

CENTRAL ARIZONA WATER CONSERVATION DISTRICT (CENTRAL ARIZONA PROJECT)

STAKEHOLDER RATE & POWER PORTFOLIO WORKSHOP April 12, 2018 - 10:00 a.m.

Central Arizona Project 23636 North Seventh Street Phoenix, Arizona Lake Mead Conference Room

AGENDA

- 1. Overview & Base Assumptions
- 2. Water Delivery Preliminary Rates
 - a. Fixed OM&R
 - b. Energy
 - c. Agriculture
- 3. Capital Charges
- 4. Taxes & Reserves
- 5. Underground Storage Rates
- 6. CAGRD Assumptions
- 7. CAGRD Preliminary Rates
- 8. Shortage Case Rates
- 9. Power Portfolio



CAP's Two-Year Financial Planning Cycle

Even years

- Long-range financial plan
- Set water rates
- Strategic plan
- Reserve strategy review
- Budget update (if required)

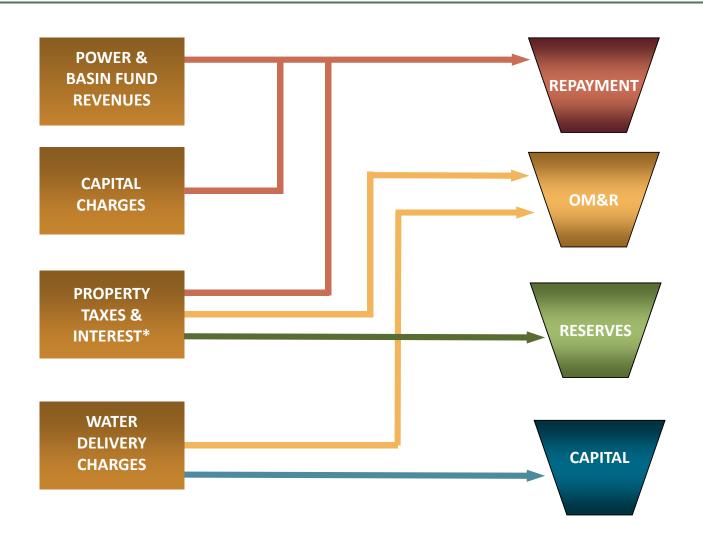
Odd years

- 2-year Budget and Business Plan (e.g. 2020-2021)
- Water rate update (if required)

Every year

- Quarterly financial reviews
- Set tax rates

General Fund Sources and Uses of Revenue



Key Assumptions

General:

- ✓ No water shortage during rate setting cycle
 - Maintain 192,000 acre-feet annual forbearance (unreimbursed)
- ✓ Water rates are set to recover costs, on a long term basis, net of other revenue
- ✓ General ad valorem property tax rate held at 10¢
 - 7½¢ available towards Ag programs and other needs, such as improving strategic reserves, shortage mitigation programs and recovery and 2½¢ dedicated to Extraordinary Cost Reserve in anticipation of incremental cost increases for 2018
 - 2019 and forward goes into strategic reserves
- ✓ Water storage tax held at 4¢ for federal repayment and CAWCD OM&R costs
 - Make 4¢ available for water bank needs

Key Assumptions (cont'd)

Power

- ✓ CAWCD is not taking any Navajo Generating Station power under its current contracts by the end of 2019
- ✓ Purchase Power costs for 2020 forward are based on the maximum fleet alternative
- ✓ Market purchases remain favorable for uncontracted power needs

Transmission

✓ Based on basic characteristics, variable costs are included in energy & fixed costs are included in O&M

Non-Indian Ag

- ✓ NIA reallocation occurs in 2021 for 2022 deliveries
- ✓ First payment in 2021 ~\$13.6 million/year for 5 years for capital charges and interest

Wheeling

- ✓ Starts at about 10,000 acre-foot in 2020 and remains at that level
- ✓ Included in rate calculations

Water Volumes

(KAF)	2019	2020	2021	2022	2023	2024
M&I Subcontract	591	609	616	665	665	666
Federal Contract	572	572	577	579	582	584
Ag Settlement Pool	251	255	248	197	194	191
Excess	27	5	0	0	0	0
Wheeled Water		10	10	10	10	10
CAGRD credit transfers & Take or Pay	26	27	30	33	38	35
Billed Water Volumes	1,467	1,478	1,481	1,484	1,489	1,486

 Continued shortage mitigation programs of 192,000 acrefeet/year. Though may be adjusted in future years based on impact considerations

Preliminary 2019-2024 Rate Components

				Advisory		sory	
Units = \$/acre-foot	Historic 2018	Firm 2019	Provisional 2020	2021	2022	2023	2024
Capital Charges							
(A) M&I – Long Term Subcontract	\$45	\$41	\$68	\$74	\$71	\$68	\$70
Delivery Charges							
Fixed O&M	\$67	\$72	\$74	\$75	\$79	\$80	\$84
Big "R"	\$27	\$24	\$24	\$24	\$24	\$25	\$26
Fixed OM&R Rate Stabilization	<u>1</u>	0	0	0	0	0	<u>0</u>
(B) Fixed OM&R	\$95	\$96	\$98	\$99	\$103	\$105	\$110
(C) Pumping Energy Rate	\$65	\$62	\$54	\$54	\$54	\$56	\$58
(D) Property Tax Equivalency	\$49	\$54	\$58	\$61	\$63	\$67	\$70

Preliminary 2019-2014 Rate Schedule

Units = \$/acre-foot		Firm	Provi- rm sional		Advi	sory		
The Letter Designations in the Formulas Refer to the Rate Components above	2018	2019	2020	2021	2022	2023	2024	
M&I Subcontract (B + C)	\$160	\$158	\$152	\$153	\$157	\$161	\$168	
Federal Contract (B + C)	\$160	\$158	\$152	\$153	\$157	\$161	\$168	
Ag Settlement Pool (C)	\$65	\$62*	\$54	\$54	\$54	\$56	\$58	
Agricultural Incentives								
Meet Settlement Pool Goals	0	0	0	0	0	0	0	
Meet AWBA/CAGRD GSF Goals	(1)	0	0	0	0	0	0	
Meet Recovery Goals	(1)	0	0	0	0	0	0	
Excess (A + B + C)	\$205	\$199	\$220	\$227	\$228	\$229	\$238	
Interstate (A + B + C + D)	\$254	\$253	\$278	\$288	\$291	\$296	\$308	

^{*2019} Ag Forbearance IV discount to participating customers of \$ 7/AF is not included in these rates

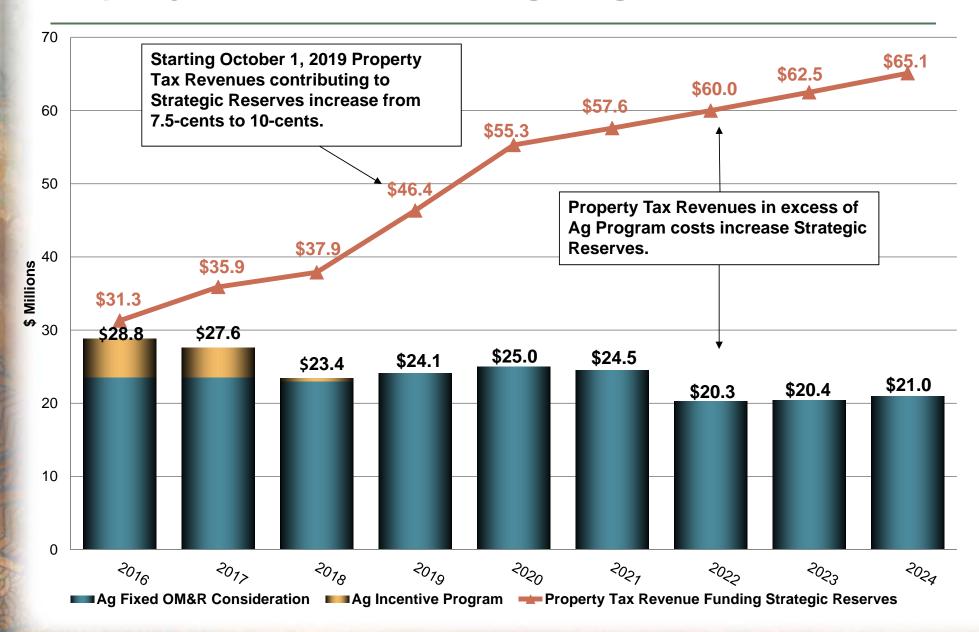
Preliminary Rates Compared to Previous Rate Case

	2019	2020
Fixed OM&R:		
Recommended	96	98
Advisory (2017)	97	102
Change	(1)	(4)
Energy:		
Recommended	62	54
Advisory (2017)	68	56
Change	(6)	(2)
Capital Charges:		
Recommended	41	68
Advisory (2017)	47	68
Change	(6)	0

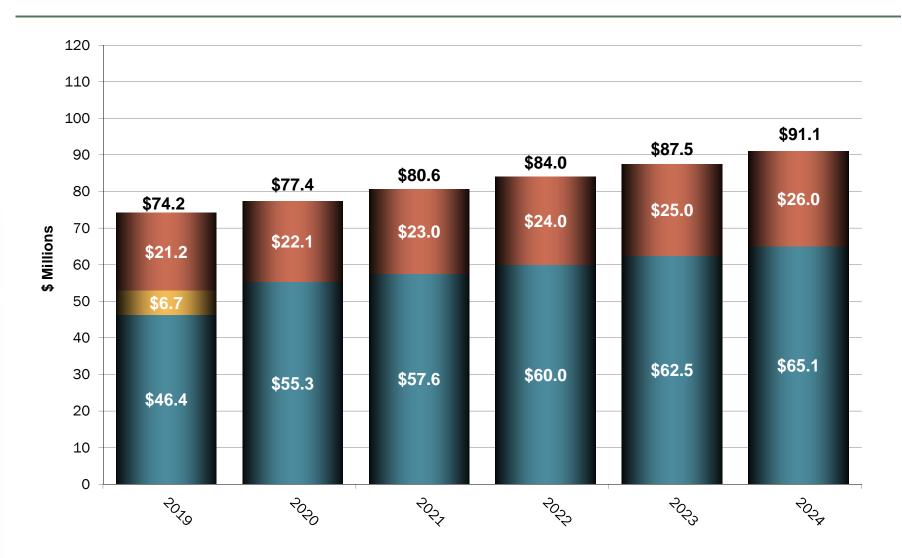
Ag Programs

- ✓ Ag Consideration is contractual agreement to cover Fixed OM&R for Ag Settlement Pool
- ✓ Ag incentive is a discretionary program the Board has authorized to assist Ag customers by softening the impact of energy cost increases. It is currently designed to allow rates to increase by no more than \$4/year
 - No incentives are proposed in the preliminary rates
- ✓ Preliminary rates are exclusive of 2019 Ag Forbearance IV program
- ✓ Assumes continuation of Ag forbearance III program

Property Tax Revenues vs. Ag Program



Property Tax Revenue



- Strategic Reserves Property Tax Revenue Extraordinary Cost Property Tax Revenue
- Water Storage Property Tax Revenue

Capital Charges

- ✓ Capital charges are paid on M&I allocations, regardless of water delivery
- ✓ Capital charges are charged on all excess deliveries.
- ✓ Not paid by federal and Ag Settlement Pool
- ✓ Must be used toward federal debt repayment.
 - Basin Development Fund net revenues are applied toward repayment first (surplus power sales, land sales, etc.)
 - Balance must be made up as a cash payment (makeup payment)
 - Capital charges are utilized for makeup payment
 - Any shortfall in makeup payment from capital charges are taken from reserves

Capital Charges

- ✓ Repayment varies ~\$1M/year through 2020; \$6 million increase in 2021
- ✓ Capital charges are published at full amount to cover make-up payment.
 - Annual discussions of how much, if any, taxes will be utilized for repayment to subsequently reduce capital charges
- ✓ No taxes have been proposed to be utilized for repayment for 2019.
- ✓ The following pages provide some sensitivity analysis of utilization of property taxes and the impact on capital charges

Capital Charges (\$/af)	2019	2020	2021	2022	2023	2024
Current published rates	\$41	\$68	\$74	\$71	\$68	\$70

Capital Charges (cont'd)

Sensitivity Analysis

Applying Varying Levels of Property Taxes Toward CAPs Annual Federal Debt Payment

Capital Charge Sensitivity Analysis - Levels	2019	2020	2021	2022	2023	2024
Base Case Capital Charge (a/f) Net Cash Due-Fed Debt (\$000) Current published rates Property Tax Applied (\$000)	662,719	651,591	650,902	700,670	705,279	702,351
	\$27,338	\$44,554	\$48,418	\$49,648	\$48,305	\$49,315
	\$41	\$68	\$74	\$71	\$68	\$70
	\$0	\$0	\$0	\$0	\$0	\$0
\$70/af Max Capital Charge Property Taxes Applied (\$000)	\$41	\$68	\$70 \$2,855	\$70 \$601	\$68	\$70 \$150
\$65/af Max Capital Charge	\$41	\$65	\$65	\$65	\$65	\$65
Property Taxes Applied (\$000)		\$2,201	\$6,109	\$4,104	\$2,462	\$3,662
\$60/af Max Capital Charge	\$41	\$60	\$60	\$60	\$60	\$60
Property Taxes Applied (\$000)		\$5,459	\$9,364	\$7,608	\$5,989	\$7,174
\$55/af Max Capital Charge	\$41	\$55	\$55	\$55	\$55	\$55
Property Taxes Applied (\$000)		\$8,717	\$12,618	\$11,111	\$9,515	\$10,685
\$50/af Max Capital Charge	\$41	\$50	\$50	\$50	\$50	\$50
Property Taxes Applied (\$000)		\$11,974	\$15,873	\$14,614	\$13,041	\$14,197

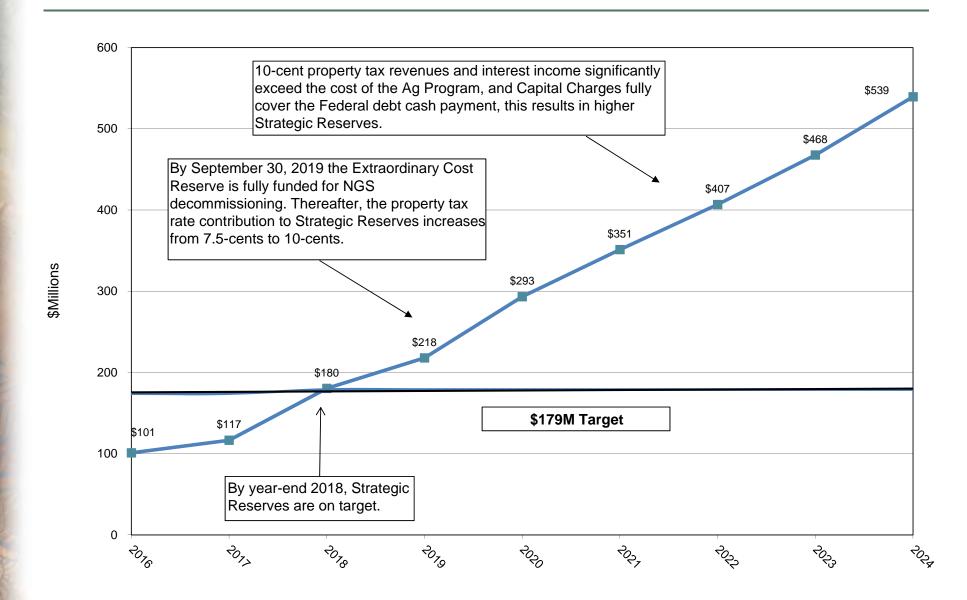
Capital Charges (cont'd)

Sensitivity Analysis

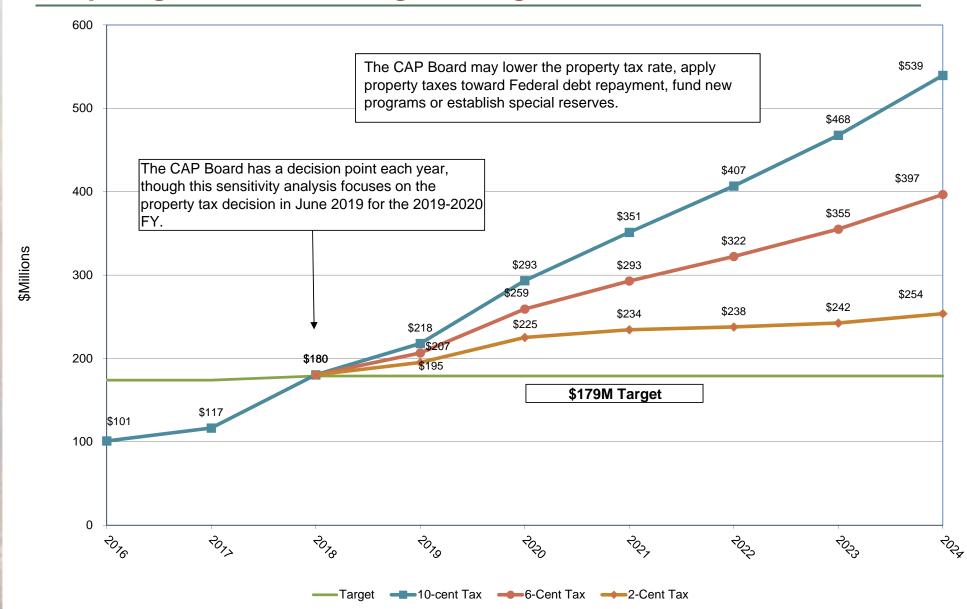
Applying Varying Cents of Property Taxes Toward CAPs Annual Federal Debt Payment

Capital Charge Sensitivity Analysis - Cents	2019	2020	2021	2022	2023	2024
Base Case						
Capital Charge (a/f)	662,719	651,591	650,902	700,670	705,279	702,351
Net Cash Due-Fed Debt (\$000)	\$27,338	\$44,554	\$48,418	\$49,648	\$48,305	\$49,315
Current published rates	\$41	\$68	\$74	\$71	\$68	\$70
Property Tax Applied (\$000)	\$0	\$0	\$0	\$0	\$0	\$0
	4	4.00	4.0.0	4.00	400	4
Capital Charge (\$/af)	\$41	\$60	\$66	\$62	\$60	\$61
1-Cents of Applied Property Taxes (\$000)		\$5,406	\$5,639	\$5,871	\$6,114	\$6,370
Capital Charge (\$/af)	\$41	\$52	\$57	\$54	\$51	\$52
2-Cents of Applied Property Taxes (\$000)		\$10,812	\$11,278	\$11,742	\$12,227	\$12,739
Capital Charge (\$/af)	\$41	\$43	\$48	\$46	\$42	\$43
3-Cents of Applied Property Taxes (\$000)		\$16,217	\$16,918	\$17,613	\$18,341	\$19,109
Capital Charge (\$/af)	\$41	\$35	\$40	\$37	\$34	\$34
4-Cents of Applied Property Taxes (\$000)		\$21,623	\$22,557	\$23,484	\$24,455	\$25,478
Capital Charge (\$/af)	\$41	\$27	\$31	\$29	\$25	\$25
5-Cents of Applied Property Taxes (\$000)		\$27,029	\$28,196	\$29,355	\$30,569	\$31,848

Strategic Reserves



Strategic Reserves Property Tax Sensitivity Analysis

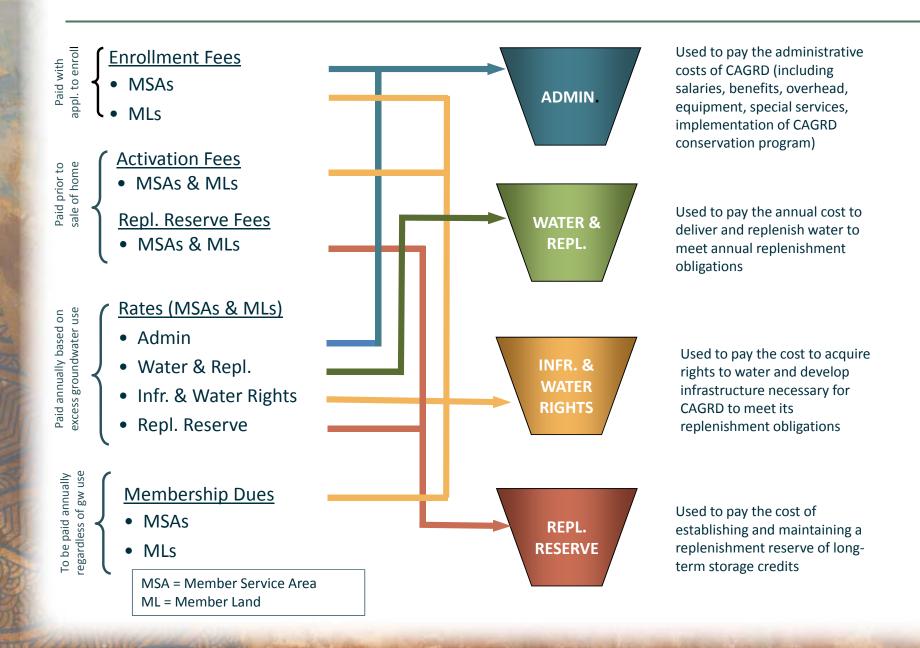


Recharge O&M Rates

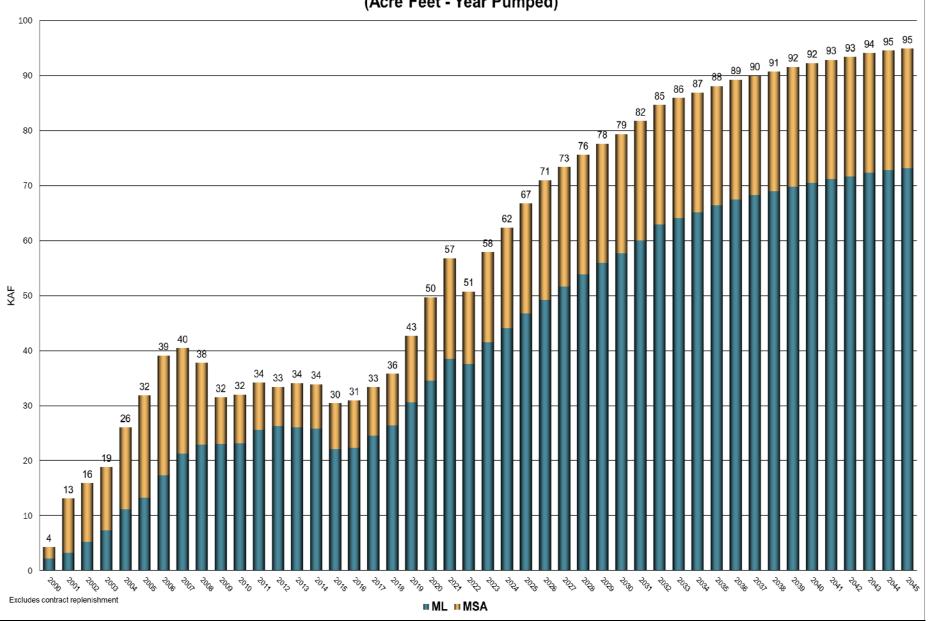
	2019	2019 2020		2021 2022		2024
	Firm	Prelim	Advisory	Advisory	Advisory	Advisory
Rates (\$/af)			·	·	·	·
Phoenix AMA	\$13	\$13	\$13	\$14	\$14	\$15
Tucson AMA	\$15	\$15	\$15	\$15	\$15	\$15



CAGRD Revenue Stream



CAGRD Obligation History and Forecast (Acre Feet - Year Pumped)



CAGRD Assumptions

- ✓ Water Replenishment & Replenishment Reserve rates are lower than prior rate schedule because:
 - In 2017 rate setting process NGS assumed to close at the end of 2017
 - NGS & open market energy purchase costs are down slightly
 - Lower CAP capital spending resulting in flat to modest increases in the "Big R" Fixed OM&R rate component
- ✓ Administrative rate component trends up moderately and then flattens out, though no change in 2018/2019 Administrative rate component from prior rate schedule.
- ✓ Annual Membership Dues (AMDs) are set at the maximum allowed by state statutes for all years, except for FY 2019/2020. Due to an improving economy (increasing obligations and activations), AMDs for FY 2019/2020 were softened by 15% to provide a smooth transition.

CAGRD Assumptions Continued

- ✓ The 2018/19 (firm) & 2019/20 (provisional) Activation Fees are in accordance with the Preliminary 2014/15 2019/20 CAGRD Activation fee schedule adopted by the Board on November 7, 2013.
- ✓ Activation & Enrollment Fees for advisory years 2020/21 through 2023/24 increase at 4% per year, with the understanding those fees will be reviewed prior to becoming firm.

CAGRD Rates

			F	irm		rovi- onal				Advi	sory	11		
	<u>20</u>	<u>17/18</u>	<u>20</u>	<u> 18/19</u>	<u>20</u>	19/20	<u>20</u>	20/21	<u>20:</u>	21/22	<u>20</u>	22/23	202	23/24
Phoenix Active Management Area														
Water & Replenishment Component	\$	214	\$	192	\$	211	\$	222	\$	224	\$	227	\$	233
Administrative Component		36		40		41		41		37		33		30
Infrastructure & Water Rights Component		353		353		353		353		353		353		353
Replenishment Reserve Charge		101		90		100		103		103		104		108
Total Assessment Rate (\$/AF)	\$	704	\$	675	\$	705	\$	719	\$	717	\$	717	\$	724
Pinal Active Management Area														
Water & Replenishment Component	\$	204	\$	204	\$	225	\$	232	\$	232	\$	233	\$	243
Administrative Component		36		40		41		41		37		33		30
Infrastructure & Water Rights Component		353		353		353		353		353		353		353
Replenishment Reserve Charge		108		97		108		111		111		112		116
Total Assessment Rate (\$/AF)	\$	701	\$	694	\$	727	\$	737	\$	733	\$	731	\$	742
Tucson Active Management Area														
Water & Replenishment Component	\$	238	\$	221	\$	242	\$	249	\$	250	\$	251	\$	260
Administrative Component		36		40		41		41		37		33		30
Infrastructure & Water Rights Component		353		353		353		353		353		353		353
Replenishment Reserve Charge		131		103		100		100		103		105		109
Total Assessment Rate (\$/AF)	\$	758	\$	717	\$	736	\$	743	\$	743	\$	742	\$	752

CAGRD Rates (cont'd)

	Historic	<u>Firm</u>	Provisional	Advisory Rates			
	<u>Rate</u> 2017/18	2018/19	<u>Rate</u> 2019/20	2020/21	2021/22	2022/23	2023/24
Contract Replenishment Tax - Scottsdale	2011710	2010/10	2010/20	2020121	<u> ZUZ IIZZ</u>	202220	2020/21
Cost of Water	\$195	\$205	\$199	\$220	\$227	\$228	\$229
Cost of Transportation	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cost of Replenishment	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Administrative Component	<u>\$36</u>	<u>\$40</u>	<u>\$41</u>	<u>\$41</u>	<u>\$37</u>	<u>\$33</u>	<u>\$30</u>
Total Tax Rate (\$/AF)	\$231	\$245	\$240	\$261	\$264	\$261	\$259
Membership Dues: ML - Phoenix AMA (\$/unit) ML - Pinal AMA (\$/unit) ML - Tucson AMA (\$/unit) MSA - (\$/unit)	\$22.63 \$14.88 \$23.58 \$74.44	\$23.52 \$15.35 \$24.54 \$76.53	\$28.59 \$19.36 \$31.04 \$97.22	\$35.74 \$25.20 \$39.29 \$128.79	\$37.09 \$27.04 \$41.30 \$140.67	\$37.43 \$28.16 \$42.16 \$149.06	\$29.39 \$22.63 \$33.42 \$121.57
Fees Enrollment Fee - Comm. Subdivisions (\$/unit) Enrollment Fee (\$/unit) Activation Fee - Minimum (\$/unit) Activation Fee - Phoenix AMA (\$/unit) Activation Fee - Pinal Post-2007 (\$/unit) Activation Fee - Tucson AMA (\$/unit)	\$700 \$284 \$282 \$610 \$610 \$510	\$924 \$284 \$282 \$820 \$820 \$640	\$1,094 \$284 \$282 \$1,080 \$1,080 \$810	\$1,135 \$295 \$293 \$1,120 \$1,120 \$840	\$1,177 \$307 \$305 \$1,160 \$1,160 \$870	\$1,219 \$319 \$317 \$1,210 \$1,210 \$900	\$1,272 \$332 \$330 \$1,260 \$1,260 \$940



Shortage Case Assumptions

Tier	Lake Mead Elevation	Reduction (AF)
Normal	1090-1075	192,000
Tier 1	1075-1050	512,000
Tier 2a	1050-1045	592,000
Tier 2b	1045-1025	640,000
Tier 3	<1025	720,000

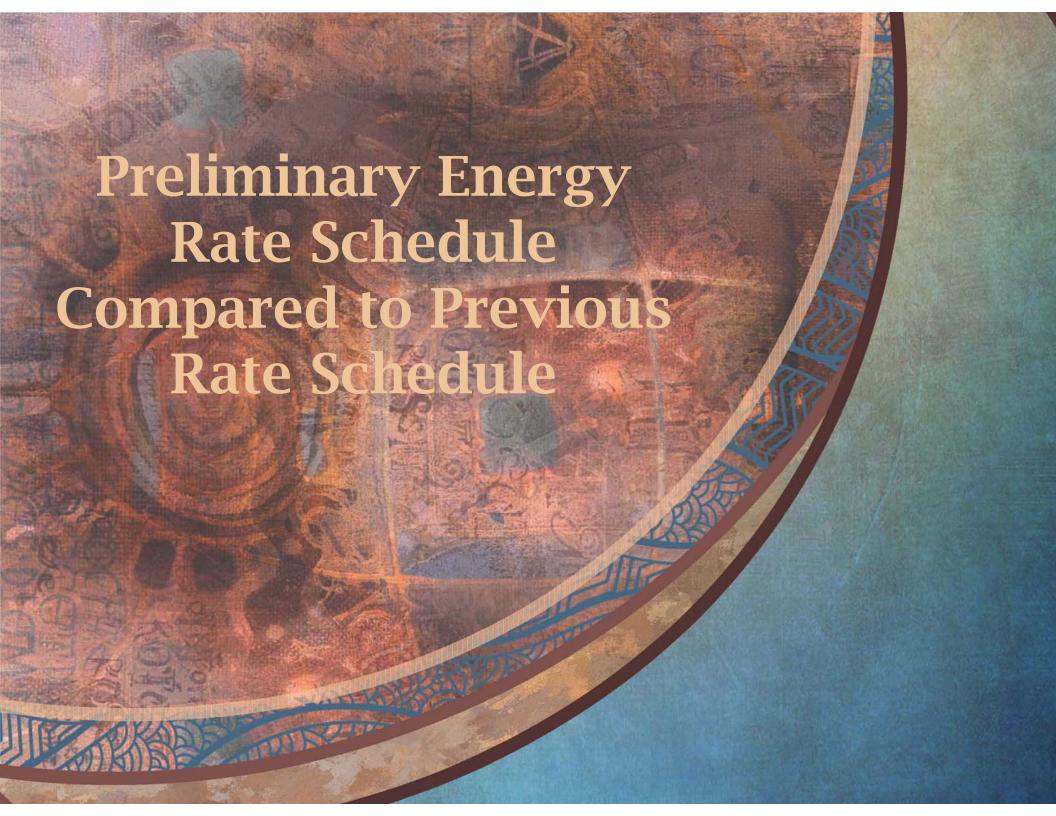
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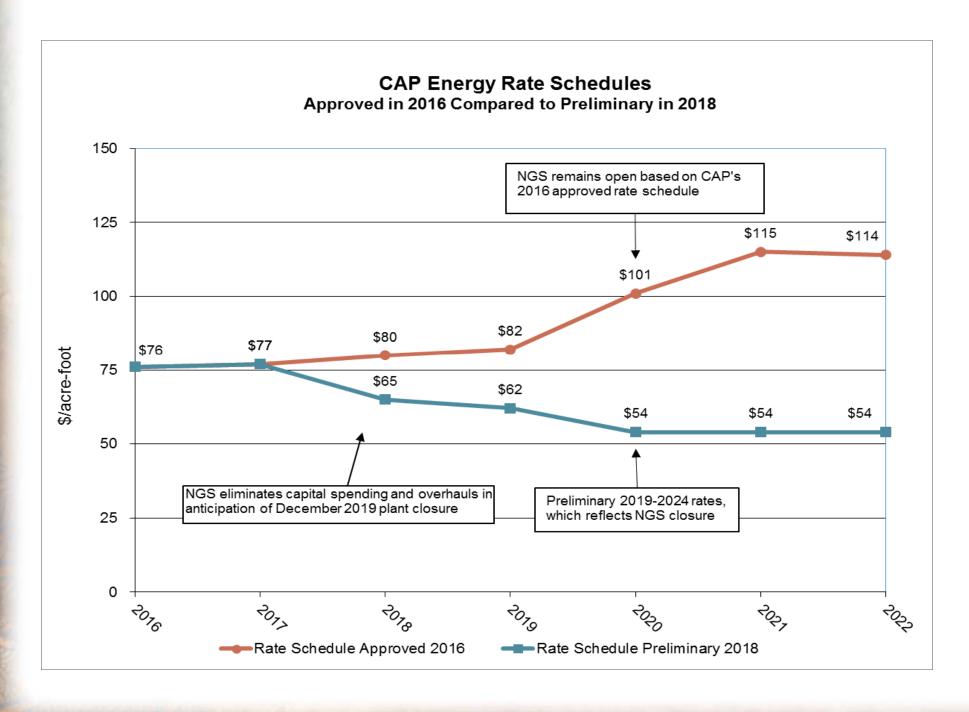
Water Shortage Rate Sensitivity Analysis (Excludes the impact of applying rate stabilization funds)

- Following is the potential incremental impact on the Water Delivery Rate
- Changes are in the Fixed OM&R Rate
- The energy costs are assumed to be variable and therefore the Energy Rate remains unchanged

Lake Mead Elevation \$/AF	2019	2020	2021	2022	2023	2024
Base Case 1,075 – 1,090	\$96	\$98	\$99	\$103	\$105	\$110
1,050 – 1,075	-	+ \$26	+ \$27	+ \$28	+\$29	+\$30
1,045 – 1,050	-	-	+ \$37	+ \$38	+ \$39	+ \$41
1,025 – 1,045	-	-	-	+ \$45	+ \$45	+ \$47
Below 1,025	-	-	-	-	+ \$58	+ \$61

For planning purposes only





RATE SCHEDULE APPROVED IN 2016 ENERGY RATE & ELECTRICITY RELATED COSTS

	YEAR						
PURCHASES (MWH)	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	2021	2022
Waddell	45,562	42,585	42,472	40,000	35,000	35,000	35,000
Hoover B	143,564	142,159	134,794	134,793	134,791	134,791	134,790
Navajo	2,131,824	2,307,893	2,352,569	2,371,587	2,266,589	2,270,379	2,344,170
Market Purchases	495,018	274,786	270,207	190,000	300,000	300,000	230,000
Grand Total	2,815,968	2,767,423	2,800,042	2,736,380	2,736,380	2,740,170	2,743,960
RATES (\$/MWH)							
Hoover B	\$45.38	\$45.83	\$48.00	\$47.17	\$50.76	\$48.72	\$50.88
Navajo	44.25	41.05	44.27	43.81	59.04	65.70	62.43
Market Purchases	22.37	28.14	28.69	30.47	31.26	33.22	35.70
Grand Average	\$40.40	\$40.00	\$42.92	\$43.04	\$55.54	\$61.25	\$59.58
COSTS (\$000)							
Hoover B	\$6,515	\$6,516	\$6,470	\$6,359	\$6,843	\$6,567	\$6,858
Navajo	94,328	94,741	104,145	103,902	133,811	149,167	146,336
Market Purchases	11,074	7,732	<u>7,752</u>	<u>5,789</u>	9,378	<u>9,966</u>	<u>8,211</u>
Pumping Energy	\$111,917	\$108,989	\$118,368	\$116,050	\$150,032	\$165,700	\$161,405
Lake Adjust., Scheduling, Shaping, etc.	(1,206)	6,696	2,918	1,472	(4,640)	(963)	2,361
Total Pumping Energy	\$110,711	\$115,685	\$121,285	\$117,522	\$145,392	\$164,737	\$163,766
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Energy Rate (\$/af)	\$76	\$77	\$80	\$82	\$101	\$115	\$114

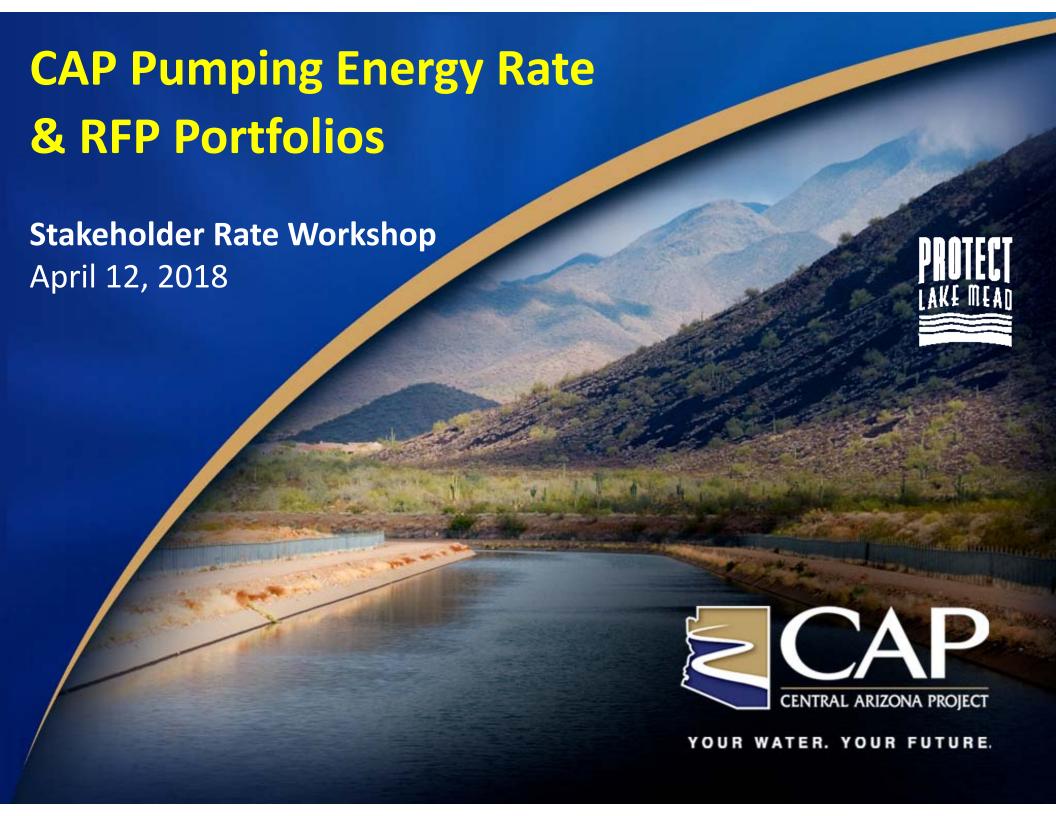
PRELIMINARY 2018 RATE SCHEDULE FOR 2019-2024 ENERGY RATE & ELECTRICITY RELATED COSTS

				YEAR			
PURCHASES (MWH)	2016	2017	<u>2018</u>	<u>2019</u>	2020	2021	2022
Waddell	46,860	45,131	44,899	37,862	38,078	38,000	38,000
Hoover B	138,679	140,127	134,000	134,000	134,000	134,000	134,000
Navajo	1,340,678	1,941,631	1,948,638	1,799,564	0	0	0
Market Purchases	<u>1,188,540</u>	525,844	737,732	785,082	2,585,222	<u>2,584,400</u>	2,584,400
Grand Total	2,714,757	2,652,733	2,865,269	2,756,508	2,757,300	2,756,400	2,756,400
RATES (\$/MWH)							
Hoover B	\$47.25	\$51.14	\$65.56	\$39.95	\$40.24	\$41.45	\$42.69
Navajo	52.31	33.76	35.23	36.36	0.00	0.00	0.00
Market Purchases	17.24	19.69	18.37	18.32	26.05	26.83	27.64
Grand Average	\$36.42	\$31.86	\$32.26	\$31.32	\$26.75	\$27.55	\$28.38
COSTS (\$000)							
Hoover B	\$6,552	\$7,165	\$8,785	\$5,353	\$5,392	\$5,554	\$5,721
Navajo	70,128	65,556	68,649	65,424	0	0	0
Market Purchases	20,492	10,353	13,552	14,383	67,345	69,343	71,424
Pumping Energy	\$97,172	\$83,074	\$90,986	\$85,160	\$72,737	\$74,897	\$77,144
Lake Adjust., Scheduling, Shaping, etc.	(841)	8,255	6,176	5,745	7,071	3,932	<u>2,813</u>
Total Pumping Energy	\$96,332	\$91,329	\$97,162	\$90,905	\$79,808	\$78,829	\$79,957
Energy Rate (\$/af)	\$76	\$77	\$65	\$62	\$54	\$54	\$54

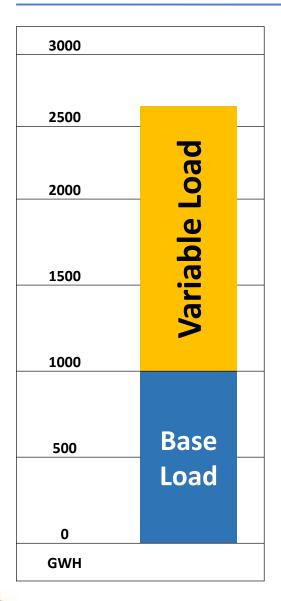


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CENTRAL ARIZONA PROJECT



CAP Energy Needs



Variable Load at Mark Wilmer Pumping Plant can be shaped daily and seasonally to take advantage of changes in the power market, allowing CAP to optimize pumping to lower energy costs

Base Load, at pumping plants downstream of Mark Wilmer, is driven by customer deliveries and is fairly predictable, requiring more certain resource supplies

Portfolio Comparison – Capacity (MW)

	Lowest Cost	Max Fleet	Tribal Lands	Max Diversity	Max Solar
Utility Fleet	35	50	35	25	
Solar (UF)	30	30	30*	30	30
Solar (F)				37	37

^{*} Located on tribal lands



Portfolio Cost Comparison

Portfolio	PPA Cost (\$/MWh)
Lowest Cost	\$34.24
Max Fleet	\$34.91
Tribal Lands	\$40.78
Max Diversity	\$41.27
Max Solar	\$44.37

2016)



CAP 2020 Energy Rate (\$/AF)

	Lowest Cost	Max Fleet	Tribal Lands	Max Diversity	Max Solar
Projected Rate	\$54	\$54*	\$55	\$56	\$55
Market +15%	\$58	\$59	\$60	\$61	\$60
Market -15%	\$49	\$50	\$50	\$52	\$50

^{*} Basis for preliminary CAP pumping energy rate



Additional Direction from Power Task Force

- 1. <u>Diversification</u>: No single generation unit should provide more than 15-20% of CAP energy needs
- 2. <u>Base Load</u>: Hedge 75% to 90% of CAP's base load energy needs prior to the delivery year
- 3. <u>Variable Load</u>: Hedge up to 40% of CAP's variable load energy needs prior to the year of delivery

4. Renewables:

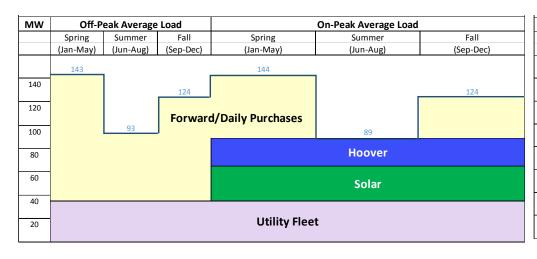
- a. Consider firmed renewable energy proposals on an equal basis with non-renewable proposals
- b. Consider purchasing 30-35 MW of non-firmed renewable energy

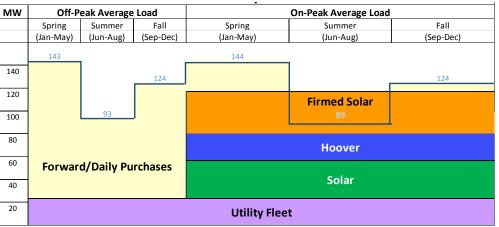


Portfolio Comparison – Capacity (MW)

Lowest Cost/Tribal Lands

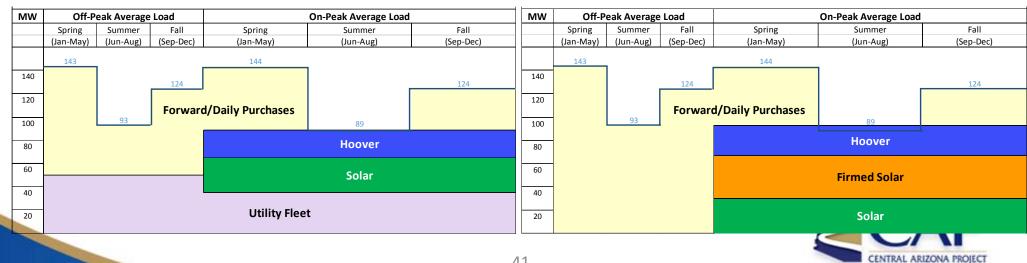
Max Diversity





Max Fleet

Max Solar





www.CentralArizonaProject.com www.CAGRD.com www.ProtectLakeMead.com

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