

Drought Mitigation Options

Desert Southwest Regional Office

August 24, 2021

Agenda

- Purpose
- Drought Impact Estimate
- Cost Pressures
- Lower Basin Generation Update
- Mitigation/Improvements Options
- Additional Feedback
- Next Steps

Meeting Purpose

- Begin to address concerns on drought causing decreased generation in the Lower Basin
- Have had rate pressures for last 10-15 years
- Drought magnifying issues
- Review previous actions to mitigate pressures
 - Increasing resource value
 - Increasing revenue
 - Increasing use of other funding sources
 - Decreasing costs
- Forum for customer ideas and feedback

Drought Impact Estimate

- Parker-Davis Project and Boulder Canyon Project customers requested that WAPA coordinate with Reclamation to provide an estimated impact due to drought
- Estimate posted on July 8, 2021
- Received customer feedback, added impact to fiscal year 2022 and posted revised estimate on July 9, 2021

https://www.wapa.gov/regions/DSW/Pages/drought_mitigation_options.aspx

Cost Pressures

- Cost pressures are not new
 - Major repair costs/capital improvements
 - Purchase Power and Wheeling (PPW)
 - COVID-19
- Strive to make continual improvements by improving resource value, increasing revenue, and decreasing costs
- Appreciate coordination between WAPA, Reclamation, and customers

Recent Improvements/Mitigations

- Boulder Canyon Project
 - Plant Improvements: Installation of wide-head turbines (drought specific), overstroke wicket gates, wicket gate replacement, unit overhauls, unit control modernization
 - Rescheduled maintenance and capital improvements
 - Increase risk of forced outages, more expensive emergency repairs, etc.
 - Fund large projects over several years
 - Develop revenue sources
 - Commercial use authorization
 - Improve merchandise sales
 - Usage of other sources of funds
 - Southern Nevada Public Land Management Act, Federal Lands Transportation Program, Security Funding, CARES Act Funding

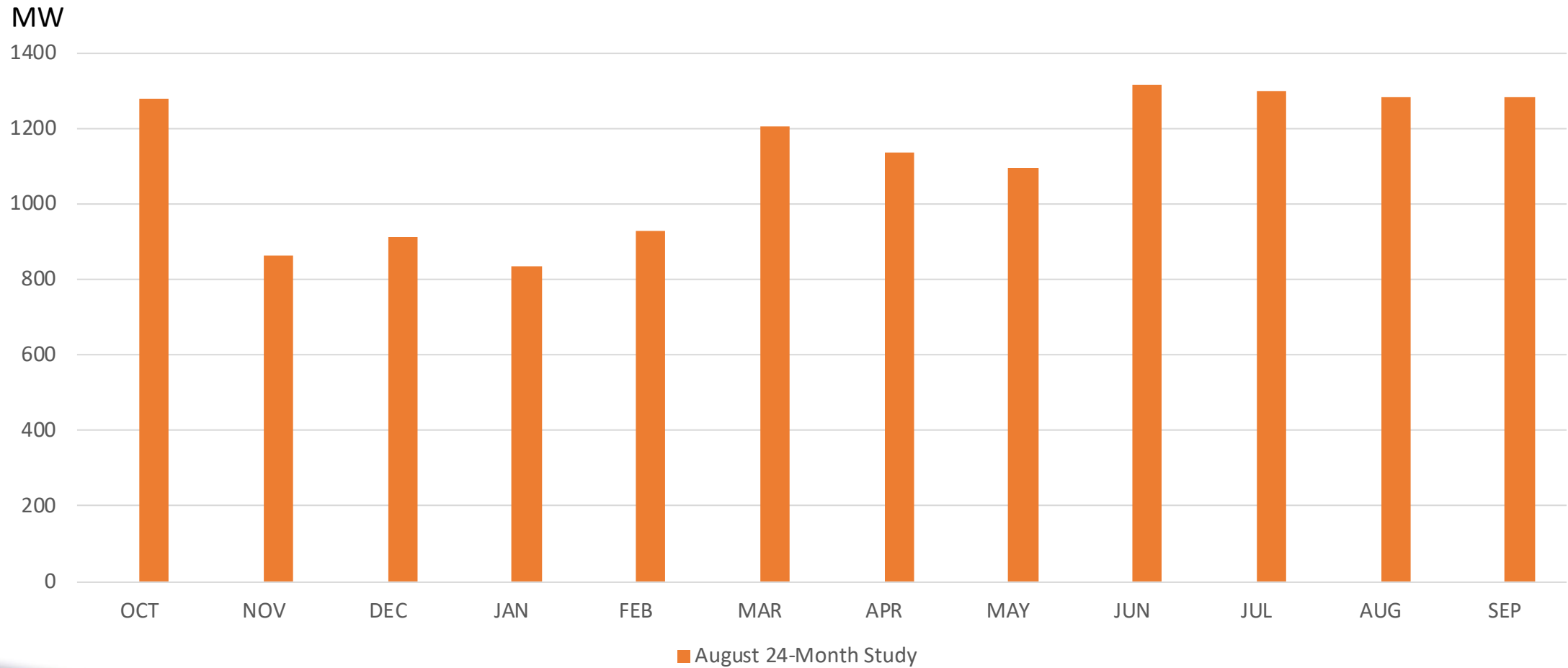
Recent Improvements/Mitigations

- Parker-Davis Project (PDP)
 - Economic dispatch improvements
 - Usage of other sources of funds
 - Southern Nevada Public Land Management Act, Federal Lands Transportation Program, Security Funding
 - Amortization of Reclamation replacements
 - Added unit efficiencies
 - Davis Rewinds Units (1, 2, 4 and 5) increased rated capacity from 48 MW to 51.75 MW, Unit 3 rewind in FY23 and expect similar gain in capacity

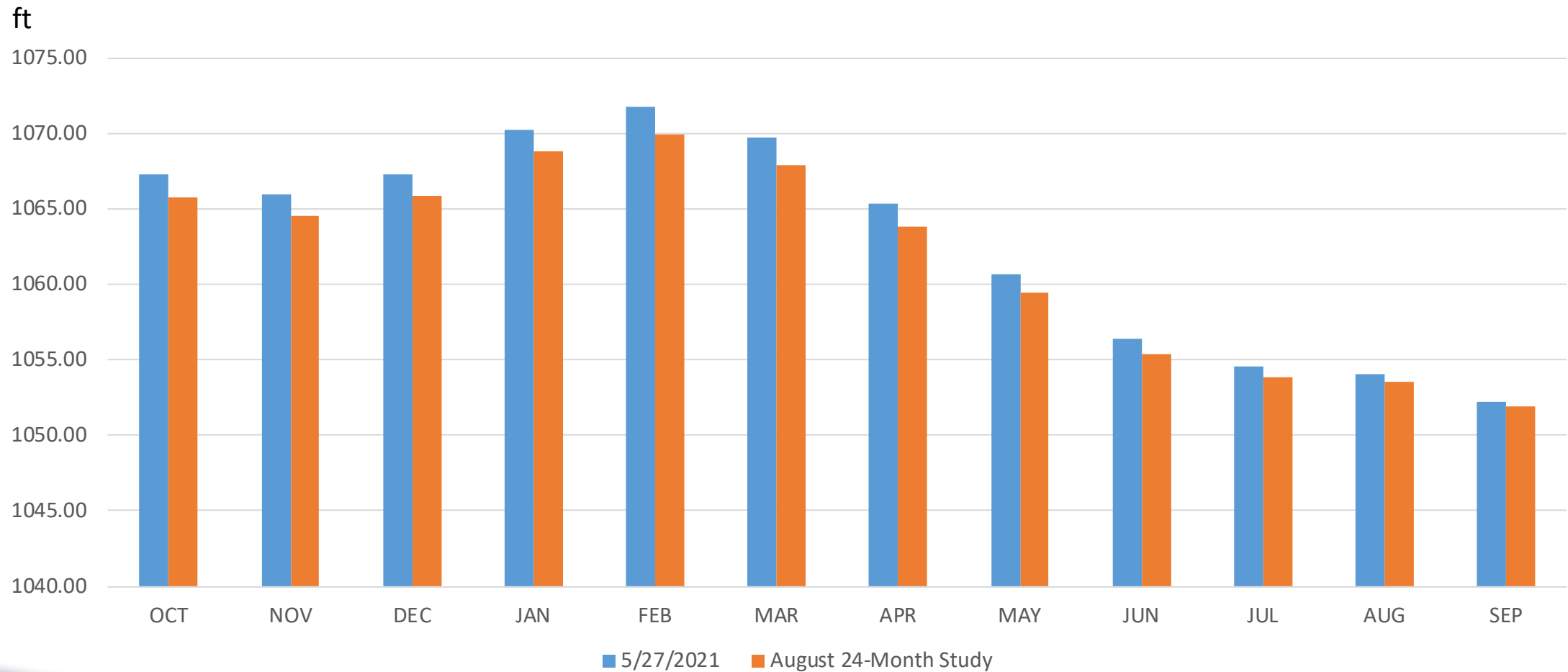
Lower Basin Generation Update

- April 2021 Projections compared to August 2021:
 - The April 2021 and August 2021 projections included DCP contributions with Level 1 Shortage reductions beginning in January 2022
 - Major difference between the April 2021 projections and the August 2021 projections is Lake Powell elevation and spring runoff
 - April 2021 projected runoff was 3.20 maf
 - August 2021 preliminary observed runoff was 1.85 maf
 - Elevation projections decreased in Lake Powell due to lower than projected spring runoff
 - Elevation projections decreased in Lake Mead due to reduced side inflows and changes to Lower Basin Water Operations

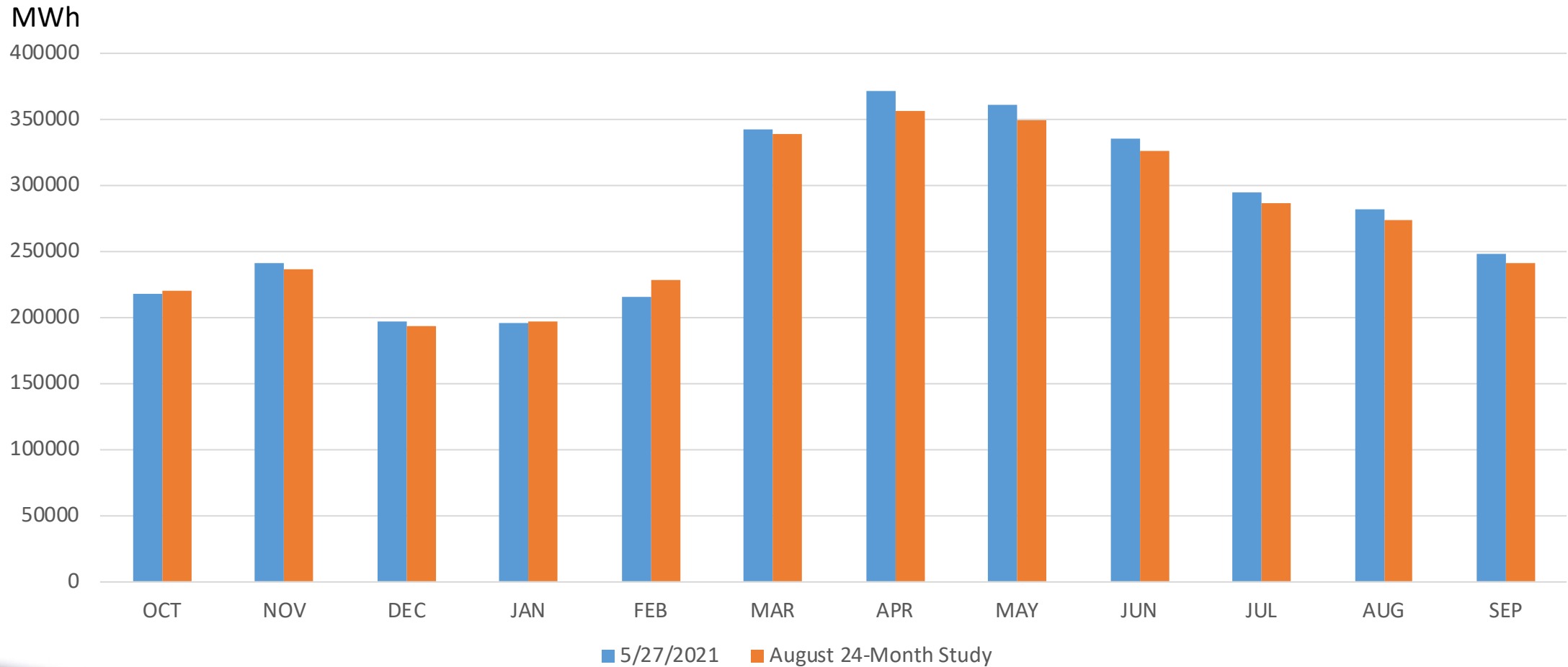
FY 2022 Hoover Capacity



Lake Mead Elevation Comparison



Hoover Master Schedule Energy Comparison



FY 2022 AOP – Presented May 2021

	Prior Year Balance	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Resources														
Parker Generation		31	21.6	14.2	19.1	25.8	40	46.7	46	46.4	44.4	40	33.6	408.8
MWD's Parker Share		-15.5	-10.8	-7.1	-9.55	-12.9	-20	-23.35	-23	-23.2	-22.2	-20	-16.8	-204.4
Davis Generation		85.3	62.5	45.6	56.6	74.5	108.8	119.5	116.9	110.7	100.8	93.5	89.5	1064.2
Net Generation		100.8	73.3	52.7	66.2	87.4	128.8	142.9	139.9	133.9	123.0	113.5	106.3	1268.6
Other PDP Credits		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.6
Purchases for PDP		8.1	9.6	17.5	12.4	8.1	14.1	8.4	11.0	12.0	17.9	20.8	21.3	161.0
Total Resources:		109.1	83.1	70.4	78.8	95.7	143.1	151.5	151.1	146.1	141.1	134.5	127.8	1432.2
Loads														
Total PDP Firm Load		82.9	79.2	80.5	80.0	74.0	147.2	145.5	149.6	146.6	151.8	150.4	144.6	1432.2
Energy Bank Sales		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excess		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Surplus Sales		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PDP / BA Deviation	0.0	8.3	6.0	-6.3	1.5	8.3	-1.0	7.8	3.8	2.2	-6.9	-11.4	-12.2	0.0
Hoover Bank	0.0	17.9	-2.1	-3.8	-2.7	13.4	-3.0	-1.8	-2.4	-2.6	-3.9	-4.5	-4.6	0.0
Total Loads:		109.1	83.1	70.4	78.8	95.7	143.1	151.5	151.1	146.1	141.1	134.5	127.8	1432.2

TOTAL FY 2022 PURCHASE POWER COSTS
\$16,296,804

ENERGY COSTS
\$15,163,108

RESERVES COSTS
\$1,133,696

+ values represent energy from P-DP
- values represent energy to P-DP

FY 2022 AOP – August 24-Month Study

	Prior Year Balance	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Resources														
Parker Generation		30.3	23.2	15.1	19.1	25.8	39.7	46.1	45.3	45.7	43.8	39.4	33.2	406.7
MWD's Parker Share		-15.15	-11.6	-7.55	-9.55	-12.9	-19.85	-23.05	-22.65	-22.85	-21.9	-19.7	-16.6	-203.4
Davis Generation		83.9	64.5	46.3	55.9	74.4	107.1	117.9	114.9	109	99.3	92	88.1	1053.3
Net Generation		99.1	76.1	53.9	65.5	87.3	127.0	141.0	137.6	131.9	121.2	111.7	104.7	1256.7
Other PDP Credits		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.1
Purchases for PDP		8.3	8.9	18.1	13.4	8.3	15.6	9.5	12.4	13.4	19.6	22.8	23.2	173.5
Total Resources:		107.6	85.2	72.1	79.0	95.8	142.7	150.6	150.1	145.5	141.0	134.6	128.1	1432.2
Loads														
Total PDP Firm Load		82.9	79.2	80.5	80.0	74.0	147.2	145.5	149.6	146.6	151.8	150.4	144.6	1432.2
Energy Bank Sales		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excess		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Surplus Sales		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PDP / BA Deviation	0.0	8.5	7.7	-5.0	1.5	8.5	-1.5	6.9	2.8	1.4	-7.2	-11.5	-12.1	0.0
Hoover Bank	0.0	16.2	-1.7	-3.4	-2.5	13.3	-2.9	-1.8	-2.3	-2.5	-3.7	-4.3	-4.4	0.0
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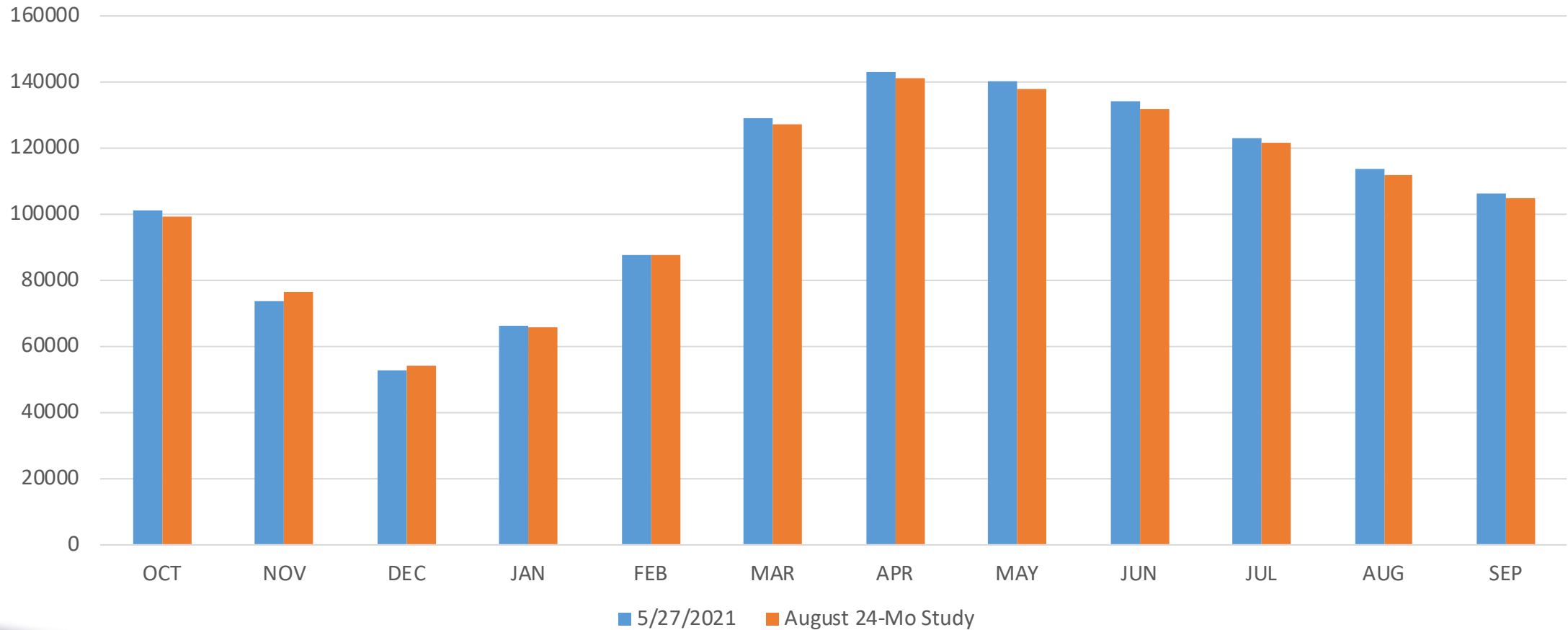
TOTAL FY 2022 PURCHASE POWER COSTS
\$20,348,630

ENERGY COSTS
\$19,173,448

RESERVES COSTS
\$1,175,182

+ values represent energy from P-DP
- values represent energy to P-DP

PDP Net Generation Comparison (MWh)



Other Initiatives

- Joint Hydropower Study
 - NREL, Argonne, WAPA and Reclamation
 - Quantify probably changes in economic value
 - Explore operational Improvements
 - Broad range of scenarios:
 - Higher levels of renewable generation
 - Continued expansion of EIM & WEIS
 - Drought conditions
 - Changes to water management under current and new Interim Guidelines
 - Funded by DOE's Water Power Technologies Office (WPTO)

Mitigation/Improvement Ideas

- Increase resource value
 - Expand energy exchanges
 - Power pooling - layoffs
 - Other Revenues
 - Explore Renewable Energy Credits
 - Review resale provisions
 - Invest in a firming resource

Mitigation/Improvement Ideas

- Decrease costs
 - Reschedule maintenance
 - Manage/planning of carryover
 - Decrease PPW costs
 - Allow opt out of PPW for PDP
 - Change allocations

Mitigation/Improvement Ideas

- Rates and Repayment
 - Change funding authority
 - Any changes (savings) to PDP transmission rates
 - Change to assets
 - Interest rate - remove floor
 - Change service life
 - Change rate methodology
 - Amortize PPW

Additional Feedback

Next Steps

- Submit additional ideas to DSW-PowerMarketing@wapa.gov
- Level of interest and support
- Further refine ideas
- Meet again to continue to explore