

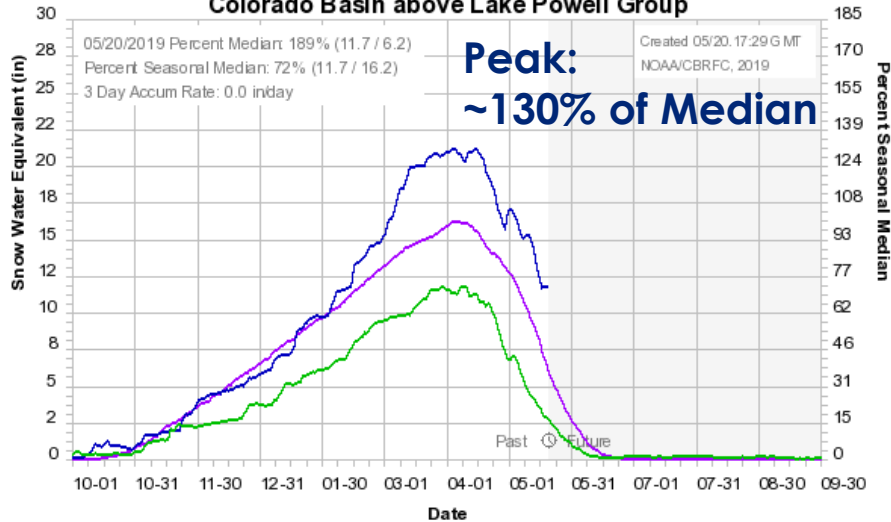
# 2020 CAP Delivery Supply



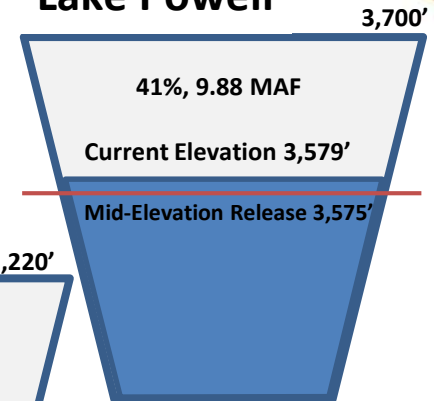
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# Colorado River Conditions

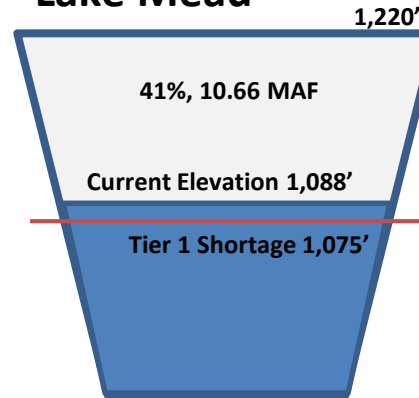
Colorado Basin River Forecast Center  
Colorado Basin above Lake Powell Group



Lake Powell



Lake Mead

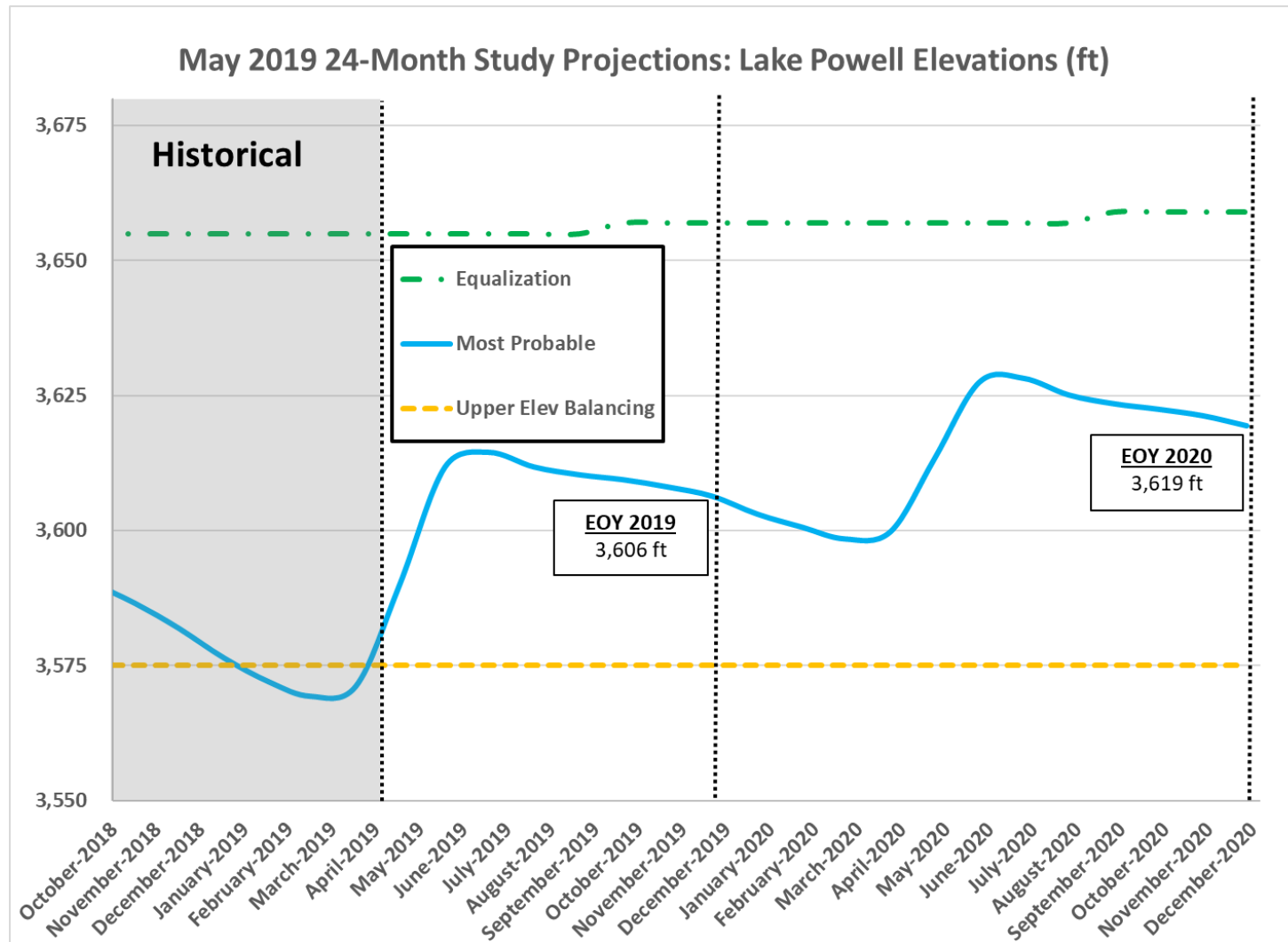


Colorado River System Contents:  
28.12 MAF (5/20/19)

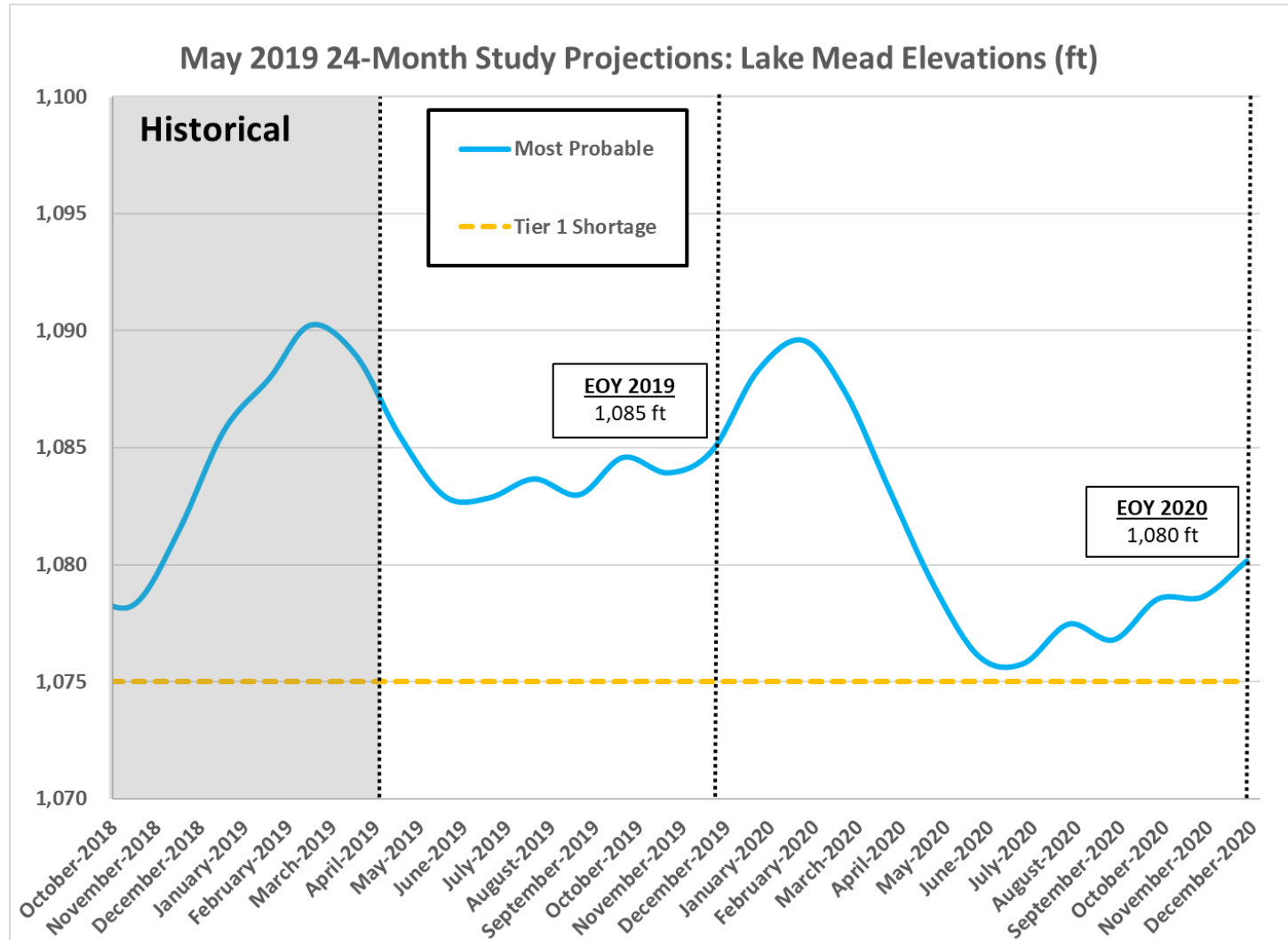
## Intervening Flows (Powell to Mead)

Month	5-Year Average	Observed	% of Average
January 2019	83 KAF	106 KAF	128%
February 2019	91 KAF	126 KAF	138%
March 2019	57 KAF	201 KAF	355%
April 2019	49 KAF	117 KAF	238%

# 24 Month Study: Lake Powell



# 24 Month Study: Lake Mead



# 2020 DCP Implementation

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## Implement Tier 0

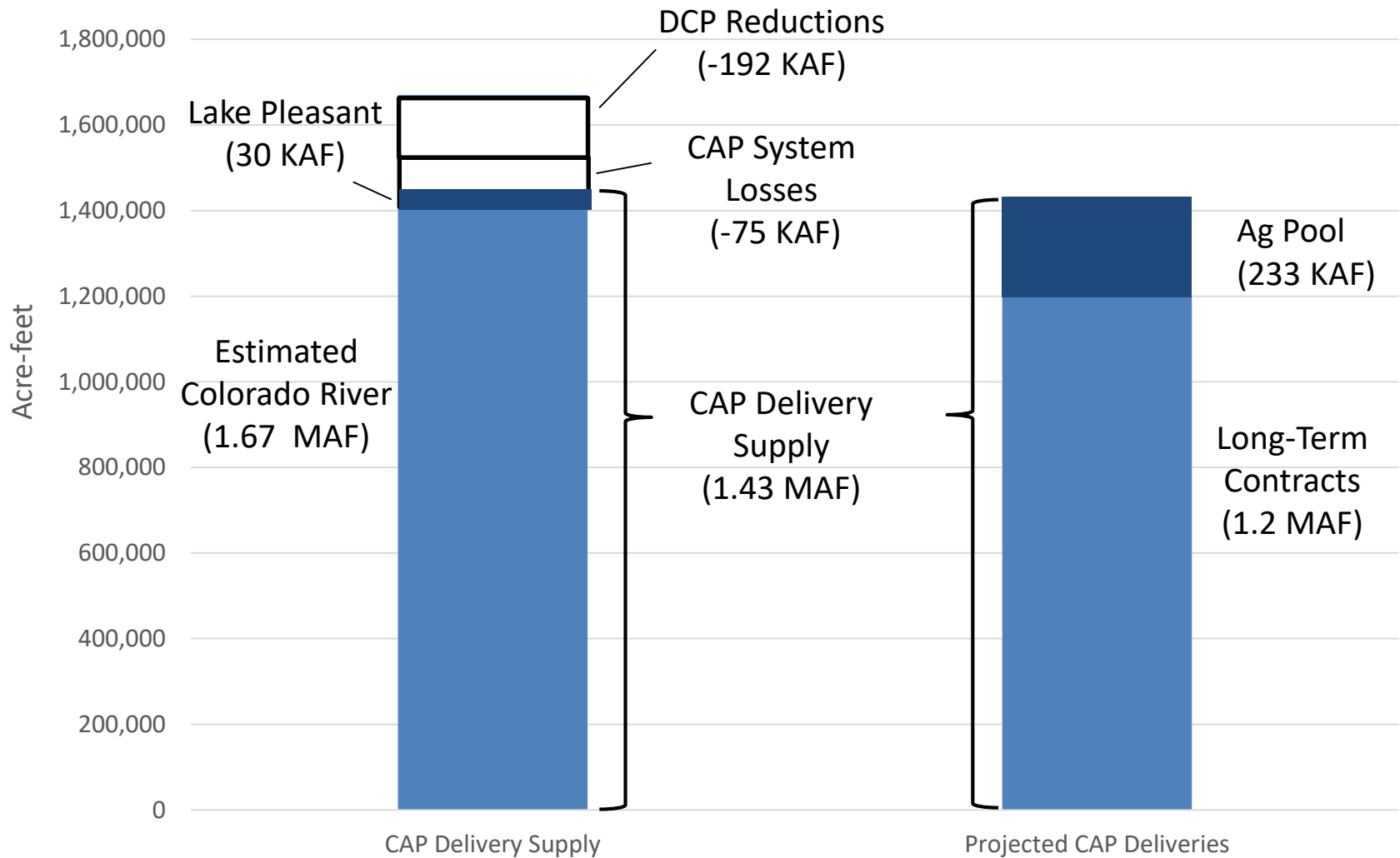
1. DCP Reductions become Mandatory (Tier 0) 192KAF - AZ
2. Offset Program in process, Offsets are meant to keep Lake Mead whole while using CAP ICS as a mitigation resource. Lake Mead contributions related to the offset program are occurring in 2019 and are planned to occur in 2020
3. Central Arizona Regional Irrigation Efficiency Conservation Project – Develop Groundwater/Recovery/Irrigation Efficiency

## Implement Tier 1

The main elements of the Intra-Arizona agreements focuses on addressing reduction to the Ag pool and NIA priority water that will be implemented when a Tier 1 Shortage is declared

1. Mitigation of NIA Supplies
2. Mitigation of Ag Pool
3. Compensated Mitigation
4. USF to GSF and GSF to GSF transfers
5. Federal and State firming obligations for NIA priority water for tribal contractors

# CAP Delivery Supply Projection 2020





# CAP Energy Cost Impact of NGS Closure



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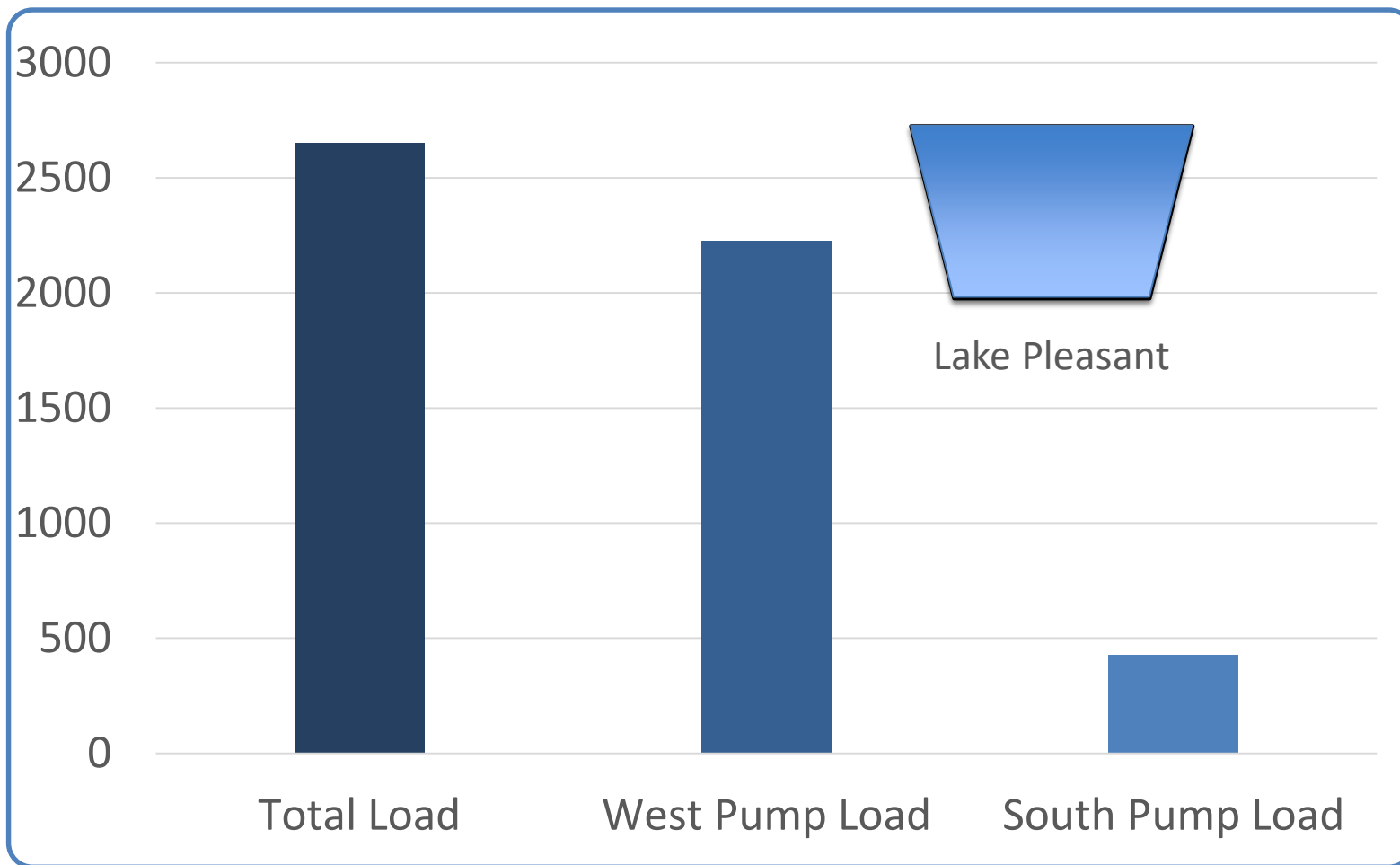
# CAP Board Task Force 2017

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1. Retain current diversification strategy: no single generation source or contract should provide more than 15-20% of CAP energy needs
2. Hedge 75% to 90% of CAP's base load energy needs prior to the delivery year
3. Hedge up to 40% of CAP's variable load energy needs prior to the delivery year
4. Consider firmed renewable energy proposals on an equal basis with non-renewable proposals
5. Consider purchasing up to 30-35 MW of non-firmed renewable energy



# 2019 CAP Energy Use - Giga Watt Hours



# Tools - Lake Pleasant

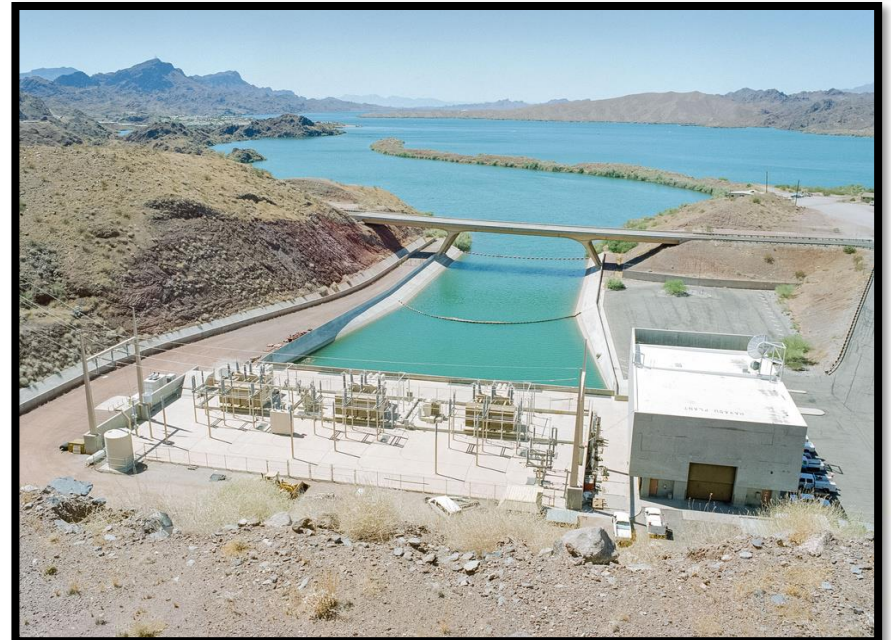
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- Midpoint of CAP system
- Bulk of CAP water deliveries downstream
- Re-regulating reservoir that “disconnects” the seasonal use of energy demand from the water demand



# Tools – Reach 1

- Mark Wilmer Pumping Plant
- 3600 cfs flow capacity, 6 pumps 50 MW each
- Downstream of Mark Wilmer
- 5,000 Acre-feet storage
- Facilitates the daily shaping of pump operations at Mark Wilmer PP



# Looking Back – CAP Energy Agreements

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- Four Party Agreement (for use of NGS)
  - SRP provided scheduling services
  - CAP energy at cost at a buildout schedule “Threshold”
  - Paid market costs for over threshold energy
- 3 Party Agreement (CAP – Reclamation – WAPA)
  - 300 MW to SRP June – August
  - Surplus energy marketed for the benefit of CAP repayment by WAPA
- Post NGS
  - Portfolio of energy agreements
  - No change in Hoover energy

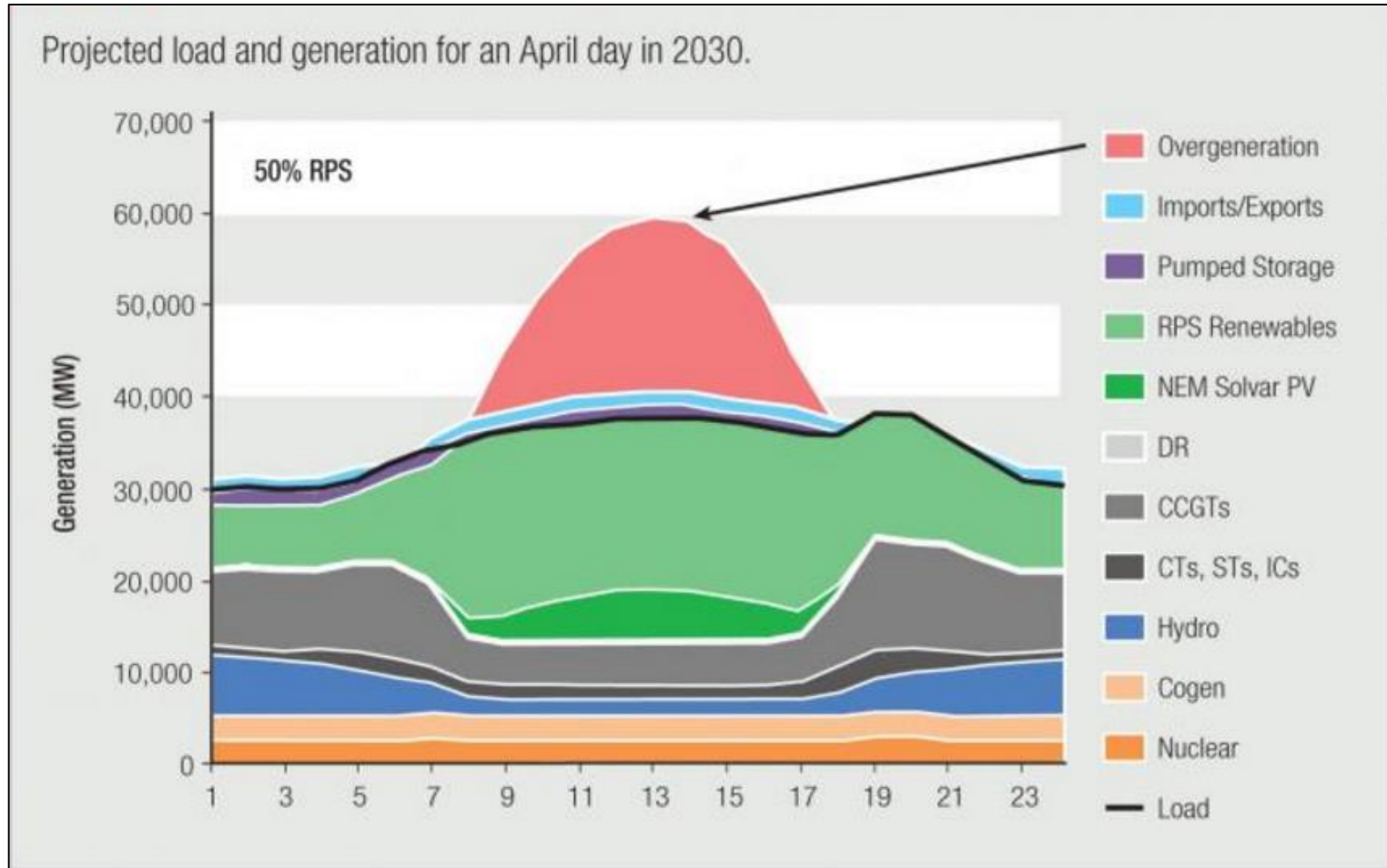
# **“Function” of 3 Party Agreement**

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- CAP reserves NGS energy to meet pumping needs annually
  - Real-time scheduling, tagging performed for CAP by AEPCO/ACES
- Unreserved NGS energy is sold by WAPA as Navajo Surplus
  - Net proceeds assist CAP repayment
- CAP Developed “new” experience and expertise in managing energy resources

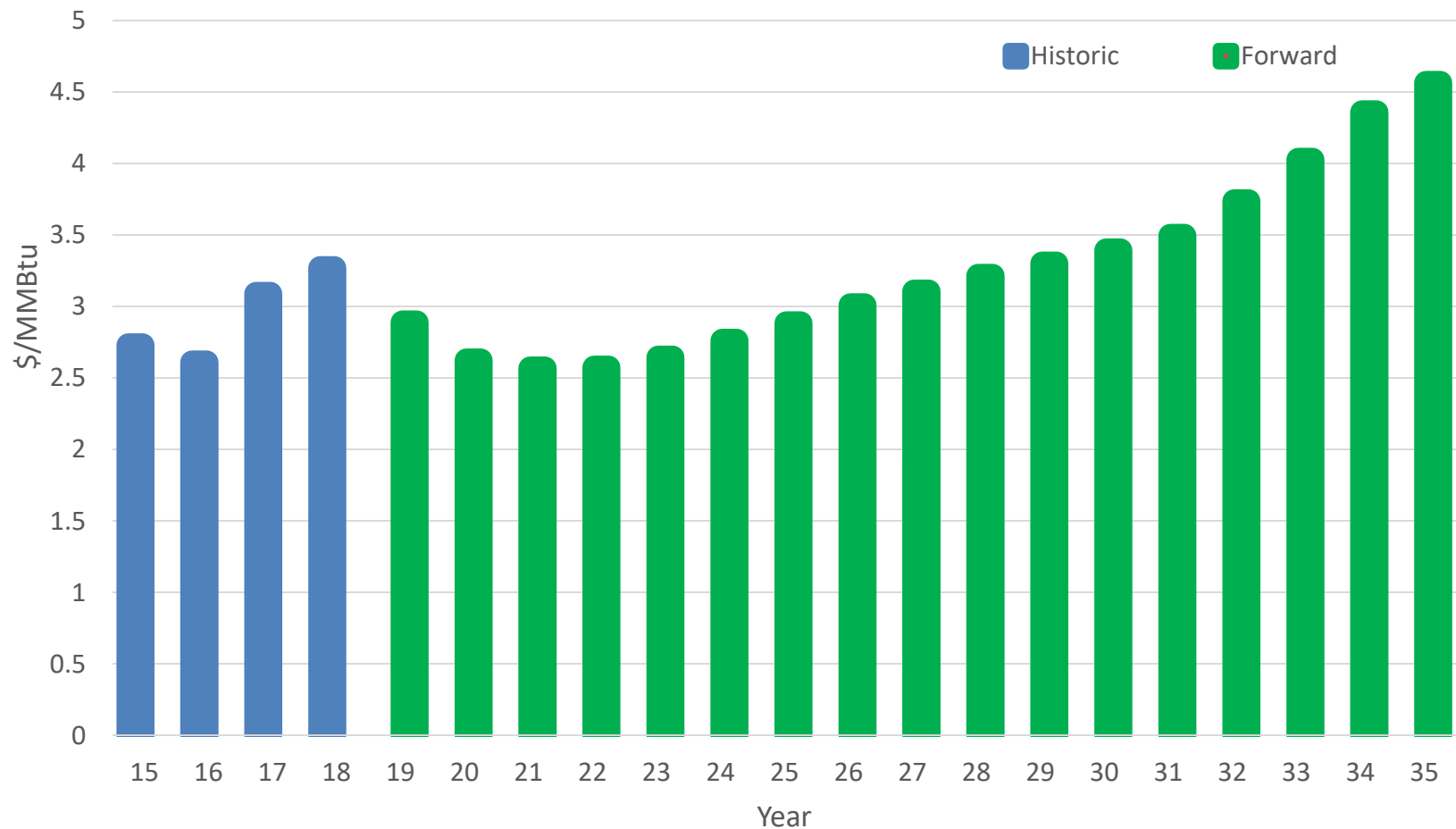


# Market Outlook

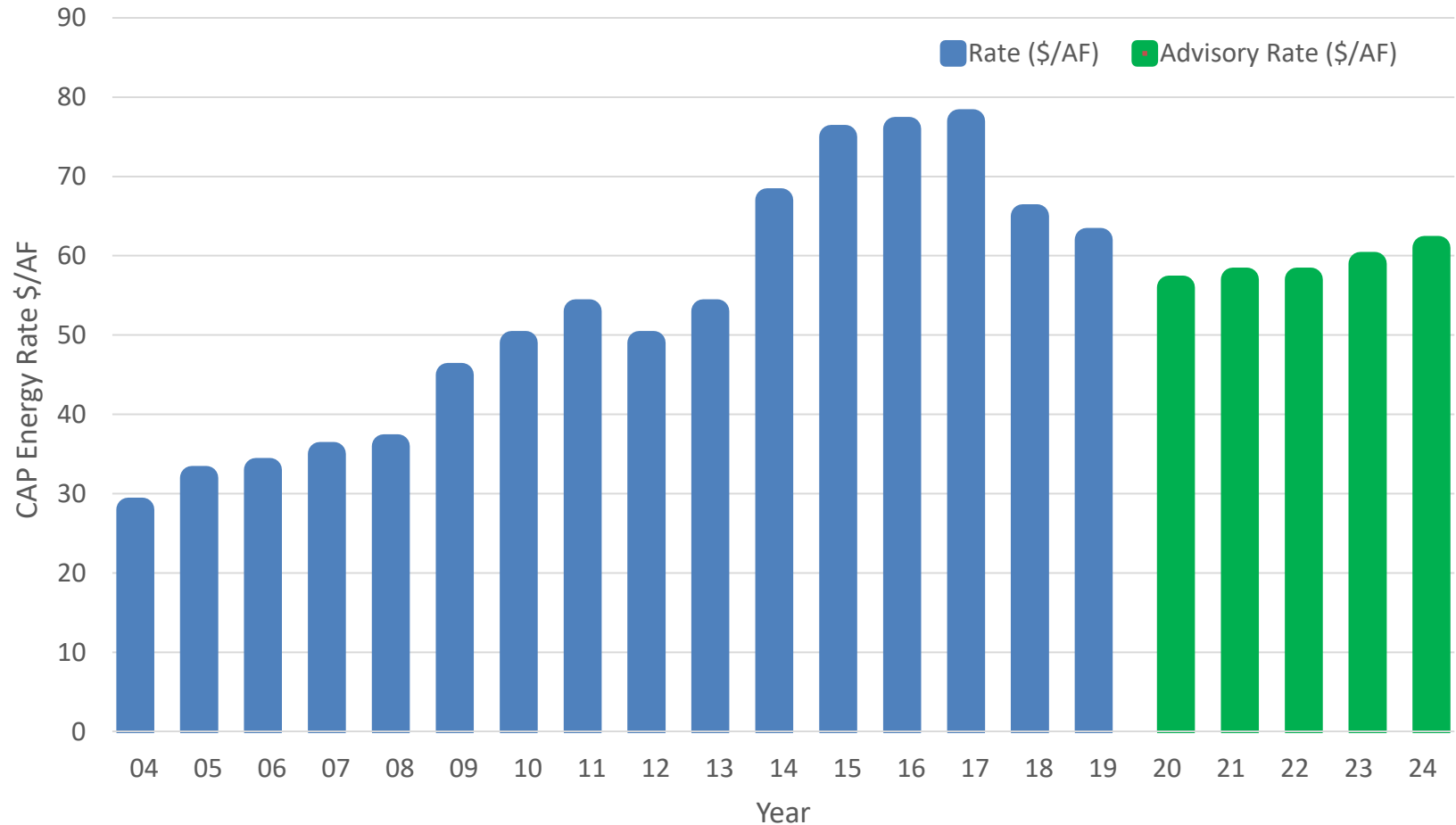


Forecasted Solar Over-Generation on CAISO Grid in Spring

# Natural Gas Prices



# CAP Energy Rates



# Summary

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- 3 Party-agreement has been positive preparation for CAP going forward in a non-NGS environment
- Diverse portfolio of power products (mostly purchases)
- Actively manage energy resources and operations to gain value from assets

# DCP Agreements



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# Proposed Agreements and Status

#	Agreement Name	Status	Requires CAWCD Approval	Parties
1	Arizona Implementation	Final	Y	ADWR, CAWCD, others TBD
2	CAP Ag Mitigation	Final	Y	CAWCD, CAP Ag Distr.
3	CAP NIA Mitigation	Final	Y	CAWCD, CAP NIA customers
4	CAWCD – SRP Exchange	Final	Y	CAWCD, SRP
5	Arizona ICS Framework & New AZ Exhibits	Final	Y	ADWR, BOR, CAWCD (Exhibits - interstate approval)
6	CRIT System Conservation	Draft	Y	ADWR, BOR, CAWCD, CRIT, others
7	US – CAWCD LBDCP Obligations	Final	Y	US, CAWCD
8	CAWCD – ADWR Exchange of Letters	Final	Y	ADWR, CAWCD

# Proposed Agreements and Status

#	Agreement Name	Status	Requires CAWCD Approval	Parties
9	GSF – GSF Agreement	Draft agreements	N	EPCOR, CAP Ag Distr.
10	USF – GSF Agreements	Draft agreements	N	Some M&I users, CAP AG Distr.
11	AWBA Recovery Agreements	Concept	N	AWBA, Recovery partners (TBD)
12	US – GRIC “Pre-firming”	Final	N	US, GRIC
13	AWBA – GRIC “Pre-Firming”	Final	N	AWBA, GRIC
14	Interstate ICS Borrowing Capacity	Draft	N	ADWR, SNWA, MWD
15	Interstate Aggregate ICS Capacity	Concept	N	ADWR, SNWA, CRCN, MWD
16	GRIC-CAGR Water Supply Acquisition Agreements	Final	Approved by CAWCD Board Nov. 1, 2018	GRIC, GRWS, and CAWCD

# NIA and AG Mitigation Agreements

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- Intent of NIA and AG Mitigation Agreements
  - Preserve the CAP priority system
  - Provide mitigation for new DCP reductions
  - Identify how firming resources will be used
  - Quantify and allocate mitigation resources
- Linkages between NIA, Ag and USF to GSF and GSF to GSF agreements

# NIA Mitigation

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- Mitigation provided if DCP reduction would prevent NIA orders from being satisfied
- Mitigation amounts determined after taking into account firming obligations
- CAWCD mitigation obligation ends at earlier of:
  - Satisfaction of mitigation obligations set forth in the agreement
  - When all Mitigation Resources have been exhausted

# NIA Agreements in Tier 1-2B

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- CAP will hold August meeting to provide information regarding the CAP water supply (post August 24-month study)
- NIA contractors submit “full” water orders
- Indicate if willing to accept compensated mitigation in water order
- CAP will determine actual reductions once orders have been received
- CAP will coordinate with Reclamation and AWBA, regarding Firming volumes
- CAP will work with NIA contractors on revised schedules



# NIA Agreements in Tier 1-2B

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- 2020-2022
  - 100% Mitigation in Tier 1 or Tier 2 Shortage
  - 0% Mitigation in Tier 3 Shortage
- 2023-2025
  - Tier 1 or Tier 2a Shortage – 75% Mitigation
  - Tier 2b Shortage – 50% Mitigation
  - Tier 3 Shortage – 0% Mitigation
- 2026
  - No Mitigation

# Ag Mitigation

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- Fixed Quantity of Mitigation for Ag Districts in 2020-2022 based on Shortage Tier
  - Tier 1 – 105,000 AF
  - Tier 2 – 70,000 AF

# Ag Mitigation

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- Mitigation Water is provided from the following sources in the following priority:
  - First: CAP water stored by non-Ag entities at the Irrigation District's GSFs
  - Second: Beginning in 2022, replacement groundwater supplies
  - Third: CAP supplies from the 400,000 acre-feet of CAP ICS and 50,000 acre-feet of CAP operational supplies

# Ag Mitigation

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- Total deliveries to Ag from CAP supplies are capped in the NIA Mitigation agreement to those levels beyond amounts of GSF and groundwater supplies
- No backstop
  - 58,500 af in 2020-2021 in Tier 1
  - 23,500 af in 2020-2021 in Tier 2a
  - 70,000 af in 2020-2021 in Tier 2b
  - 42,000 af in 2022 in Tier 1
  - 7,000 af in 2022 in Tier 2a
  - 53,500 af in 2022 in Tier 2b

# AG Mitigation Tier 1-2B

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- CAP will hold August meeting to provide information regarding the CAP water supply (post August 24-month study)
- No AG Pool water will be available
- USF-GSF and GSF-GSF partners should coordinate schedules to align with determined shortage tier
- AG Districts submit schedules that align with mitigation agreements



# ICS Framework – 2007 Guidelines

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- Purpose
  - Program and accounting tool to provide incentive for conservation in Lake Mead for Lower Basin contractors
- Process for ICS Creation
  - Exhibits– description of the overall conservation program
  - Annual ICS Creation Plan - specific conservation action and verification method
  - Annual Certification Report – documents and verifies conservation activity
  - Annual Accounting - ICS creation and accumulation is documented in the annual Water Accounting Report for the Lower Basin

# Types of ICS – 2007 Guidelines

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- **System Efficiency ICS\*** – projects financed to save water that would otherwise be lost from the Mainstream
- **Extraordinary Conservation ICS (EC ICS)\*** – conservation projects to provide a water supply in place of or to reduce an existing Mainstream water use
- **Binational ICS (BICS)\*** – cooperative measures which allow Mexico to create Intentionally Created Mexican Allocation (ICMA) and a program to allow the conversion of ICMA to BICS

\* CAP has created this type of ICS

- Also Tributary Conservation ICS, Imported ICS and Developed Shortage Supply

# EC ICS – 2007 Guidelines

## 2007 Guidelines Requirements on Extraordinary Conservation (EC ICS)

	Arizona	California	Nevada
Annual Creation Limitations (AF/yr)	100,000	400,000	125,000
Annual Release (Delivery) Limitations (AF/yr)	300,000	400,000	300,000
Maximum Accumulation Limitations (AF)	300,000	1,500,000	300,000

# ICS - 2007 Guidelines vs. DCP

Rules Related to ICS	2007 Guidelines	LBDGP
Maximum ICS Accumulation Limit	AZ - 300 kaf NV - 300 kaf CA - 1.5 maf	AZ- 500 kaf; NV- 500 kaf; CA- 1.7 maf <ul style="list-style-type: none"> <li>• AZ limit increased to <b>600 kaf</b> through separate agreement</li> <li>• Limit includes EC ICS, BICS, and DCP ICS</li> </ul>
Evaporative Losses	3% annually when Mead is above 1,075'	One-time 10% upon creation through 2026
Recovery of ICS	No recovery when Mead below 1,075'	<ul style="list-style-type: none"> <li>• Recovery when Mead above 1,025' with ICS conversion to DCP ICS count toward limit when Mead below 1,045'</li> <li>• No delivery when Mead &lt; 1,025'</li> <li>• Requirements on delivery of DCP ICS depending on year and Mead elevation</li> <li>• Flexibility for use through 2057</li> </ul>
Annual ICS Creation Limit	AZ - 100 kaf NV - 125 kaf CA - 400 kaf	Same, with flexibility for states to annually share EC ICS creation capacity

# Arizona ICS Framework

## Agreement Roles

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### Convener – ADWR

- Coordination of review of ICS Exhibits and Creation Plans for AZ parties
- Convene discussions among AZ ICS creators on annual creation and accumulation limits

### Forbearance – CAWCD

- Review of AZ Creation Plans to provide forbearance
- Coordinate creation and accumulation capacities
- Identify impacts to CAP operations and costs

### AZ ICS Exhibits:

CAWCD

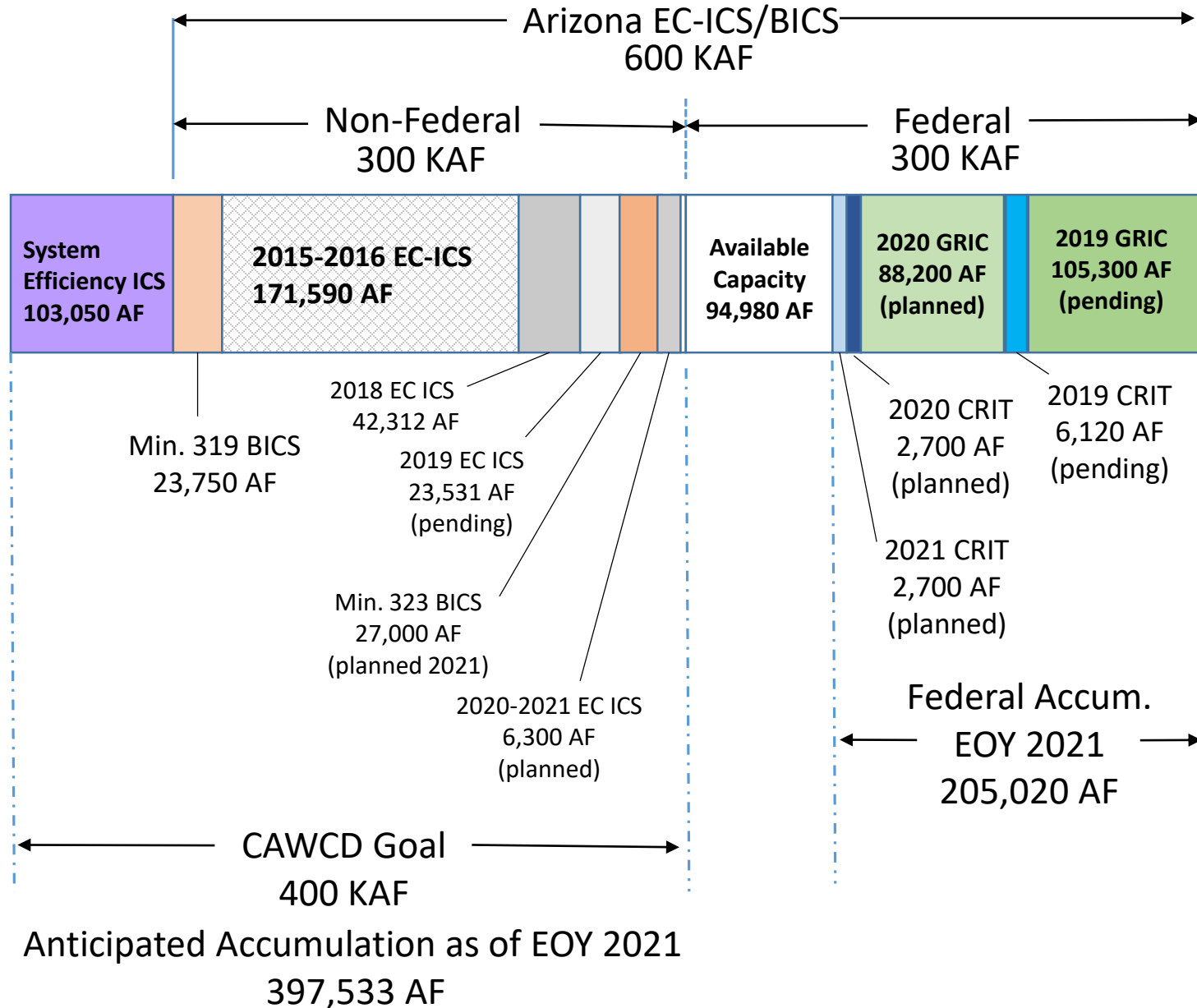
Gila River Indian Community

Mohave Valley IDD

Colorado River Indian Tribes

Wellton – Mohawk IDD

# Arizona ICS Accumulation for DCP – Current, Pending, and Planned





# Next Steps for ICS

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- Approve Exhibits through signing of DCP documents
- BOR completes review and approval of 2019 and 2020 Creation Plans – LB interstate process
- Forbearance Agreements between BOR to CAWCD for 2019 and 2020 Creation Plans – to Board in June or August 2019
- 2019 CAP water orders to be amended for ICS creation
- 2020 CAP water ordering process to reflect planned ICS creation

# Questions?



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