plan

- DCP Plus conserves even more water in Lake Mead than is required under the LBDCP.
- Primary goal of DCP Plus is to improve the probability of keeping Lake Mead above 1075' through 2020
 - Pushes out Tier 1 shortage by about 2 years
 - Eliminates the need for a separate Ag Pool mitigation
- Total quantity of conservation contemplated by DCP Plus is 1,234 kaf, approximately 400 kaf/year in 2017, 2018 and 2019



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DCP Plus Plan

- Conservation accomplished through 3 mechanisms:
 - “Uncompensated System Conservation” - conservation mandated for AZ by LBDCP that will be taken by CAP without compensation (192 kaf/yr)
 - “Compensated System Conservation” – conservation voluntarily contributed by certain CAP Tribes, CAP Non-Indian Ag and possibly other CAP subcontractors for compensation. Exact details yet to be worked out, preliminary estimate 410 kaf of compensated conservation during 2017-2019, at \$150/af. Total cost of \$61.5 million over the 3 years.
 - “ICS” – Arizona tribes, including GRIC and potentially other tribes, anticipate creating a total of 255 kaf of ICS during 2017-2019. No compensation received, but ICS credit created.



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DCP Plus Plan

Type	2017	2018	2019	Total
Uncompensated Conservation CAP LBDCP ¹	185 KAF	192 KAF	192 KAF	569 KAF
Compensated System Conservation ²	80 KAF	165 KAF	165 KAF	410 KAF
ICS Projects ³	120 KAF	77.5 KAF	57.5 KAF	255 KAF
<i>Total</i>	<i>385 KAF</i>	<i>434.5 KAF</i>	<i>414.5 KAF</i>	<i>1,234 KAF</i>

Notes: 1 – CAP 2017 planned conservation similar to DCP levels
 2 – Parties potentially include GRIC, Pinal Ag, and Others
 3 – Parties potentially include GRIC and Others



Compensated Conservation

- Projected cost range \$125 - \$150/AF
 - 2017 cost range: \$12.5M to \$15M
 - 2018/'19 cost range: \$20.6M to \$24.75M/yr
 - Total projected cost: \$52.5M to \$63M
- Potential Contributors:
 - United States
 - Dept. of the Interior
 - Dept. of Agriculture
 - Arizona Parties
 - State
 - Cities
 - PSCP Extension/expansion
 - CAP, MWD, SNWA, Denver Water, BOR
- Contributions to be determined
- Process to be determined



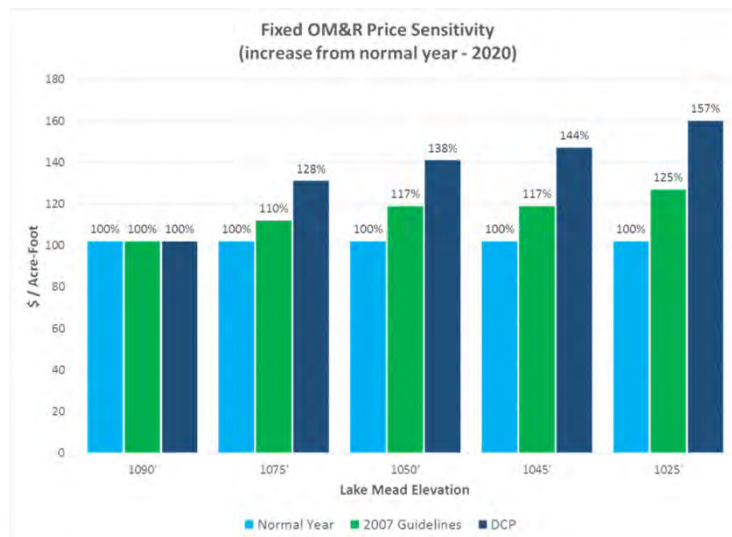
ICS Projects

- Create Tribal ICS Program within CAP's ICS Program
 - Uncompensated
 - ICS ~ 255 kaf over 3 years
- GRIC key contributor:
 - Likely On-Reservation projects
- Will require:
 - New ICS exhibit (CAWCD-BOR, LBDCP parties)
 - New ICS delivery agreement (CAWCD-BOR)
 - Coordination with GRIC, others
 - Annual verification and accounting
- Can operate within existing authorities



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LBDCP Impact on Fixed OM&R Rate



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CAP Water Rate Sensitivity Analysis							
DCP+ versus DCP Alone							
	2016	2017	2018	2019	2020	2021	2022
Published Rates (\$/acre-foot)							
Fixed OM&R	85	87	91	96	102	106	113
CAP Energy Rate	76	77	80	82	101	115	114
	161	164	171	178	203	221	227
Fixed OM&R (\$/acre-foot)							
Published Rates (DCP-like)	85	87	91	96	102	106	113
Lake Mead Elevation*	>1075	>1075	>1075	>1075	>1075	>1075	>1075
CAP Deliveries 000 acre-feet	1488	1534	1537	1459	1459	1461	1463
Probable with DCP Alone	85	87	91	123	131	146	156
Lake Mead Elevation*	>1075	>1075	>1075	Tier 1	Tier 1	Tier 2	Tier 2
CAP Deliveries 000 acre-feet	1488	1534	1537	1139	1139	1061	1063
Change from Published Rates	100%	100%	100%	128%	128%	138%	138%
Probable with DCP+	85	100	108	113	102	136	145
Lake Mead Elevation*	>1075	>1075	>1075	>1075	>1075	Tier 1	Tier 1
CAP Deliveries 000 acre-feet	1488	1334	1295	1237	1459	1141	1143
Change from Published Rates	100%	115%	119%	118%	100%	128%	128%
Change from DCP Alone	0%	15%	19%	-10%	-28%	-9%	-10%
Cumulative from DCP Alone	0%	7%	11%	6%	-1%	-2%	-3%
* January 1							
Elevations do not consider creation of additional ICS by California							

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CAP Water Rate Sensitivity Analysis							
DCP+ versus DCP Alone							
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Water Delivery Rate (\$/a-f)							
Published Rates (DCP-like)	161	164	171	178	203	221	227
Lake Mead Elevation*	>1075	>1075	>1075	>1075	>1075	>1075	>1075
CAP Deliveries 000 acre-feet	1488	1534	1537	1459	1459	1461	1463
Probable with DCP Alone	161	164	171	205	232	261	270
Lake Mead Elevation*	>1075	>1075	>1075	Tier 1	Tier 1	Tier 2	Tier 2
CAP Deliveries 000 acre-feet	1488	1534	1537	1139	1139	1061	1063
Change from Published Rates	100%	100%	100%	115%	114%	118%	119%
Probable with DCP+	161	177	188	195	203	251	259
Lake Mead Elevation*	>1075	>1075	>1075	>1075	>1075	Tier 1	Tier 1
CAP Deliveries 000 acre-feet	1488	1334	1295	1237	1459	1141	1143
Change from Published Rates	100%	108%	110%	110%	100%	114%	114%
Change from DCP Alone	0%	8%	10%	-6%	-14%	-5%	-5%
Cumulative from DCP Alone	0%	4%	6%	3%	0%	-1%	-2%
* January 1							
Elevations do not consider creation of additional ICS by California							

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DCP Plus Issues

- Availability of funding for DCP Plus is a significant issue.
- Another recent issue is a desire by some parties to DCP Plus for CAWCD to commit to leave “all CAP Excess Water” in Lake Mead, in addition to the 569 kaf of uncompensated system conservation in 2017-2019.
 - “CAP Excess Water” consists of all Project Water that is unused by CAP contractors or subcontractors.
 - “CAP Excess Water” is the source of water making up the CAP Ag Pool and the CAP Statutory Firming Pool, which includes deliveries to the AWBA for firming CAP M&I subcontracts, deliveries to the United States for tribal firming and deliveries to the CAGR to replenish groundwater that has been pumped by members.



Potential Decisions by CAP

- Support for Federal legislation (DCP & PSCP funding)
- Support for State legislation (Joint Resolution authorizing ADWR to sign agreements)
- Execution of MOA regarding AZ Implementation Plan
- Revised rate schedule
- Potential implementation agreements with other parties (ICS, PSCP, etc.)
- Potential expansion of CAP participation in Pilot System Conservation Funding



