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BUSINESS PROGRESS REPORT

2019
OCTOBER

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Generation Costs & Reliability

Combustion Turbine Project

Unit Operation for September 2019

Unit	Availability		Production			Reason for Run
CT1 Alameda	Unit 1	Unit 2	Unit 1	253.9	MWh	CAISO / CAISO
	100.0%	99.8%	Unit 2	218.5	MWh	
Curtailments, Outages, and Comments:						
Unit 1: Normal operation.						
Unit 2: 9/22/19 - Alameda Unit 2 failed to start due to bleed valve issues 1830-1930 OMS 7748900. 9/15/19 - Alameda Unit 2 failed to start due to bleed valve issues 1745-1807 OMS 7721366.						
Unit	Availability		Production			Reason for Run
CT1 Lodi	100.0%		22.2 MWh			CAISO
Curtailments, Outages, and Comments:						
Normal operation.						
Unit	Availability		Production			Reason for Run
CT2 STIG	100.0%		1,403.6 MWh			CAISO
Curtailments, Outages, and Comments:						
Normal operation.						
Unit	Availability		Production			Reason for Run
LEC	99.9%		76,527 MWh			0
Curtailments, Outages, and Comments:						
9/22/19 - LEC re-heater outlet high temp on CT 1229-1320 OMS 7747944						

Maintenance Summary – Specific per asset above.

Geothermal Facilities

Availability/Production for September 2019

Unit	Availability	Net Electricity Generated/Water Delivered	Out-of-Service/Descriptors
Unit 1	100 %	19,044 MWh	U1 had no outages for the month
Unit 2	100 %	*17,768 MWh	U2 had no outages for the month
Unit 3	N/A %	N/A	Unit 3 remains out of service.
Unit 4	100 %	27,164 MWh	U4 had no outages for the month. Drill rig was working on P&Q site workovers.
Southeast Geysers Effluent Pipeline	96 %	200.6 mgallons	Average flow rate: 4,608 gpm
Southeast Solar Plant	N/A	3,419 KWh	Year-to-date KWh: 2,598,995
Bear Canyon Pump Station Zero Solar	N/A	87,751 KWh	Year-to-date KWh: 3,645,446

* Accounts for an additional 1,865 MWh of house load for the 21KV power supply to the effluent pipeline supplied from Unit #2.

Hydroelectric Project

Availability/Production for September 2019

Units	Availability	Net Electricity Generated	Out-of-Service
Collierville Unit 1	0 %	0 MWh	CV #1 unit was out of service on 8/5/19 at 0700 through present time due to a scheduled unit rewind and maintenance
Collierville Unit 2	100 %	40,704 MWh	No outages to report.
Spicer Unit 1	90.5 %	1,582 MWh	NSM #1 unit was out of service on 9/6/19 at 2355 through 9/9/19 at 2018 for a PG&E Line outage.
Spicer Unit 2	90.51 %	1,579 MWh	NSM #2 unit was out of service on 9/6/19 at 2355 through 9/9/19 at 2011 for a PG&E Line outage.
Spicer Unit 3	77.03 %	234 MWh	NSM #3 unit was out of service on 9/7/19 at 0004 through 9/10/19 at 1351 for a PG&E Line outage. NSM #3 unit was out of service on 9/16/19 from 0900 through 9/19/19 to 1635 for annual maintenance.

Operations & Maintenance Activities:

- CMMS work orders
- Andritz continued CV unit 1 Rewind activities
- North Fork drawdown and cleanout
- CV unit 1 top and bottom stator bars installed
- FERC/DSOD Inspections

Environmental, Health & Safety (EH&S) Projects Incident Reports

- There were no Cal OSHA recordable, lost time, or vehicle accidents in the month of August.
- Find below a Safety Report that highlights the following areas: recordable incidents and lost time accidents (LTAs) reported this period and this calendar year; the number of days since last recordable or LTA; the number of work hours since last recordable or LTA; and vehicle accidents reported this month and this calendar year. In September of 2012, Generation Services completed an internal audit of its records with the results reflected in this report and was updated through the payroll period ended September 28, 2019.
- The “CT Group” column reflects the combined safety numbers of all CT employees. Beginning with the November 2009 report, the CT Group Column also includes Lodi Energy Center staff.

September 2019 Generation Services Safety Report

	Hydro	GEO	CT Group *	NCPA HQ **
Cal OSHA Recordable (this month)	0	0	0	0
Cal OSHA Recordable (calendar year)	2	0	0	0
Days since Recordable	101	431	1,636	6,704
Work Hours Since Last Recordable	9,151	91,620	242,506	2,445,866
LTA's (this month)	0	0	0	0
LTA's (calendar year)	0	0	0	0
Days without LTA	4,370	1,499	9,540	5,633
Work Hours without LTA	398,048	308,595	683,050	2,067,884
Vehicle Incident (month)	0	0	0	0
Vehicle Incident (calendar year)	0	3	0	0

* CT Group: Combines CT-1, CT-2 and LEC Operations

** NCPA HQ: Roseville employees at the Main Office

Data originates from OSHA logs, HR records and payroll information.
Days and Hours are calculated through pay period ended September 28, 2019.

Power Management/NCPA Market Results

Dispatch and Schedule Coordination

- NCPA Dispatch and Schedule Coordination Center safely, reliably, and economically schedules, monitors, and manages NCPA and NCPA member power resources and loads 24 hours per day, 7 days per week on a continuous basis. This process includes balancing MSSA loads and resources on a 5-minute basis, optimizing NCPA resources and minimizing ISO costs.
- NCPA MSSA Load Data:

Current Year 2019 Data

	September 2019		Calendar Year 2019	
	Peak MW	MWh	Peak MW	MWh
NCPA Pool	442.64 9/25 @ 1700	199,967	478.77 8/15 @ 1700	1,763,679
SVP	574.22 9/25 @ 1700	318,142	587.78 6/11 @ 1600	2,790,685
MSSA	1016.86 9/25 @ 1700	518,109	1057.99 8/15 @ 1700	4,554,364

Last Year 2018 Data*

	September 2018		Calendar Year 2018	
	Peak MW	MWh	Peak MW	MWh
NCPA Pool	365.71 9/10 @ 1700	191,121	419.2 7/25 @ 1700	1,735,202
SVP	512.58 9/20 @ 1600	307,382	529.29 8/9 @ 1700	2,771,198
MSSA	864.66 9/4 @ 1700	498,503	945.44 8/9 @ 1700	4,506,400

*Last year's data added for comparison purposes only

System Peak Data

	All Time Peak Demand	2019 Peak Demand
NCPA Pool	517.83 MW on 7/24/06 @ 1500	478.77 8/15 @ 1700
SVP	587.78 MW on 6/11/19 @ 1600	587.78 6/11 @ 1600
MSSA	1070.79 MW on 9/1/17 @ 1700	1057.99 8/15 @ 1700

- NCPA MSSA has a Deviation Band with the CAISO, which is used as a performance measure by the CAISO. The ability to stay within this Deviation Band is a measure of NCPA Dispatch's ability to balance the MSSA Loads and Resources on a 5-minute basis. The following NCPA Deviation Band Performance table includes all deviations, including deviations from unit forced outages, metering and load outages, COTP, Western, and WECC curtailments.

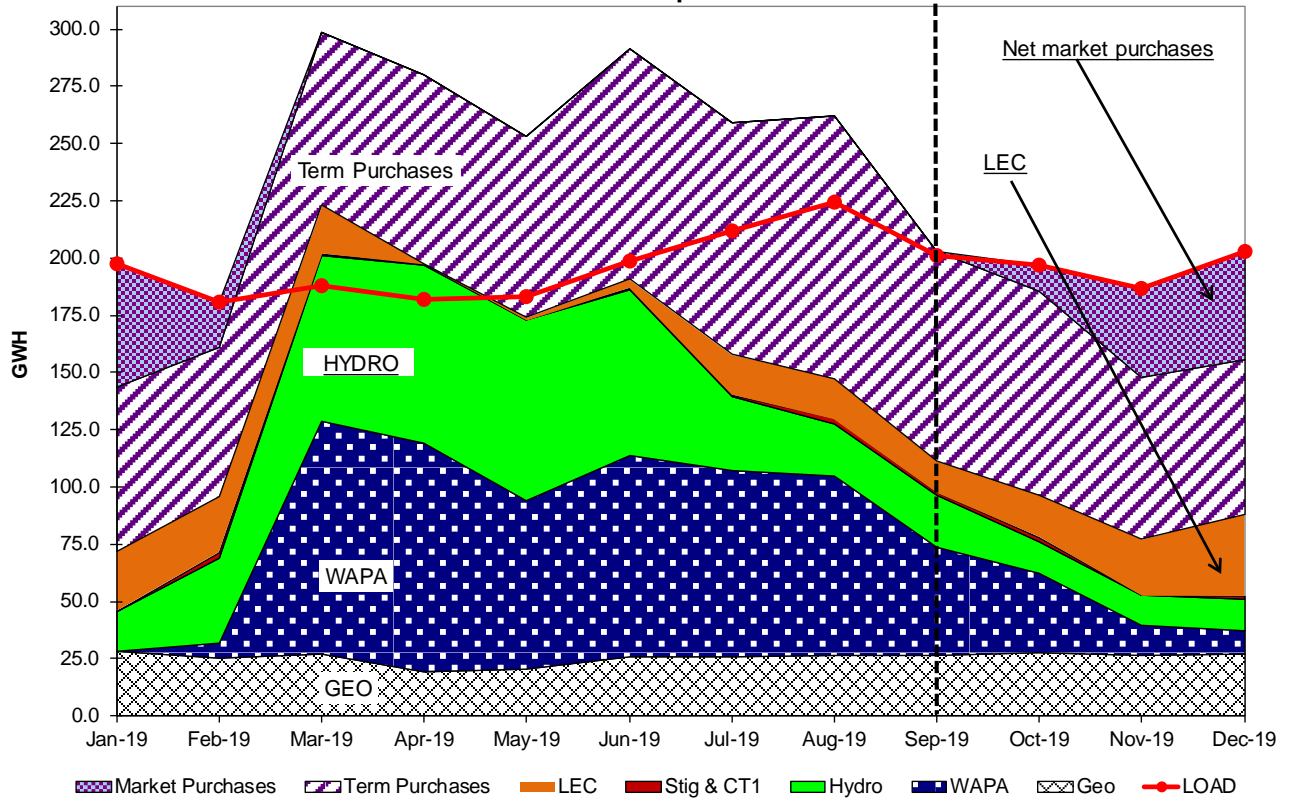
NCPA Deviation Band Performance		
	September 2019	Calendar Year 2019
MSSA % Within the Band	97.78%	96.29%

- Spicer Meadows:
 - September 6 - 9, units off line for PG&E transmission outage. Unit 3 remained on providing station service. Station service power restored normal on September 10 at 1351
 - September 16 – 19, Unit 3 o/s for annual maintenance
- Geothermal Units:
 - September 1 - 21, Unit 4 derated for well maintenance
- Lodi Energy Center:
 - September 22 @ 1229 – 1320, Unit delayed start due to reheater outlet temp trouble
- Alameda CTs:
 - September 15 @ 1743 – 1807, Unit 2 delayed start due to bleed valve trouble
 - September 22 @ 1840 – 1856, Unit 2 delayed start due to bleed valve trouble
- Lodi CT:
 - No curtailments
- Collierville Units:
 - September 1-30, Unit 1 o/s for rewind and annual maintenance. ETR November 21
- STIG:
 - No curtailments

Pooling, Portfolio Planning & Forecasting

- NCPA Pool load during September 2019 was 200,894 MWh, or 99.6% of forecast. Summer temperatures continued, with temperature spikes as late as 9/24-25. Cooler weather recently brought Pool load through October 10th to 60,958 MWh, about 3% lower than during the same period in October 2018.
- Lodi Energy Center (LEC) operated on 18 of 30 days during September 2019, with 13,762 MWh generated for the Pool, or 85% of the pre-month forecast. Production was lower than the previous month due to continued strong hydro generation, relatively mild weather and low power prices. Through October 10, 2019 LEC had generated 9,411 MWh for the Pool, about half the pre-month forecast for October.
- During September 2019, 0.58” of rain was recorded at the Big Trees gage. Average September Big Trees precipitation is 0.84”.
- The Value of Storage (VOS) of New Spicer Meadow Reservoir (NSMR) is being increased from \$35/MWh to \$40/MWh.
- NSMR storage as of September 30, 2019 was at 122,327 acre feet. The historical average NSMR storage at the end of September is 104,248 acre feet. As of October 14, 2019 NSMR storage is 114,995 acre feet. The current NCPA Pool share of NSMR storage is 58,970 acre feet.
- Combined Calaveras Project generation for the Pool in September 2019 totaled 22.3 GWh, slightly down from 22.7 GWh in August 2019. The Pool’s 22.3 GWh in August 2019 was slightly below the pre-month forecast of 24.5 GWh.
- Western Base Resource (BR) deliveries for the Pool for September 2019 were 47,422 MWh, including Displacement energy totaling 12,334 MWh. The amount delivered was 81% of Western’s own pre-month forecast. Through October 10, 2019 the Pool had received 22,918 MWh, including 3,285 MWh from the Displacement program, or 63% of Western’s pre-month forecast for October.
- The PG&E Citygate gas index averaged \$3.25/MMBtu for delivery on October 10, 2019, exceeding the average PG&E gas price during September of \$3.025/MMBtu and August’s \$2.605 average as maintenance season interrupts supply. Strong storage refill continued in September, as did domestic production. The October 2019 PG&E Bidweek price is \$3.075/MMBtu, 34 cents higher than September’s.
- Day-ahead NP15 electricity prices averaged \$37.75/MWh (HLH) and \$30.89 (LLH) during September 2019, with the hourly TH_NP15 maximum at \$153.30 on the 25th during a last heat wave. Through early October, daily maximums reached \$91.11 on October 7 due to a combination of expected high Monday temperatures and ongoing maintenance projects limiting supply.

NCPA POOL RESOURCES
Calendar 2019: Jan.- September Actual / Balance Forecast



NCPA Pool Loads & Resources Value Summary										
	Peak and Energy Summary				Estimated Production Costs		Cost of Serving Demand			
	Sep-19				NCPA Pool					
	Coincident Peak (MW)	Total MWh	Forecast Values	Avg. MW	Cost/Revenue (Estimate)	Variable Cost (\$/MWh)	Totals	Avg (\$/MWh)		
Demand	446.7	200,894	201,612	279.0	N/A	N/A				
WAPA	-	47,422	58,717	65.9	\$ 2,049,840	\$ 43.23	\$ 7,525,852	\$ 37.46	at Market Clearing Price	
Geothermal	-	26,488	26,559	36.8	503,278	19.00				
Hydro	-	22,300	23,931	31.0	133,800	6.00				
Stig & CTs	-	1,127	1,015	1.6	61,028	54.15			at Variable Cost of Pool Generation	
LECs	-	13,762	16,155	19.1	466,117	33.87				
Contracts	-	91,535	91,196	127.1	5,120,678	55.94	\$ 8,263,160	\$ 41.13		
Market - Net <small>(Net Sales = Negative)</small>	446.7	(1,740)	(15,961)	(2.4)	(62,457)	35.89				
Net Total	446.7	200,894	201,612	279.0	\$ 8,272,284	\$ 41.13				

Monthly Market Summary						
	Pool Energy (MWh)	HLH Avg MCP (\$/MWh)	Avg Variable Cost of Pool Generation (\$/MWh)	Forward Prices (EOX NP15 HLH Ask Prices)		
				NP15 9/3/2019 (\$/MWh)	10/10/2019 (\$/MWh)	
Jan-19	197,652	\$ 42.93	\$ 45.13	Nov-19	\$ 40.14	\$ 38.12
Feb-19	180,866	\$ 79.12	\$ 41.57	Dec-19	45.96	45.08
Mar-19	187,890	\$ 39.02	\$ 24.83	Jan-20	45.34	43.64
Apr-19	178,692	\$ 24.88	\$ 28.55	Q1 2020	\$ 40.16	\$ 38.31
May-19	183,123	\$ 20.05	\$ 32.01	Q2 2020	28.37	27.79
Jun-19	198,698	\$ 25.83	\$ 38.09	Q3 2020	47.43	46.51
Jul-19	212,102	\$ 33.30	\$ 56.98	CY2020	\$ 38.40	\$ 37.72
Aug-19	224,328	\$ 34.79	\$ 37.80	CY2021	39.13	39.53
Sep-19	200,894	\$ 37.46	\$ 41.13	CY2022	39.72	40.49
Oct-19				CY2023	39.21	40.28
Nov-19				CY2024	38.31	39.65
Dec-19				CY2025	37.93	39.41

NOTES TO SUMMARY TABLE:

Peak and Energy Summary:
 * Monthly generation summary of Coincidental Peak (hour in which pool demand peaked), total MWh for the month, and pre-month forecasted values for report period.
 * Generation totals are for POOL SHARE of the projects.
 * Hydro totals include Collierville and Spicer generation.

Estimated Production Costs:
 * Fixed project costs not included except for WAPA, where total month's project costs are used to calculate the average unit cost.
 * STIG and CT costs include forward natural gas and basis hedge transactions.
 * STIG & CT costs reflect \$2.60 and \$1.62/MWh variable O&M costs per 6-12-06 GSCA.

Cost of Serving Demand:
 Compares price of meeting total monthly demand with (1) Hourly pool market clearing price; (2) Variable cost of pool gen. Pool Gen is sum of estimated costs divided by sum of generation.

Industry Restructuring, Contracts and Interconnection Affairs

Resource Adequacy Compliance Filings

- NCPA made the following Resource Adequacy compliance filings with the CAISO for the compliance period December 2019:
 - Monthly System Resource Adequacy Demonstration (filed October 17, 2019)
 - Monthly Supply Plan (filed October 17, 2019)

Industry Restructuring

NCPA is actively participating in a number of CAISO stakeholder initiatives on behalf of the members. The following is a brief description of key active initiatives:

Extended Day Ahead Market

- This initiative will develop an approach to extend participation in the day-ahead market to the Western Energy Imbalance Market (EIM) entities in a framework similar to the existing EIM approach for the real-time market, rather than requiring full integration into the California ISO balancing area. The extended day-ahead market (EDAM) will improve market efficiency by integrating renewable resources using day-ahead unit commitment and scheduling across a larger area.
- CAISO published an issue paper on 10/10/2019. Stakeholder meeting to follow.

Resource Adequacy Enhancements

- Due to the rapid transformation of the resource mix in California, the CAISO is currently re-examining the CAISO Resource Adequacy requirements and rules. This initiative will explore changes to the CAISO's Resource Adequacy requirements and rules to ensure the resources providing reserve services are effectively supporting reliable operations of the grid.
- CAISO is proposing massive overhauls to its RA program in conjunction with CPUC changes. Specific areas the CAISO is looking at are termination of the Resource Adequacy Availability Mechanism for System capacity and replacing it with "less complicated" counting rules similar to eastern RTOs, import eligibility, exemptions, maximum import capability calculations and allocations, redefining Planned and Forced outages, new "fast" and "long" ramping products.
- CAISO published the Second Revised Straw Proposal and held stakeholder meeting on 10/9/2019.
- Modifications from previous proposal
 - Apply forced outage counting rules to flex and local capacity as well as system.
 - Inclusion of portfolio assessment process to ensure that reliability needs can be met by the shown RA portfolio during all hours.
 - 24X7 must offer obligation in Day Ahead Market. No Real Time Market MOO if not picked up in DA.
 - Removed proposed requirement for providing comparable capacity for planned outages.

- Attempts to remove obligations for outage replacement to the greatest extent possible
 - LSEs will be required to submit supporting documentation that any non-specified RA import resource shown on RA and Supply plans represent physical capacity and firm transmission as well as source balancing authority. Removed consideration of Maximum Import Capability provisions and plan to initiate as standalone initiative.
 - Allows imports to qualify as flexible capacity.
 - Additional procurement authority to use the capacity procurement mechanism as an option to fulfill LSEs' unforced capacity deficiencies and system deficiencies.
- For reference, NCPA submitted the following comments to the First Revised Straw Proposal
 - Concern that UCAP will not properly account for unconventional resources
 - Support in using CAISO's own systems to track outages rather than rely on NERC systems
 - Supports procurement of additional capacity when system is deficient as opposed to individual LSEs
 - Requested clarification that LF-MSS self-provision RA will remain exempt from Must Offer Obligation in CAISO markets
 - When MOO is applicable, it should be set at UCAP as instead of NQC
 - Concern that substitution comparability test may be too restrictive
 - Offered suggestions to improve allocation of RA import capability
 - Seeks clarification for flexible RA allocation exempt language from "changes in load" to "change in load between the day-ahead market and meter".
 - Expressed strong opposition to UCAP deficiency tool due to potential for market power.

Day-Ahead Market Enhancements

- This initiative will explore new day-ahead products that will address ramping needs between intervals and uncertainty that can occur between the day-ahead and real-time markets.
- The latest working group occurred on 8/13/2019. CASIO reviewed the need for new products along with data supporting uncertainty concerns:
 - Uncertainty between day-ahead and real-time market has increased from 2017 to 2019 and CAISO operators are addressing this development with out of market actions which disrupts market efficiency
 - Historically, generators had higher certainty to know if they would be scheduled in real-time
 - Due to uncertainty and changing resource fleet, commitment decisions are no longer necessarily known
 - Gas, hydro, storage, and imports need to cover costs to be available for dispatch in real-time – this will be accomplished with imbalance reserves

- New Imbalance Reserve Product (IRP) will be designed to address granularity and uncertainty between day-ahead and real-time markets:
 - Hourly product; 15-minute dispatchable; Biddable; Covers granularity difference and uncertainty between DAM and FMM; All awards are co-optimized and settled simultaneously; DAM has no energy price formation issue because the market solves all hours in a single optimization; Stepped relaxation parameters (proposed)
- CAISO reviewed two options for applying IRP:
 - Option 1 – Financial
 - Co-optimizes bid-in demand, ancillary services and imbalance reserves
 - Imbalance reserves cover historical uncertainty between IFM cleared net load and FMM net load
 - Exceptional dispatch if IFM clears inconsistent with operational needs
 - Option 2 – Financial + Forecast
 - Co-optimizes bid-in demand, ISO reliability capacity, ancillary services and imbalance reserves
 - Imbalance reserves cover historical uncertainty between ISO's day-ahead net load forecast and FMM net load
 - Reliability capacity covers differences between ISO net load and cleared net load
 - Exceptional dispatch if IFM/RUC clears inconsistent with operational needs
- CAISO reviewed policy alignment and relationships among Day Ahead Market Enhancements, Extending Day Ahead Market to EIM, and Resource Adequacy Enhancements.
- NCPA Comments included tentative support of Option 2 along with requests for special Load Following MSS cost allocation netting.

Review Transmission Access Charge Structure

- This initiative will consider possible changes to the CAISO's current volumetric Transmission Access Charge (TAC) structure for recovering participating transmission owners' costs of owning, operating and maintaining transmission facilities under CAISO operational control. The CAISO will consider stakeholder input on the initiative scope, which will include possible changes to reflect the benefits of distributed resources in reducing future transmission needs.
- CAISO's draft final proposal includes a hybrid billing determinate consisting of volumetric and peak demand functions in order to address costs shifts as well as the full impact of high coincident peak demand, low load factor UCD areas that have relatively lower volumetric use compared to high load factor areas. It received general support from the market and will be presented to the CAISO board this year.
- NCPA performed an impact analysis and determined that NCPA members would mostly benefit or be indifferent to the new billing determinant so long as certain LFMSS benefits remain in place.

Hybrid Resources

- CAISO published Straw Proposal and held a working group meeting on October 3, 2019.
- As generation developers become increasingly interested in pairing energy storage with existing or proposed generation, this initiative will explore how such “hybrid” generation resources can be registered and configured to operate within the ISO market. This initiative will develop solutions allowing developers to maximize the benefits of their resource’s configuration. Hybrid resource configurations also raise new operational and forecasting challenges that ISO plans to address during this initiative.
- CAISO refers to hybrid projects or hybrid resources as a combination of multiple technologies or fuel sources combined into a single resource with a single point of interconnection. Projects are not required to include storage to be considered hybrid resources.
- Approximately 41% of the total capacity currently seeking interconnection is hybrid resource configurations.
- Initial Objectives:
 - Promote the reliable and efficient integration of hybrid resources
 - Address additional technical questions surfaced by increasing numbers and interest in hybrid resources:
 - Configurations, metering, operations, market participation, and settlements
 - Address new operational and forecasting challenges raised by hybrid resources
 - New requirements may be needed to provide reliable participation by hybrid resources
- CAISO prefers customers to register a resource ID for each technology/fuel source for increased visibility in order to address uncertainty issues. CAISO reminds participants that separate resource IDs are required to provide forecasts for hybrid resources that include eligible/participating intermittent resources. The forecasts help to minimize uninstructed imbalance energy charges.

Western

Western Base Resource Tracking (NCPA Pool)

Western Base Resource Tracking - NCPA Pool							
	Actual			Costs & Rates			
	BR Forecast ¹ (MWh)	BR Delivered (MWh)	Difference (MWh)	Base Resource & Restoration Fund (\$)	Monthly Cost of BR ² (\$/MWh)	CAISO LMP Differential ³ (\$/MWh)	12-Mo Rolling Avg. Cost of BR ⁴ (\$/MWh)
Jul-19	95,615	81,155	(14,460)	\$2,134,816	\$ 26.31	\$ (0.02)	\$ 30.98
Aug-19	75,245	78,474	3,229	\$2,134,816	\$ 27.20	\$ (0.02)	\$ 30.65
Sep-19	46,290	47,422	1,133	\$2,049,840	\$ 43.23	\$ (0.17)	\$ 31.31
Oct-19	23,193	-	(23,193)	\$962,106	\$ 41.48	\$ -	\$ 32.54
Nov-19	7,602	-	(7,602)	\$962,106	\$ 126.55	\$ -	\$ 33.78
Dec-19	6,564	-	(6,564)	\$962,106	\$ 146.58	\$ -	\$ 34.98
Jan-20	9,331	-	(9,331)	\$962,106	\$ 103.11	\$ -	\$ 35.49
Feb-20	17,163	-	(17,163)	\$962,106	\$ 56.06	\$ -	\$ 35.91
Mar-20	27,643	-	(27,643)	\$962,106	\$ 34.80	\$ -	\$ 35.16
Apr-20	52,877	-	(52,877)	\$2,146,905	\$ 40.60	\$ -	\$ 34.83
May-20	84,464	-	(84,464)	\$2,146,905	\$ 25.42	\$ -	\$ 35.51
Jun-20	90,039	-	(90,039)	\$2,146,905	\$ 23.84	\$ -	\$ 35.82
1/ As forecasted in NCPA 19/20 Budget							
2/ = (Western Cost + Restoration Fund)/BR Delivered, for Pool Participants only.							
3/ = (MEEA LMP - PG&E LAP LMP) using public market information (i.e. not settlement quality).							
4/ Based on BR Delivered (Actual) when available and BR Forecast in all other cases. Includes CAISO LMP impact.							

- NCPA Pool received 47,422 MWh Base Resource (BR) energy in September 2019. This includes 12,334 MWh of Displacement Energy for an estimated savings of \$69,230 or about \$5.60/MWh.
- Pool Members' total savings under Market Efficiency Enhancement Agreement (MEEA) for Pool Members was negative at approximately \$6,000 in September 2019. The net negative saving was due to lower congestion prices for import at COTP as opposed to MEEA prices. Despite MEEA Benefits are negative July 2019 through September 2019, MEEA savings for October 2018 through September 2019 (WAPA Fiscal Year) is about \$137,000. NCPA will continue to closely monitor MEEA Benefits.

Western Base Resource Scheduling Flexibility

- WAPA and BOR implemented Base Resource Min-Take Experiment 3 customer pre-disclose energy beginning operating date July 11, 2019. The intent is to potentially lower the Base Resource Min-Take even more for all Base Resource customers during the low value hours. Based on NCPA's preliminary analysis, NCPA Pool shows an added value of about \$20,000 total for seven trade dates in July 2019 and August 2019. NCPA will use the data provided by WAPA recently to perform analysis for applicable operating dates for September 2019.

Draft 2025 Base Resource Contract

- NCPA participated in WAPA's second face-to-face meeting with other Base Resource customers to refine the proposed 2025 Base Resource contract language. WAPA will send out the revised contract by October 18th, 2019, for review and comments. WAPA plans to have a third face-to-face meeting with interested customers early November 2019. WAPA intends to finalize the contract language by January 2020, and each entity will have six months to execute.

Interconnection Affairs

PG&E Update

Public Safety Power Shut Off (PSPS) Program

- PG&E initiated a PSPS on September 24, 2019. NCPA was notified of resources which NCPA schedules in the Butte County area of being shut off by CAISO. NCPA was notified by PG&E of loads being potentially shutoff in the Geysers area. NCPA notes: during the September 24th event, PG&E did send direct advance notification and did coordinate with the CAISO in advance of a PSPS. No NCPA Member points of interconnection were impacted by this event.

TO-20 Rate Case

- This case is currently in settlement discussions. PG&E is asking for a ROE 12.5%, stating wildfire mitigation cost for this increase. Typically the return of equity is somewhere in the low 9 percent range.
- FERC 890 case/PG&E's self-approved projects stakeholder process is now part of the TO-20 settlement discussions. CPUC and Joint Interveners have proposed Stakeholder Review Process as an appendix to the TO-20 settlement. Next settlement conference with PG&E is scheduled for October 15, 2019.

Cotenancy Agreement

- PG&E with support from NCPA and SVP filed an amendment that acknowledged CDWR's request for termination. The amendment rejected CDWR's request, pending resolution of the Cost of Removal dispute. All other matters have been delayed until this issue is resolved.
- On September 27, 2019 FERC rejected PG&E's amendment stating PG&E cannot unilaterally extend the term of the Agreement. FERC did not address the cost of removal aspect and the calculation methodology. NCPA has initiated discussions with members as to how much capacity from CDWR's share should NCPA take. Pending the outcome of the capacity discussion, NCPA and SVP will look at next steps. More updates will be provided to members as it becomes available.

Load Interconnection Agreement Extension

- The Load IA (effective November 1, 2015) amongst the Members, NCPA, and PG&E is valid until November 1, 2020. The Agreement can be extended for another five years until 2025. The extension language states: Parties have to agree to such five-year extension by no later than the fourth anniversary of the Effective Date/ November 1, 2019.
- NCPA has reached out to PG&E to extend the Agreement. More updates will be provided to members as it becomes available.

Debt and Financial Management

- The Federal Reserve approved a much anticipated quarter point interest rate cut at the September FOMC meeting lowering its benchmark overnight lending rate to a target range of 1.75% to 2.0%. The committee again cited “the implications of global developments for the economic outlook as well as muted inflation pressures” as the primary rationale for the cut.
- While the committee as a whole has not pointed to further cuts, divisions remain among individual policymakers with three officials dissenting against the final vote. For now, a growing number of Fed officials expect one more cut this year, based on economic projections released after the Fed’s two-day meeting. However, a murky economic outlook and a division within the Fed’s policy setting committee prevented a clear message about what comes next.
- The Finance Committee held a meeting on October 8th where the Agency’s auditor, Baker Tilly, presented the 2019 Financial Statement Audit. Baker Tilly views the audit as an opportunity to provide an opinion on the reliability of financial reporting to the Committee, Agency Members, and outside parties all providing value to NCPA. Their report concluded no audit findings or concerns and will issue an unmodified (clean) opinion. The financials will be included in the October Commission agenda package.

Schedule Coordination Goals

Software Development

- Staff, in collaboration with Power Management, Generation Services, and a consultant, have begun efforts to develop a solution to enable Multi-Stage Generation capability for the Lodi Energy Center. Since the first week of September, the team participated in the CAISO Market Simulation Fall 2019 Release Phase 1 and was able to exercise the planned scenarios for the LEC Bidding Configurations. Phase 2 immediately follows and will continue until December 2019. Anticipated go-live is early 2020.
- NCPA Information Services staff is performing a technology upgrade to its legacy NCPA ADS (NADS) software application that is responsible for processing and responding to various market generator resource instructions sent by the CAISO for

each 5-minute interval. In addition, the business logic will be refined to further improve performance under a variety of operational conditions. Completion is anticipated middle of next year.

- Work has begun to automate and integrate members' monthly Resource Adequacy demonstrations and supply plans into NCPA's bid-to-bill system. Target completion is middle of next year.
- Planning is underway to develop a general Data Exchange app and/or service to provide an API for the member/customer to submit data into the NCPA data store. Initially this was rolled out as a means for MEID to submit energy schedules and water flows. The app/service will be redesigned to handle submission of a variety of interval data. Initial target use case is for Palo Alto's Solar Resources' Expected Energy data. Rollout is expected mid-November.
- Coordination with Power Management Dispatch and Scheduling and SVP is underway to provide manpower assistance to SVP's real-time operations during the weekend shifts. December 2019 timeframe is the anticipated start of the transition.

Network

- Progress continues to be made upgrading staff to Windows 10 with over 70.8% of the Agency on the new Operating System. The goal is to have all workstations moved over before the end of 2020.
- The Ops and Support group has been working alongside Power Management and Settlements in preparation for the CAISO MSG market simulation later this year. Part of this effort will include enhancements to SCADA control logic for LEC configurations along with updating dispatch control center screens.
- The Ops and Support group is preparing new Next Generation Firewalls to be installed during the October Failover. These firewalls will replace old off support equipment and help to both enhance our security and CIP compliance posture.
- The final Oracle 12 upgrade plans have continued throughout the summer and preparations for additional testing are underway. The remaining two databases are the largest and most complicated to configure, but it is imperative they are updated soon to maintain support from Oracle.
- Plans are underway to perform a hard failover to the Disaster Recovery Center October 18th- 20th. This will not only test our failover procedures but give the Operations and Support time to perform maintenance and installation of new firewalls and switch hardware.
- NCPA continues to gather requirements for becoming a NERC CIP Medium impact entity. This includes a timeline, resources and costs that will be associated with the activity and ongoing maintenance that will be required to support such a program. Staff anticipates having a schedule and timeline sometime in October. Further we

are finalizing the procedures for additional Low Impact requirements that are set to go live January 1st of 2020.

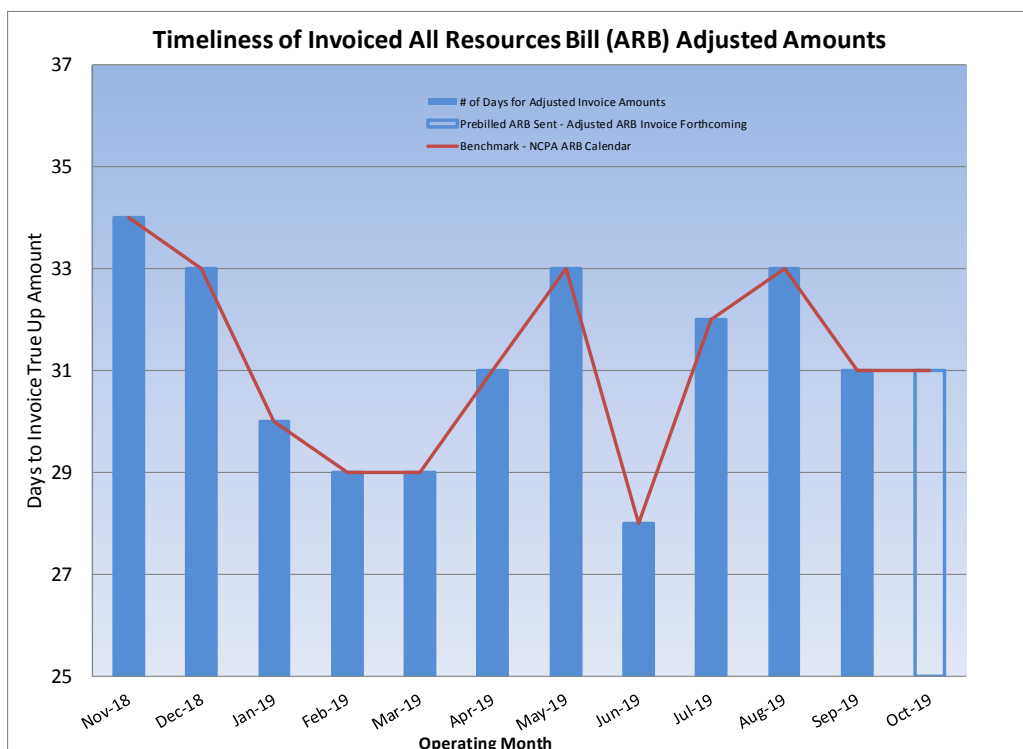
NCPA Bills & Settlements

Progress Against the Strategic Plan

Adjusted Power bills, which include CAISO transactions, invoiced to members the following month subsequent to the monthly pre-billed ARB month. Timely ARB settlements adjustments help improve members' cash flow and reconciliation of their budget performance.

The October 2019 NCPA All Resources Bill (ARB) monthly invoice sent to members on September 24, 2019 contains:

- October 2019 monthly pre-billed budget/forecast amounts;
- August 2019 (1st Adjustment) NCPA Project and CAISO Initial settlement true-ups;
- July 2019 (2nd Adjustment) NCPA Project settlement true-up and T+12 business day recalculated CAISO settlement true-up allocations;
- May 2019 (3rd Adjustment) T+55 business day recalculated CAISO settlement true-up allocations and NCPA Projects true-up;
- November 2018 (4th Adjustment) T+9 month recalculated CAISO settlement true-up allocations;
- January 2018 (5th Adjustment) T+18 month recalculated CAISO settlement true-up allocations;
- October 2016 (6th Adjustment) T+33 month recalculated CAISO settlement true-up;
- July 2016 (7th Adjustment) T+35 month CAISO settlement true-up;



Legislative & Regulatory

Political Arena State/Federal/Western Programs

- The California Air Resources Board released amendments to its Low Carbon Fuel Standard regulations on October 1st. The transportation electrification working group is collaborating to review the amendments and submit comments prior to the scheduled adoption on November 21st.
- The California Municipal Utilities Association's Annual Customer Engagement Summit was held in Santa Clara on October 2-3, and discussion topics included electrification, crisis communications, and program design for hard-to-reach segments.
- NCPA held its 2019 Annual Conference from September 25-27 at the Resort at Squaw Creek in Olympic Valley, CA. Over 250 attendees participated in the three-day conference to hear from 17 dynamic speakers who touched on hot-button topics. The conference kicked off on Wednesday with NCPA Legal Committee and Legislative and Regulatory Affairs Committee meetings, during which members heard from prominent leaders in the legal and policy realm on PG&E's bankruptcy case, inverse condemnation, outcomes from the 2019 legislative year, and key policy issues related to electrifying the transportation sector. Thursday's main conference session included a range of expert speakers offering their unique perspective on the challenges electric utilities are facing today. The agenda included a panel discussion on the evolving utility landscape and how large utilities and federal power systems are adapting to increased wildfire threats and changing energy markets; a discussion on community choice aggregation; and overviews of recent reports and analyses on the value of a competitive transmission process and on the California Independent System Operator's energy outlook, which identified an impending capacity shortfall of 2,300 MW starting as early as next year. These groundbreaking insights will likely take center stage next year as both policymakers and regulators scramble to find a solution to this complex problem. As well, conference attendees heard from an industry expert on social media and data privacy. NCPA is grateful for members' participation and involvement at our Annual Conference, and will continue to keep members up-to-date on key developments touched on by our fantastic lineup of speakers.
- NCPA is soliciting feedback from members to guide the development of social media, marketing, and communication resources for NCPA and member use. Resources will include template social media messaging and designs, as well as customer communication best practices.

Human Resources

Hires:

John Machado, joined NCPA on October 7, 2019 as Combustion Turbine Specialist III at our Lodi Energy Center in Lodi, CA. John has over 19 years of plant mechanic experience having most recently worked as a Hydroelectric Plant Mechanic for the San Luis and Delta Mendota Water Authority.

Intern Hires:

None

Promotions/Position Changes:

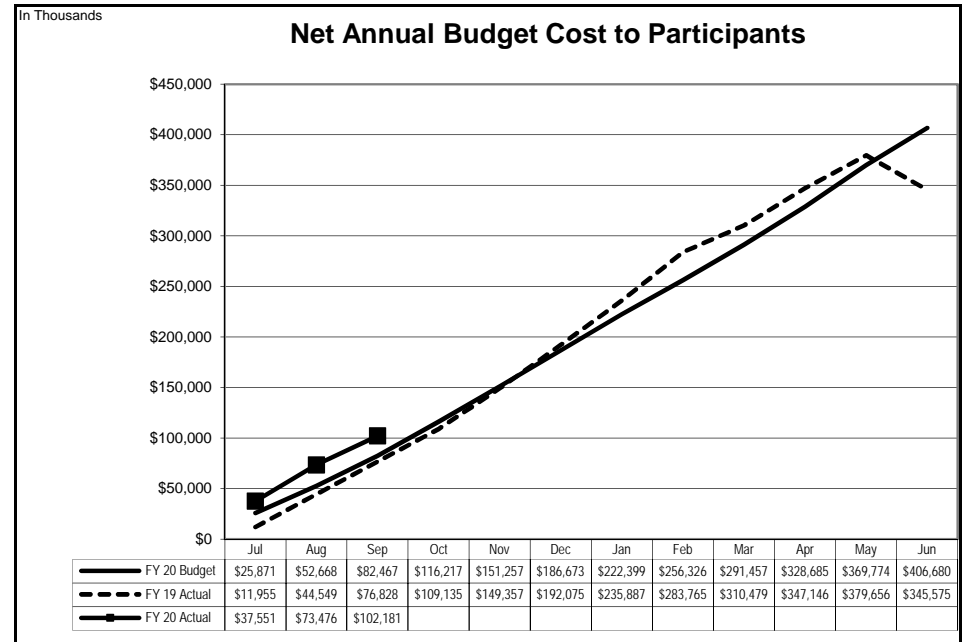
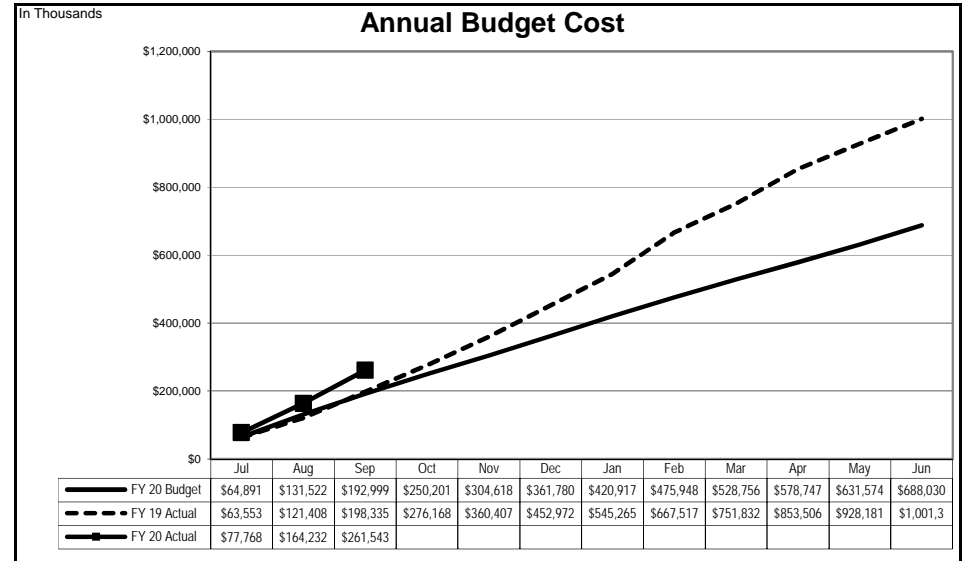
None

Separations:

None

**Annual Budget
2019-2020 Fiscal Year To Date
As of September 30, 2019**

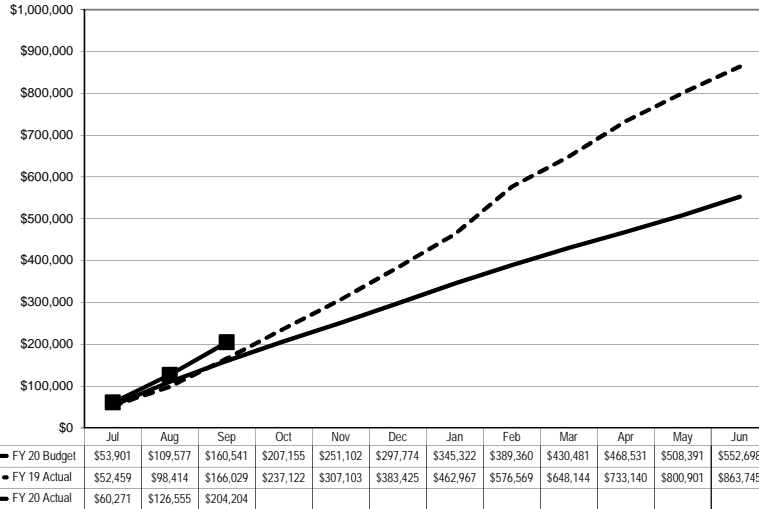
In Thousands	Program			
	Annual Budget	Actual	Under(Ovr) Budget	YTD % Remaining
GENERATION RESOURCES				
NCPA Plants				
Hydroelectric	54,074	13,043	\$ 41,031	76%
Geothermal Plant	35,311	8,677	26,634	75%
Combustion Turbine No. 1	6,170	1,300	4,869	79%
Combustion Turbine No. 2 (STIG)	9,438	2,322	7,116	75%
Lodi Energy Center	92,960	16,758	76,203	82%
	197,953	42,100	155,853	79%
Member Resources - Energy	56,229	19,187	37,042	66%
Member Resources - Natural Gas	3,541	1,128	2,413	68%
Western Resource	23,325	7,827	15,498	66%
Market Power Purchases	15,123	6,373	8,750	58%
Load Aggregation Costs - ISO	256,030	126,564	129,465	51%
Net GHG Obligations	497	1,023	(526)	-106%
	552,698	204,204	348,495	63%
TRANSMISSION				
Independent System Operator	117,089	53,305	63,784	54%
MANAGEMENT SERVICES				
Legislative & Regulatory				
Legislative Representation	2,132	471	1,661	78%
Regulatory Representation	748	137	611	82%
Western Representation	745	144	601	81%
Customer Programs	424	48	375	89%
	4,049	801	3,248	80%
Judicial Action	625	76	549	88%
Power Management				
System Control & Load Dispatch	6,082	1,603	4,480	74%
Forecasting & Prescheduling	2,934	641	2,293	78%
Industry Restructuring	414	86	328	79%
Contract Admin, Interconnection Svcs & Ext. Affairs	954	251	703	74%
Gas Purchase Program	77	17	60	78%
Market Purchase Project	111	23	88	79%
	10,573	2,622	7,951	75%
Energy Risk Management	212	43	169	80%
Settlements	980	196	784	80%
Integrated System Support	243	13	230	95%
Participant Pass Through Costs	1,560	149	1,412	90%
Support Services	-	134	(134)	
	18,243	4,034	14,209	78%
TOTAL ANNUAL BUDGET COST	688,030	261,543	426,487	62%
LESS: THIRD PARTY REVENUE				
Plant ISO Energy Sales	127,624	22,997	104,627	82%
Member Resource ISO Energy Sales	29,156	7,838	21,319	73%
Member Owned Generation ISO Energy Sales	67,108	21,258	45,850	68%
NCPA Contracts ISO Energy Sales	15,623	5,120	10,503	67%
Western Resource ISO Energy Sales	18,304	7,864	10,440	57%
Load Aggregation Energy Sales	-	64,551	(64,551)	
Ancillary Services Sales	4,197	2,860	1,337	32%
Transmission Sales	110	28	83	75%
Western Credits, Interest & Other Income	19,227	26,846	(7,619)	-40%
	281,350	159,361	121,989	43%
NET ANNUAL BUDGET COST TO PARTICIPANTS	406,680	102,181	\$ 304,499	75%



Annual Budget Budget vs. Actual By Major Area As of September 30, 2019

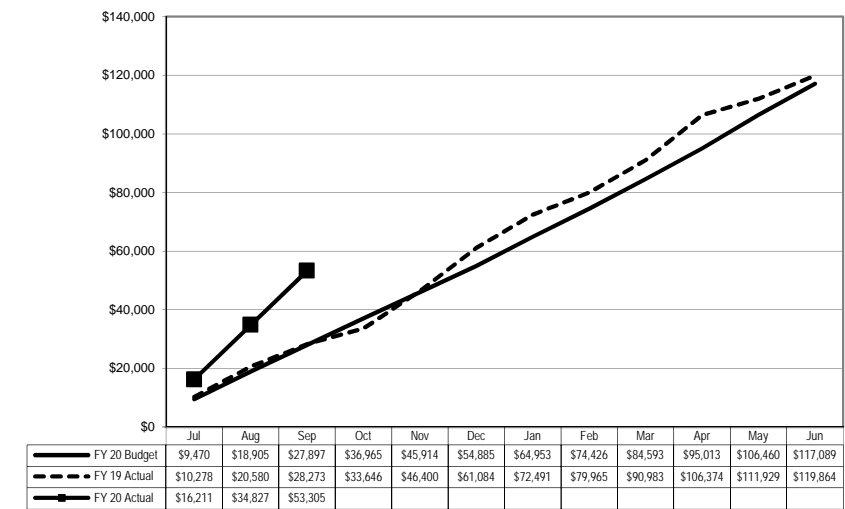
In Thousands

Generation Resources



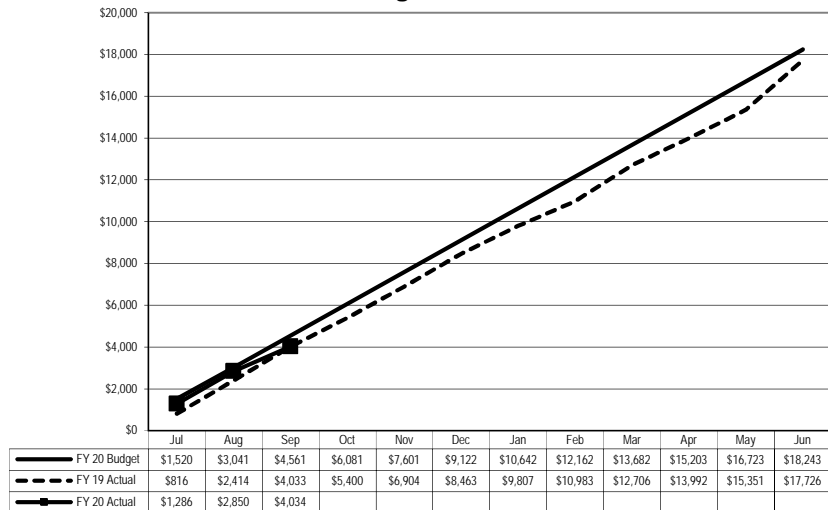
In Thousands

Transmission-ISO



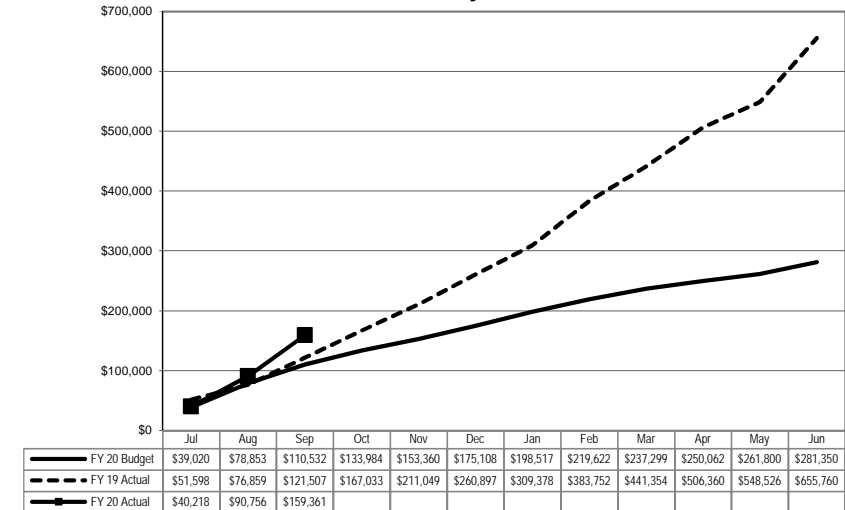
In Thousands

Management Services



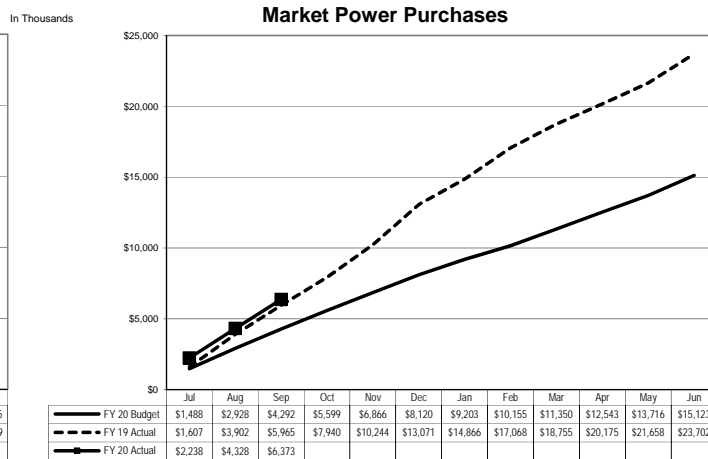
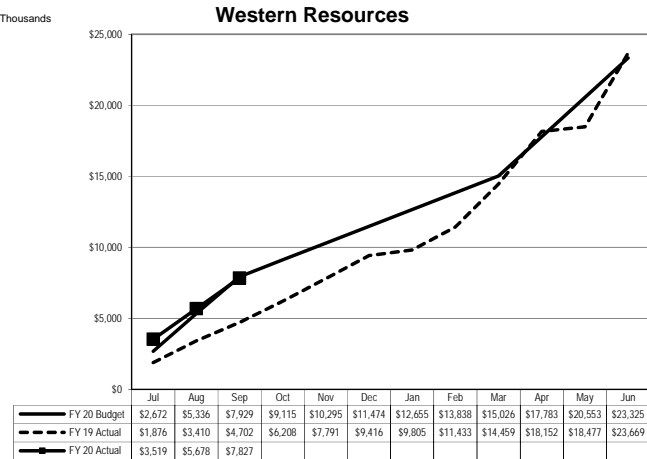
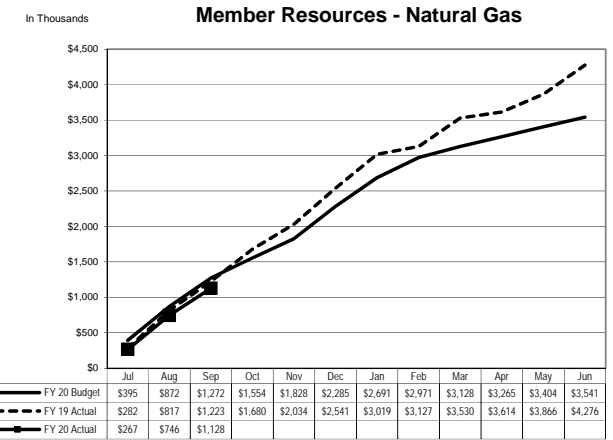
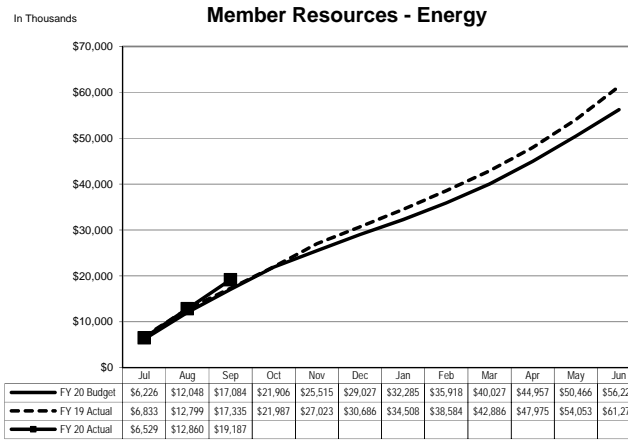
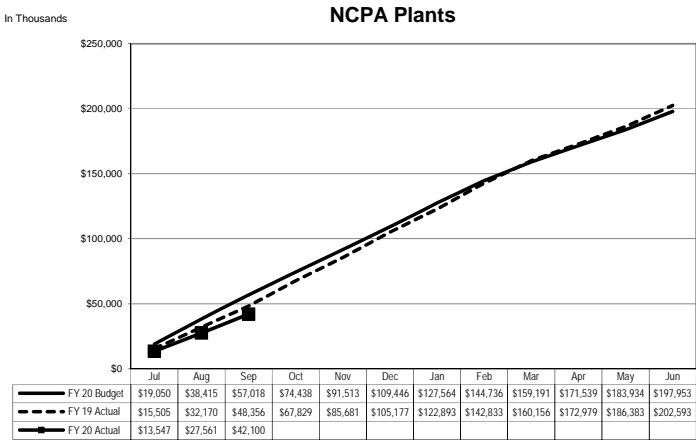
In Thousands

Third Party Revenue



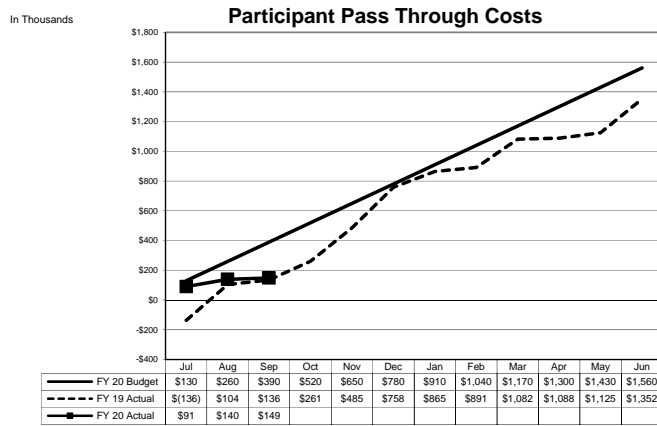
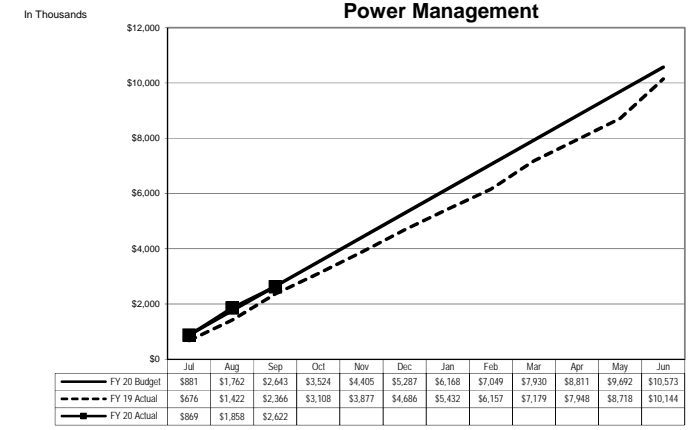
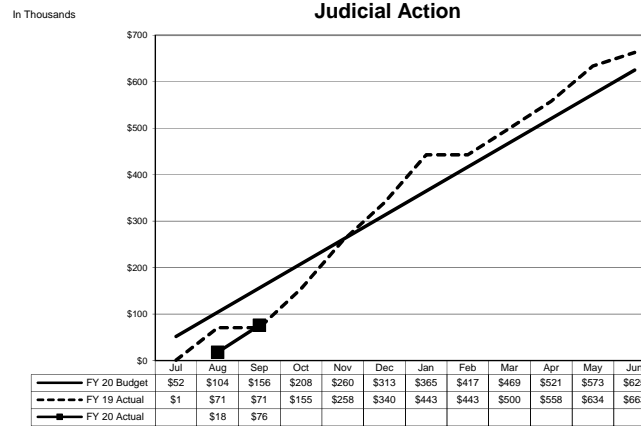
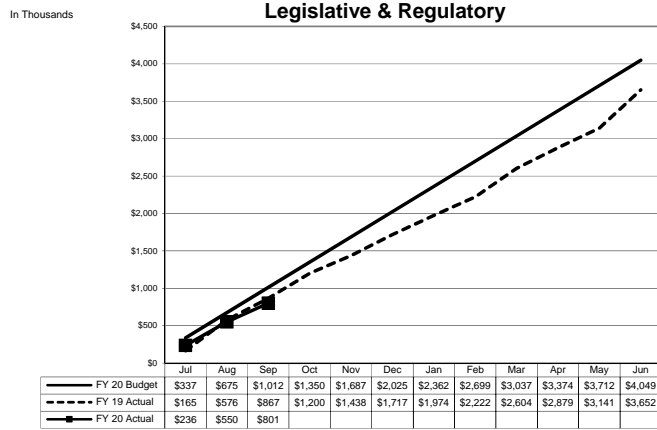
Footnote: Transmission is solely reflective of Independent System Operator (ISO) costs

**Annual Budget Cost
Generation Resources Analysis By Source
As of September 30, 2019**



Footnote: Other Resources (Graeagle, BART PV, Gridley PV) are included in Market Power Purchases

Annual Budget Cost Management Services Analysis By Source As of September 30, 2019

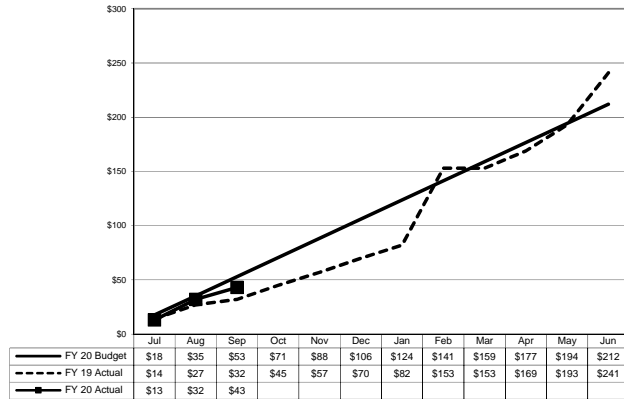


**Annual Budget Cost
Management Services Analysis By Source
As of September 30, 2019**

In Thousands

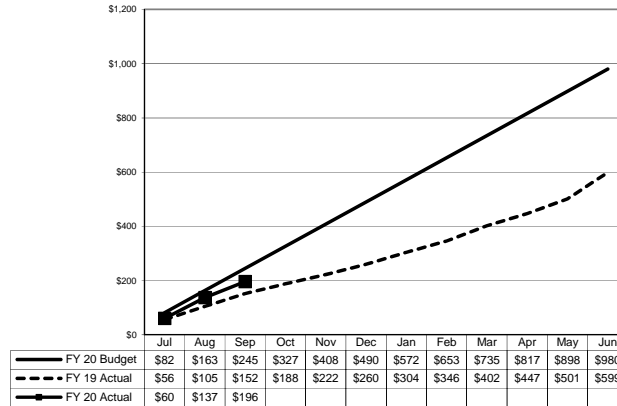
Energy Risk Management

In Thousands

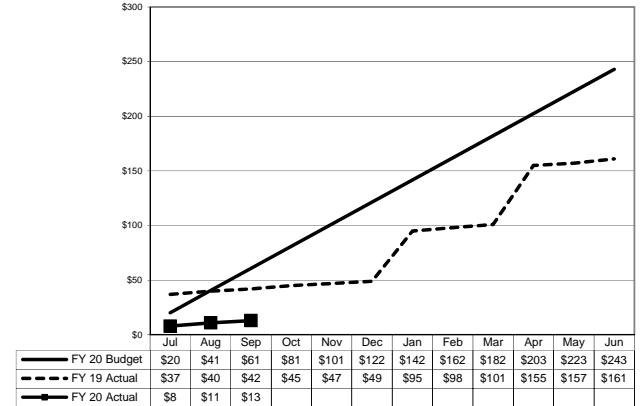


Settlements

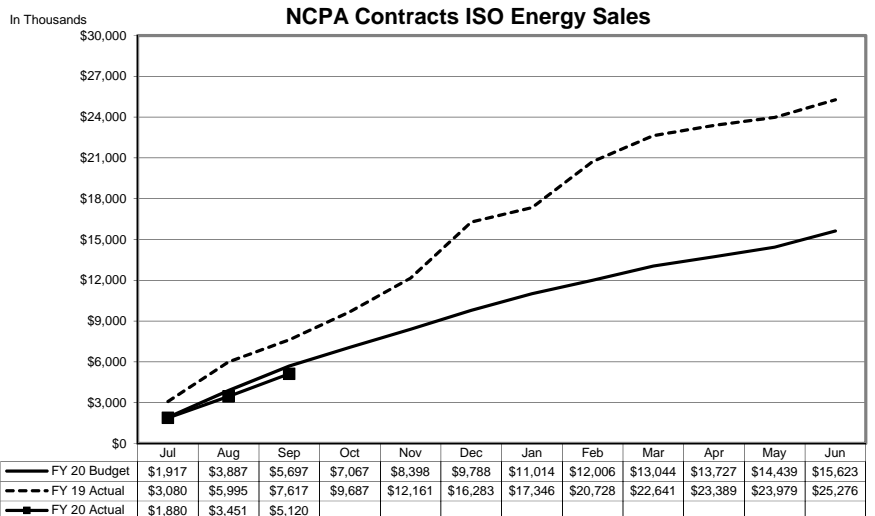
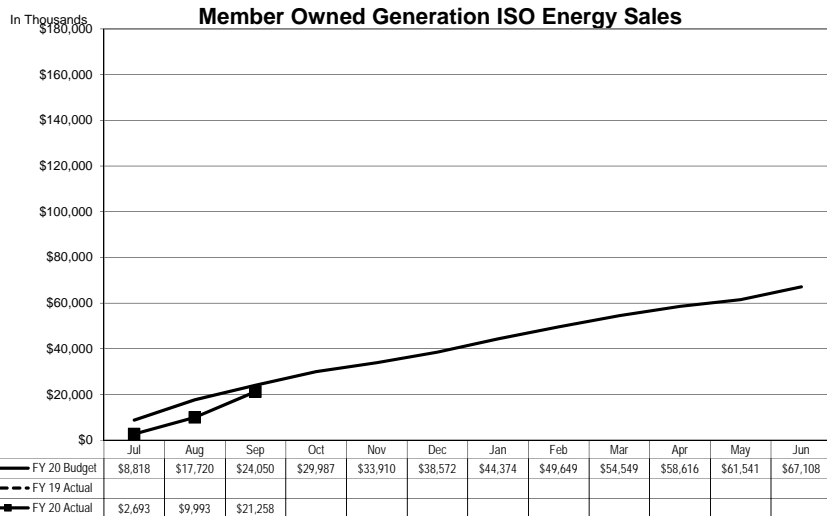
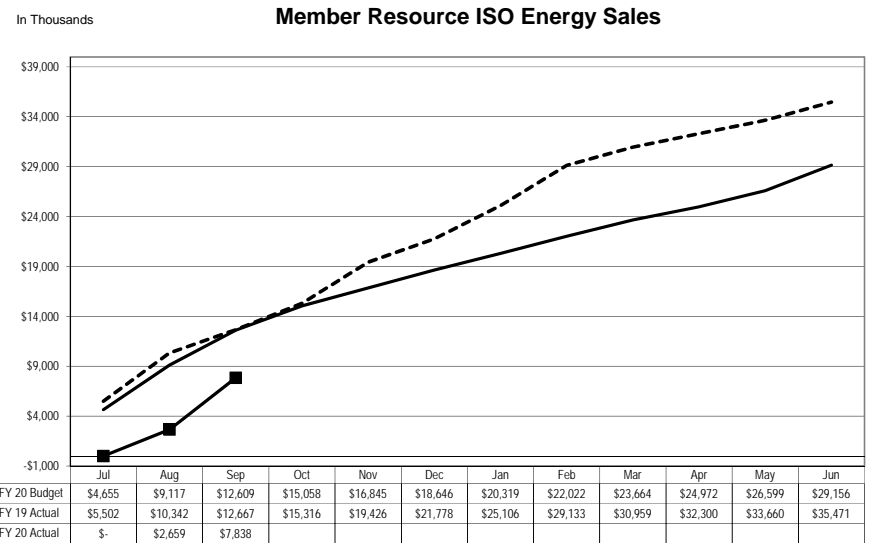
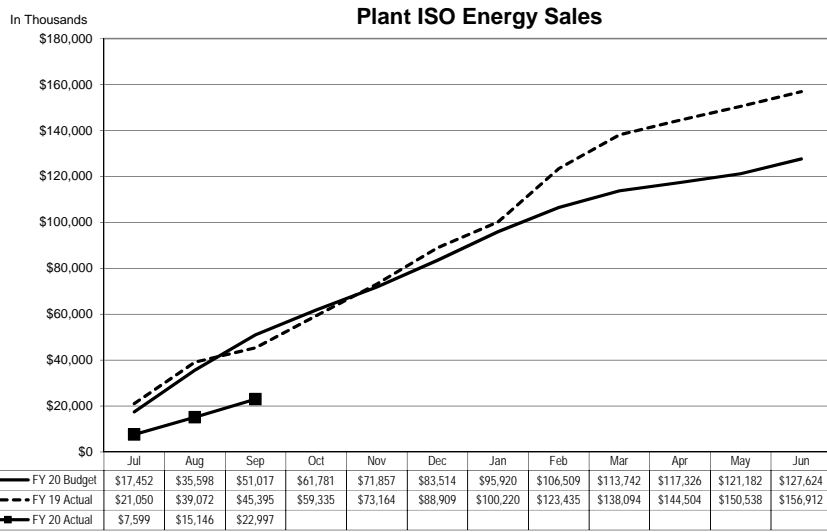
In Thousands



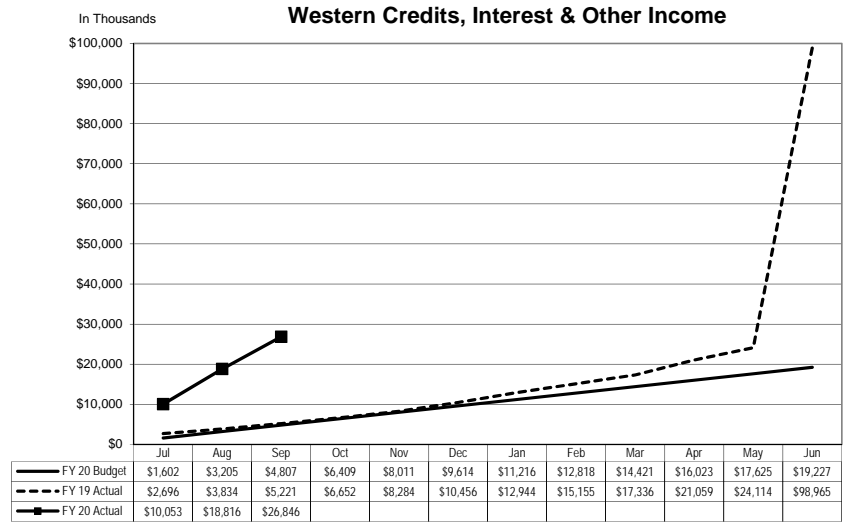
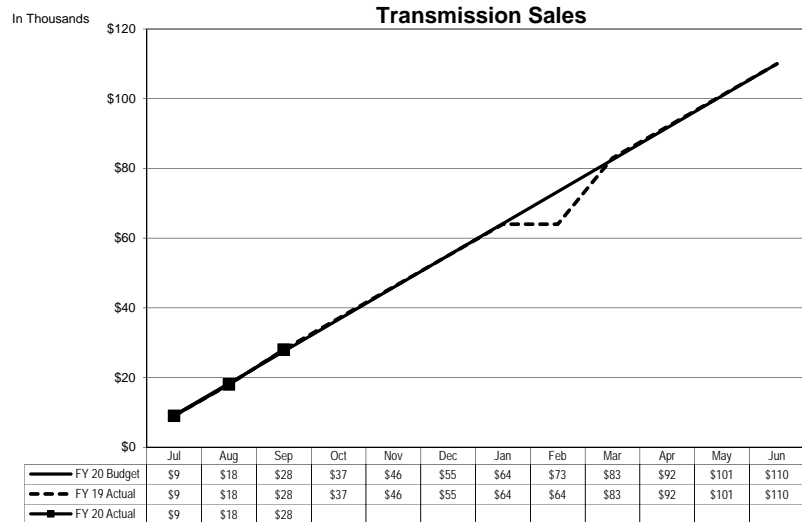
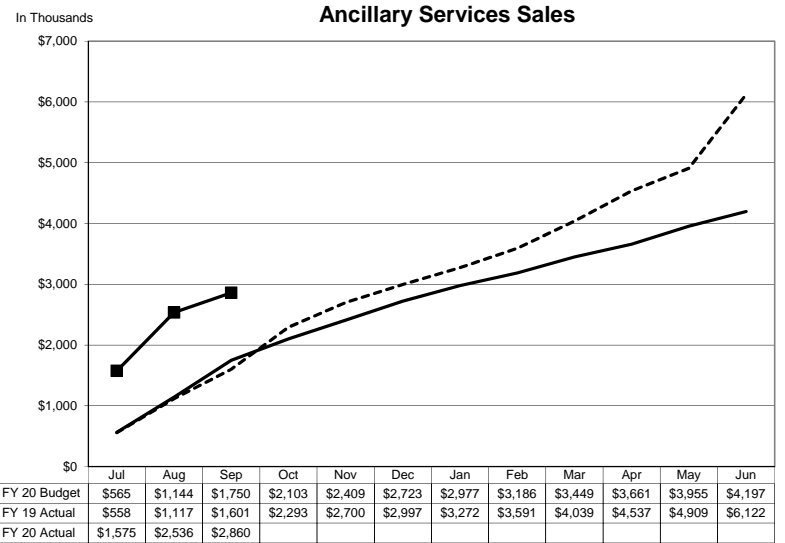
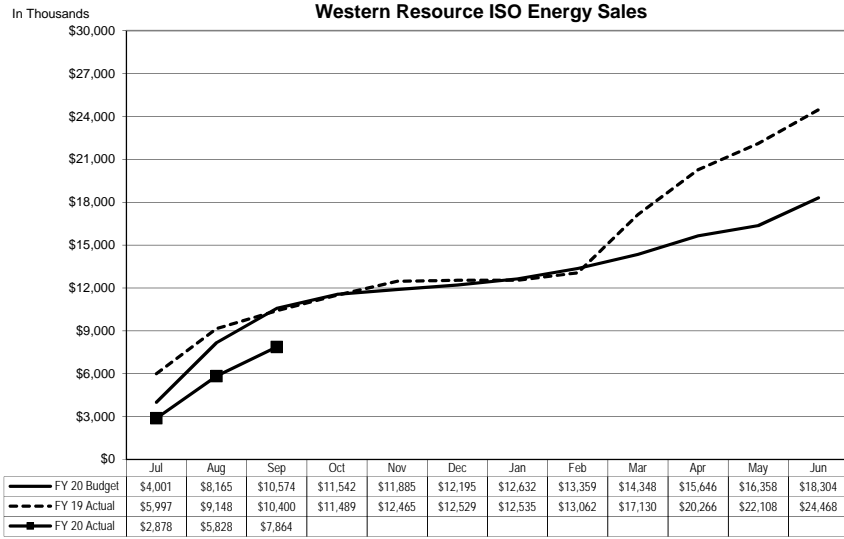
Integrated Systems Support



**Annual Budget Cost
Third Party Revenue Analysis By Source
As of September 30, 2019**



**Annual Budget Cost
Third Party Revenue Analysis By Source
As of September 30, 2019**



**Annual Budget
NCPA Generation Detail Analysis By Plant
As of September 30, 2019**

Generation Cost Analysis

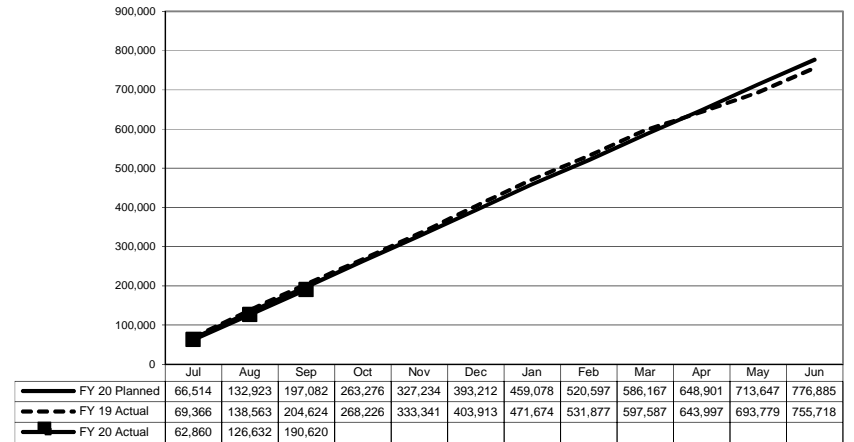
\$ in thousands

	Geothermal				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
	Routine O & M	\$ 18,456	\$ 4,590	\$ 24.08	\$ 13,866
Capital Assets/Spare Parts Inventories	3,645	785	4.12	2,860	78%
Other Costs	7,640	1,870	9.81	5,770	76%
CA ISO Charges	625	196	1.03	429	69%
Debt Service	4,946	1,236	6.49	3,709	75%
Annual Budget	35,311	8,677	45.52	26,634	75%
Less: Third Party Revenue					
Interest Income	382	79	0.41	303	79%
ISO Energy Sales	29,481	6,444	33.81	23,036	78%
Ancillary Services Sales	-	-	-	-	-
Effluent Revenues	750	146	0.76	604	81%
Misc	110	28	0.15	82	75%
	30,723	6,697	35.13	24,026	78%
Net Annual Budget Cost to Participants	\$ 4,588	\$ 1,980	\$ 10.39	\$ 2,608	57%
Net Generation--MWh @ Meter	776,885	190,620			
\$/MWh (A)	\$ (0.46)	\$ 3.90			

MWhs Generated

In MWh

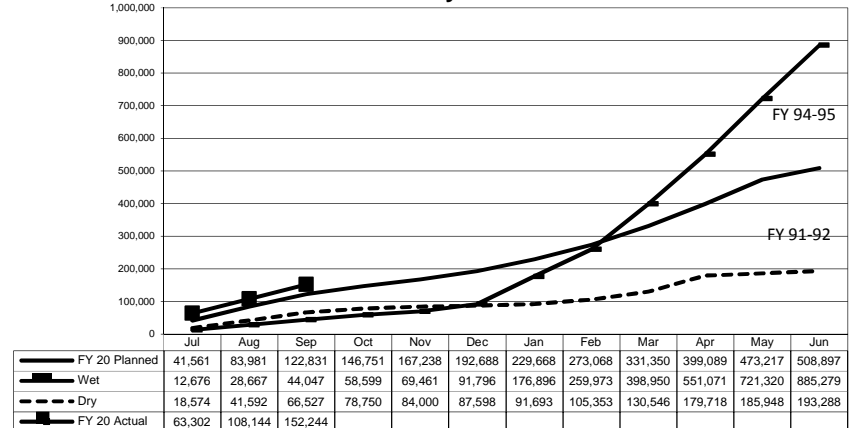
Geothermal



	Hydroelectric				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
	Routine O & M	\$ 450	\$ 1,792	\$ 11.77	\$ (1,342)
Capital Assets/Spare Parts Inventories	4,775	1,271	8.35	3,504	73%
Other Costs	12,078	777	5.11	11,300	94%
CA ISO Charges	3,465	876	5.76	2,588	75%
Debt Service	33,307	8,327	54.69	24,980	75%
Annual Budget	54,074	13,043	85.67	41,031	76%
Less: Third Party Revenue					
Interest Income	670	104	0.69	566	84%
ISO Energy Sales	23,455	4,799	31.52	18,656	80%
Ancillary Services Sales	2,539	2,470	16.22	69	3%
Misc	-	-	-	-	-
	26,664	7,373	48.43	19,291	72%
Net Annual Budget Cost to Participants	\$ 27,410	\$ 5,670	\$ 37.24	\$ 21,740	
Net Generation--MWh @ Meter	508,897	152,244			
\$/MWh (A)	\$ (11.59)	\$ (17.45)			

In MWh

Hydro



Footnotes:

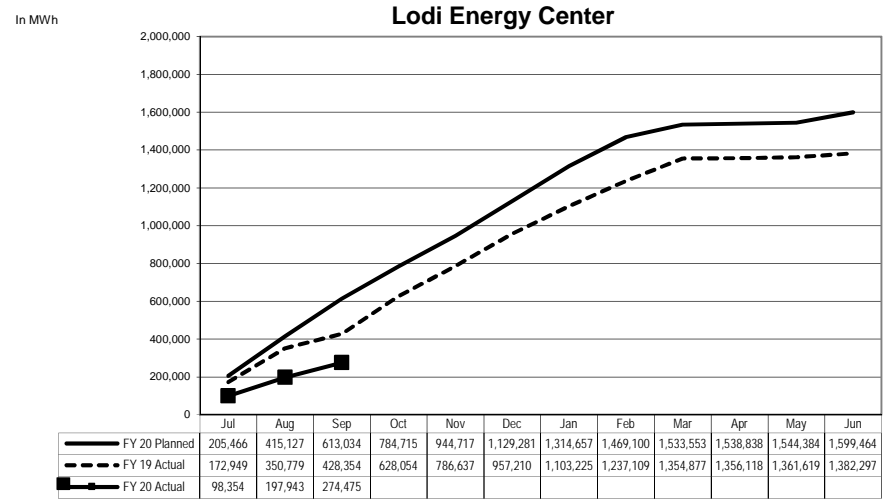
(A) Aggregate fiscal year generation in \$/MWh (excluding debt service)

**Annual Budget
NCPA Generation Detail Analysis By Plant
As of September 30, 2019**

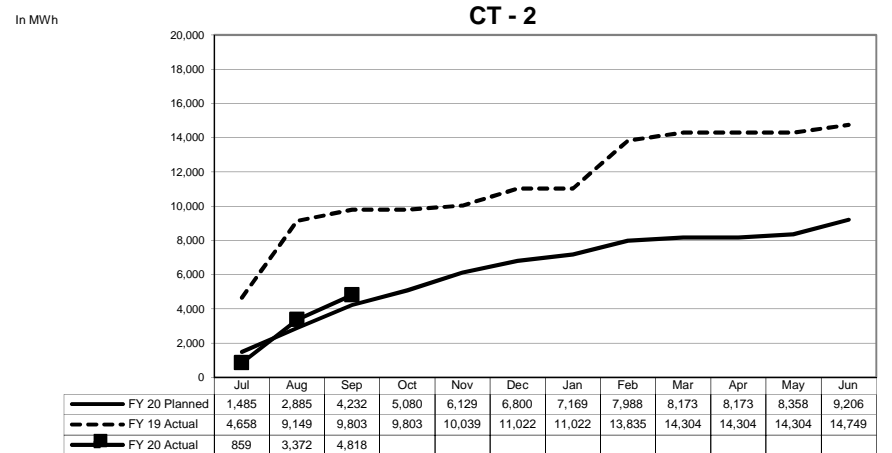
Generation Cost Analysis

	Lodi Energy Center				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 14,101	\$ 2,699	\$ 9.83	\$ 11,401	81%
Fuel	39,513	6,176	22.50	33,337	84%
AB 32 GHG Offset	-	-	-	-	0%
CA ISO Charges and Energy Purchases	4,710	371	1.35	4,339	92%
Capital Assets/Spare Parts Inventories	5,333	374	1.36	4,959	93%
Other Costs	3,249	624	2.27	2,625	81%
Debt Service	26,054	6,514	23.73	19,541	75%
Annual Budget	92,960	16,758	61.05	76,203	82%
Less: Third Party Revenue					
Interest Income	386	170	0.62	216	56%
ISO Energy Sales	72,603	11,043	40.23	61,559	85%
Ancillary Services Sales	1,433	220	0.80	1,212	85%
Transfer Gas Credit	-	-	-	-	0%
Misc	-	-	-	-	0%
	74,421	11,434	41.66	62,987	85%
Net Annual Budget Cost to Participants	\$ 18,539	\$ 5,323	\$ 19.40	\$ 13,216	71%
Net Generation--MWh @ Meter	1,599,464	274,475			
\$/MWh (A)	\$ (4.70)	\$ (4.34)			

MWhs Generated



	Combustion Turbine No. 2 (STIG)				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 1,595	\$ 388	\$ 80.52	\$ 1,208	76%
Fuel and Pipeline Transport Charges	1,089	256	53.05	834	77%
Capital Assets/Spare Parts Inventories	418	93	19.36	325	78%
Other Costs	486	119	24.71	367	76%
CA ISO Charges	53	17	3.62	36	67%
Debt Service	5,796	1,449	300.78	4,347	75%
Annual Budget	9,438	2,322	482.04	7,116	75%
Less: Third Party Revenue					
Interest Income	109	29	6.08	79	73%
ISO Energy Sales	819	331	68.61	489	60%
Ancillary Service Sales	-	-	-	-	0%
Fuel and Pipeline Transport Credits	1,687	477	99.00	1,210	72%
Misc	-	-	-	-	0%
	2,615	837	173.68	1,778	68%
Net Annual Budget Cost to Participants	\$ 6,823	\$ 1,486	\$ 308.35	\$ 5,338	78%
Net Generation--MWh @ Meter	9,206	4,818			
\$/MWh (A)	\$ 111.53	\$ 7.57			



Footnotes:

(A) Aggregate fiscal year generation in \$/MWh (excluding debt service)

**Annual Budget
NCPA Generation Detail Analysis By Plant
As of September 30, 2019**

Generation Cost Analysis

	Combustion Turbine No. 1				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 2,268	\$ 477	\$ 327.95	\$ 1,791	79%
Fuel and Pipeline Transport Charges	975	117	80.75	858	88%
Capital Assets/Spare Parts Inventories	2,110	412	283.39	1,698	80%
Other Costs	747	183	125.73	564	76%
CA ISO Charges	69	112	76.76	(42)	-61%
Debt Service	-	-	-	-	-
Annual Budget	6,170	1,300	894.58	4,869	79%
Less: Third Party Revenue					
Interest Income	-	3	-	(3)	
ISO Energy Sales	1,266	379	261.00	887	70%
Ancillary Services Sales	-	-	-	-	0%
Misc	-	16	10.76	(16)	0%
	1,266	398	271.77	868	69%
Net Annual Budget Cost to Participants	\$ 4,904	\$ 902	\$ 620.89	\$ 4,001	82%
Net Generation--MWh @ Meter	13,042	1,453			
\$/MWh (A)	\$ 375.97	\$ 620.89			

Footnotes:

(A) Aggregate fiscal year generation in \$/MWh (excluding debt service)

MWhs Generated

In MWh

CT - 1

