



Northern California Power Agency
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BUSINESS PROGRESS REPORT

2019

May

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Generation Costs & Reliability

Combustion Turbine Project

Unit Operation for April 2019

Unit	Availability		Production		Reason for Run
CT1 Alameda	Unit 1	Unit 2	Unit 1	372.3 MWh	CAISO/CAISO
	97.6%	100.0%	Unit 2	288.9	
Curtailements, Outages, and Comments:					
Alameda CT Unit 1 failed start; GC lubricating system. ETR 1200 on 4/16 17.5hrs OMS 7158639 / No Comment for U2.					
Unit	Availability		Production		Reason for Run
CT1 Lodi	0.0%		0.0 MWh		O/S
Curtailements, Outages, and Comments:					
LodiCT1 - Out of Service due to warranty repairs to the Hot Gas Path Turbine sections					
Unit	Availability		Production		Reason for Run
CT2 STIG	100.0%		0.0 MWh		No Run
Curtailements, Outages, and Comments:					
Lodi STIG o/s for annual maintenance ETR 4/28 OMS 6433491					
Unit	Availability		Production		Reason for Run
LEC	3.3%		1,241 MWh		CAISO
Curtailements, Outages, and Comments:					
LEC o/s for annual maintenance 4/1 - 4/28 OMS 6433505					

Maintenance Summary – Specific per asset above.

Geothermal Facilities

Availability/Production for April 2019

Unit	Availability	Net Electricity Generated/Water Delivered	Out-of-Service/Descriptors
Unit 1	67.64 %	19,005 MWh	U1 was off line 4/21/19 at 0700 for the remainder of the month for T/G overhaul.
Unit 2	0 %	*0 MWh	U2 was off line 4/1/19 at 0001 for the remainder of the month for T/G overhaul
Unit 3	N/A %	N/A	U3 remains out of service
Unit 4	85.00 %	27,402 MWh	U4 was off line 4/1/19 at 0302 until 4/5/19 at 1500 due to PG&E line work.
Southeast Geysers Effluent Pipeline	77.60%	261.1 mgallons	Average flow rate: 5,779 gpm
Bear Canyon Pump Station Zero Solar	N/A	90,980 KWh	Year-to-date KWh: 3,231,289

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

Hydroelectric Project

Availability/Production for April 2019

Units	Availability	Net Electricity Generated	Out-of-Service
Collierville Unit 1	98.97 %	75,521 MWh	CV #1 unit was out of service on 4/2/19 at 0903 through 1458 due to planned bi-monthly maintenance. CV #1 unit was out of service on 4/3/19 at 1315 through 1442 due to planned bi-monthly maintenance.
Collierville Unit 2	99.46 %	75,864 MWh	CV #2 unit was out of service on 4/3/19 at 0903 through 1256 due to planned bi-monthly maintenance.
Spicer Unit 1	75.99 %	234 MWh	NSM #1 unit was out of service on 4/9/19 at 1152 through 4/16/19 at 1646 due to an external PG&E 21kv underground cable fault.
Spicer Unit 2	75.99 %	140 MWh	NSM #2 unit was out of service on 4/9/19 at 1152 through 4/16/19 at 1649 due to an external PG&E 21kv underground cable fault.
Spicer Unit 3	73.26 %	121 MWh	NSM #3 unit was out of service on 4/9/19 at 1152 through 4/17/19 at 1225 due to an external PG&E 21kv underground cable fault.

Operations & Maintenance Activities:

- CMMS work orders
- Cloud seeding activities still suspended due to hitting suspension criteria
- Corona Scan of the insulators on the Collierville-Bellota 230kv transmission line
- Vegetation management around transmission lines
- Maintenance on Collierville Drainage Ditch
- Welding maintenance on spare Pelton runner

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

- There were no Cal OSHA Recordable items, Lost Time Accidents, or Vehicle Incidents that occurred in April 2019.
- 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 April 27, 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.

April 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)	1	0	0	0
Days since Recordable	105	277	1,482	6,550
Work Hours Since Last Recordable	7,876	57,362	219,982	2,371,176
LTA's (this month)	0	0	0	0
LTA's (calendar year)	0	0	0	0
Days without LTA	4,216	1,345	9,386	5,479
Work Hours without LTA	384,463	274,337	660,526	1,993,194
Vehicle Incident (month)	0	0	0	0
Vehicle Incident (calendar year)	0	0	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 April 27, 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

	April 2019		Calendar Year 2019	
	Peak MW	MWh	Peak MW	MWh
NCPA Pool	367.71 4/24 @1800	178,691	367.71 4/24 @1800	745,076
SVP	519.61 4/24 @1500	298,348	519.61 4/24 @1500	1,191,427
MSSA	880.9 4/24 @ 1700	477,039	880.9 4/24 @ 1700	1,936,503

Last Year 2018 Data*

	April 2018		Calendar Year 2018	
	Peak MW	MWh	Peak MW	MWh
NCPA Pool	312.09 4/23 @1700	175,888	419.2 7/25 @1700	734,501
SVP	484.58 4/23 @1600	298,118	529.29 8/9 @1700	1,197,114
MSSA	794.07 4/23 @ 1600	474,006	945.44 8/9 @ 1700	1,931,615

*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	367.71 4/24 @ 1800
SVP	586.59 MW on 9/1/17 @ 1600	519.61 4/24 @ 1500
MSSA	1070.79 MW on 9/1/17 @ 1700	880.90 4/24 @ 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.

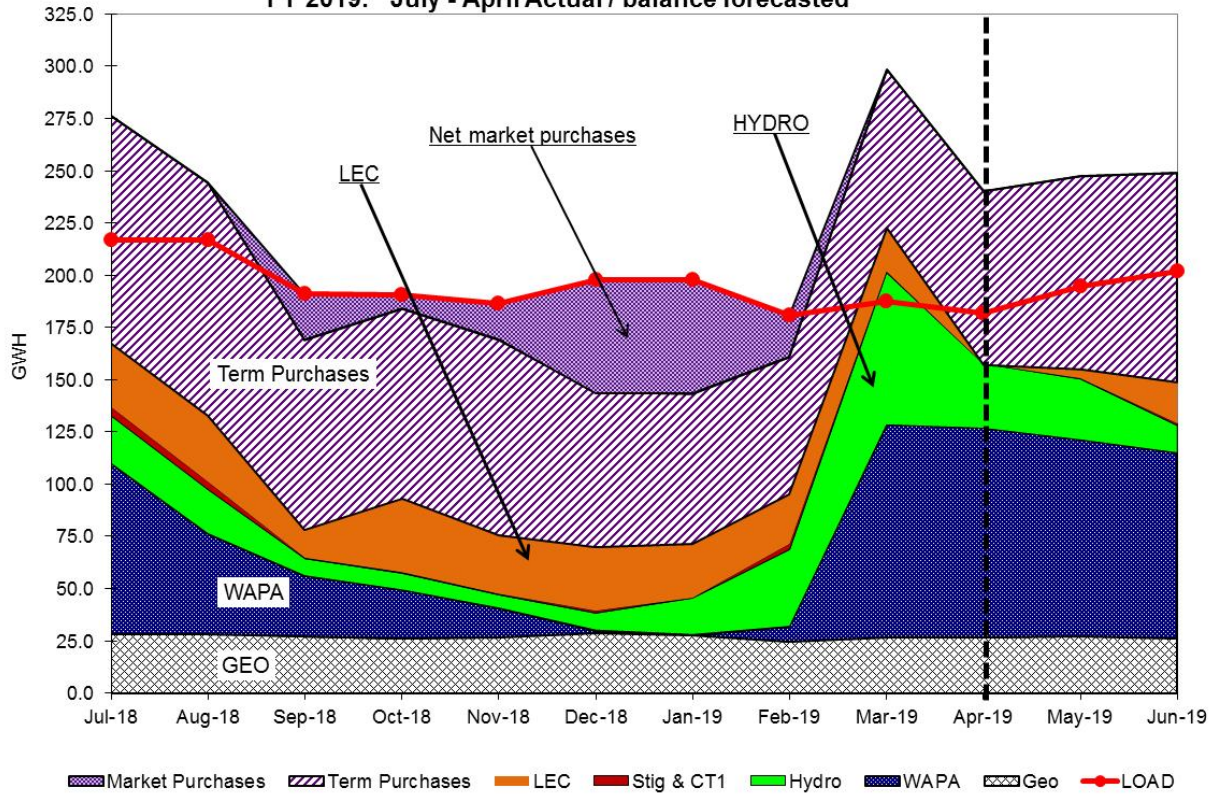
NCPA Deviation Band Performance		
	April 2019	Calendar Year 2019
MSSA % Within the Band	93.01%	95.84%

- McKay's spilling intermittently throughout the month, becoming continuous on April 24th, due to high natural flows from snow melt, and economic bidding.
- Spicer Meadows:
 - April 9 – 16, all units separated from the grid due to PG&E 21kV line outage. Unit 3 remained on providing station service power.
- Geothermal Units:
 - April 1 – 5, Unit 4 off line for PG&E Geysers 12 – Fulton 230kV line outage
 - April 1 – 30, Unit 2 o/s for annual maintenance outage. ETR May 10
 - April 21 – 30, Unit 1 o/s for annual maintenance outage. ETR May 26
- Lodi Energy Center:
 - April 1 – 28, plant o/s for annual maintenance
- Alameda CTs:
 - April 15 @ 1956 – April 16 @ 1158, Unit 1 o/s due to failed start
- Lodi CT:
 - April 1 - 30, unit o/s for turbine repair and annual maintenance. ETR May 3
- Collierville Units:
 - April 2 @ 0903 – 1458, Unit 1 o/s for bi-monthly maintenance outage
 - April 3 @ 0903 – 1256, Unit 2 o/s for bi-monthly maintenance outage
 - April 3 @ 1315 – 1442, Unit 1 o/s for bi-monthly maintenance outage
 - April 7 and 26, units derated for about an hour for intake trashrack flushing to alleviate high intake differential
 - April 13 - 15, units derated intermittently due to intake differential issues
- STIG:
 - April 15 – 28, plant o/s for annual maintenance

Pooling, Portfolio Planning & Forecasting

- NCPA Pool load in April 2019 was 178,691 MWh, or 97.8% of the load forecast. Temperatures near normal for the month as was precipitation. Between May 1 and 14, 2019, NCPA Pool load was 82,308 MWh.
- Lodi Energy Center (LEC) was offline for planned maintenance during April.
- During April 2019, 2.41" of rain was recorded at the Big Trees gage. Average April Big Trees precipitation is 4.49".
- The Value of Storage (VOS) of New Spicer Meadow Reservoir (NSMR) is being maintained at \$60/MWh.
- NSMR storage as of April 30, 2019 was at 105,542 acre feet. The historical average NSMR storage at the end of April is 101,059 acre feet. As of May 14, 2019 NSMR storage is 140,269 acre feet. The current NCPA Pool share of NSMR storage is 71,804 acre feet.
- Combined Calaveras Project generation for the Pool in April 2019 totaled 77.5 GWh, up from 71.3 GWh in March 2019. The Pool's 77.5 GWh in April 2019 was 50% more than the pre-month forecast of 52.1 GWh. This was due to above average precipitation and abundant natural side flows as the snowpack runoff has begun.
- Western Base Resource (BR) deliveries for the Pool in April 2019 were 110,510 MWh. The Displacement program continued in April, with 6,499 MWh received. Through May 14, 2019 the pool had received nearly 33,615 MWh of BR.
- The PG&E Citygate gas index averaged \$3.44/MMBtu for delivery on May 15, 2019, higher than the average PG&E gas price during April 2019 of \$3.229/MMBtu, as gas demand refilling storage supports prices. The May 2019 PG&E Bidweek price is \$3.07/MMBtu.
- Day-ahead NP15 electricity prices averaged \$24.13/MWh (HLH) and \$19.73 (LLH) during March 2019, with the hourly TH_NP15 maximum at \$58.92.

NCPA POOL RESOURCES
FY 2019: July - April Actual / balance forecasted



POOL CAISO COSTS and REVENUES								
		MONTHLY LOAD and RESOURCE MWh				PEAK ON 04-24-2019 HE 18		
YEAR	MONTH	LOAD/ RESOURCE	TOTAL MWh	TOTAL AMOUNT	COST/ REVENUE perMWh	PEAK HOUR MW	PEAK HOUR AMOUNT	COST /REVENUE perMWh
2019	4	LOAD	177,522	\$ 4,423,262	\$ 24.92	367.7	\$ 9,859	\$ 26.81
2019	4	CONTRACTS	-6,130	\$ (122,019)	\$ 19.91	56.0	\$ 1,404	\$ 25.07
2019	4	GEO	18,932	\$ 454,514	\$ 24.01	19.5	\$ 522	\$ 26.81
2019	4	HYDRO	76,671	\$ 1,901,398	\$ 24.80	121.2	\$ 3,419	\$ 28.22
2019	4	CARBON FREE	70	\$ 1,350	\$ 19.28	0.0	\$ -	
2019	4	LEC	229	\$ 9,604	\$ 41.94	0.0	\$ -	
2019	4	LFGAS/BGAS	16,788	\$ 418,671	\$ 24.94	23.7	\$ 759	\$ 32.04
2019	4	SMALL GAS	1,381	\$ 43,785	\$ 31.70	0.0	\$ -	
2019	4	SOLAR	26,082	\$ 408,821	\$ 15.67	95.3	\$ 2,405	\$ 25.23
2019	4	WAPA	110,087	\$ 3,125,596	\$ 28.39	38.0	\$ 1,048	\$ 27.57
2019	4	WIND	9,424	\$ 222,991	\$ 23.66	9.0	\$ 239	\$ 26.54
			=====	=====	=====	=====	=====	=====
Load Load Resource Balance (-) Long (+) Short:			-76,013	\$ (2,041,447)	\$ 26.86	5.1	\$ 63	

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 July 2019:
 - Monthly System Resource Adequacy Demonstration (filed May 17, 2019)
 - Monthly Supply Plan (filed May 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:

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 and replacing 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.
- NCPA is skeptical that all these changes are required and will be less complicated than the current RA program. NCPA is also concerned that these proposals will not address CAISO's stated issues of lack of RA showing above 115% and import unavailability due to Must Offer Obligations discouraging the former and lack of bid caps enabling the latter. NCPA will focus on working with CAISO to convince them that a Load Following MSS has sufficient incentive to meet demand with sufficient supply in real time due to the LFMSS Dispatch Operating Point Deviation penalty and therefore be exempt from such requirements. CAISO proposes to release changes for 2022 RA Year.

Day-Ahead Market Enhancements

- The Day-Ahead Market Enhancements (DAME) initiative was scaled down to Phase 2 being that Phase 1 (15-minute granularity) is currently infeasible and has been deferred. This is a serious blow to the Extending Day Ahead Market to Energy Imbalance Market initiative but those feasibility tests are still ongoing.
- DAME Phase 2 will address uncertainty issues associated forecast errors from Day Ahead to Real Time by introducing a Day Ahead Flexible Ramping Product. Units will be forced to bid FRP in at \$0 so costs and revenues associated with the product should be minimal. The CAISO also proposes to re-optimize Ancillary Services in

the RTM in order to address undeliverable capacity. These features should be released in 2021.

- NCPA is generally in support of the proposals but is concerned that the timelines are too aggressive for such major overhauls and expressed such concerns in stakeholder comments.

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 determinant consisting of volumetric and peak demand functions in order to address cost 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.

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)	Restoration Fund (\$)	Monthly Cost of BR ² (\$/MWh)	CAISO LMP Differential ³ (\$/MWh)	12-Mo Rolling Avg. Cost of BR ⁴ (\$/MWh)
Jul-18	82,704	81,285	(1,419)	\$1,516,215	\$ 18.65	\$ 0.52	\$ 29.90
Aug-18	69,979	47,727	(22,252)	\$1,516,215	\$ 31.77	\$ (0.76)	\$ 30.07
Sep-18	59,937	28,828	(31,109)	\$2,124,730	\$ 73.70	\$ 0.03	\$ 32.14
Oct-18	57,294	23,113	(34,181)	\$1,170,723	\$ 50.65	\$ 0.16	\$ 33.95
Nov-18	29,042	13,824	(15,218)	\$1,170,723	\$ 84.69	\$ 0.18	\$ 35.33
Dec-18	16,349	960	(15,389)	\$1,170,723	\$ 1,219.50	\$ 0.34	\$ 37.64
Jan-19	20,572	-	(20,572)	\$562,206	\$ 27.33	\$ -	\$ 36.37
Feb-19	37,432	7,063	(30,369)	\$995,254	\$ 140.91	\$ 0.05	\$ 37.73
Mar-19	56,569	101,222	44,653	\$1,170,720	\$ 11.57	\$ 0.04	\$ 31.97
Apr-19	61,300	110,510	49,210	\$2,134,816	\$ 19.32	\$ 1.25	\$ 28.75
May-19	86,402	-	0	\$2,134,816	\$ 24.71	\$ -	\$ 29.32
Jun-19	83,927	-	0	\$2,134,816	\$ 25.44	\$ -	\$ 29.98

1/ As forecasted in NCPA 18/19 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 had 110,510 MWh Base Resource (BR) energy in April 2019. This is the second highest volume of total Base Resource deliveries since January 2013.
- Market Efficiency Enhancement Agreement (MEEA) pricing saved Pool Members approximately \$130,000 in April 2019. In addition, the Displacement Program saved Pool Members approximately \$35,000, for a total savings of about \$165,000 combined for the two programs.

Western Base Resource Scheduling Flexibility

- WAPA and BOR conducted a survey on Base Resource Minimum Take ideas for customer feedback. Customers generally expressed interest in pursuing the experiments proposed. WAPA and BOR implemented the first two experiments beginning operating date February 28, 2019 so customers can benefit from the increased scheduling flexibility at the soonest. WAPA shared experiment results of approximately \$3.4 Million potential savings from the rescheduled 80,770 MWh, for BR customers through April 23, 2019. WAPA will continue to provide updates during the monthly Hydropower Operations Committee (HPOC) meetings.

Interconnection Affairs

PG&E Update

Public Safety Power Shut Off (PSPS) Program

- PG&E attended our April UD meeting and provided an update to their PSPS program. The main takeaway from this meeting was PG&E will be shutting off at the Tx level this year during high wind high humidity conditions.
- Members requested that PG&E provide wildfire preparedness material/literature the same as they do for their customers.
- PG&E was requested to draft a PSPS communication protocol document for NCPA members. NCPA pitched the idea of having a Public Utility contact in their wildfire Incident Command system. PG&E has since then notified NCPA they will likely send notification through ISO channels.
- In the event NCPA dispatch is contacted first; NCPA dispatch has a member contact list for notifications. NCPA will send out this list for members to double check their listed contacts and update as necessary.
- PG&E mentioned they will be performing PSPS drill. NCPA encouraged that a representative from each member participate in the drill. More information will be sent to members as soon as it is received.

Load Interconnection Agreement

- Since mid-2018 NCPA has held a Monthly Check-In Meeting with the PG&E contracts team. This is a very informal meeting where follow-up is done on NCPA and pending member items.
- Members are welcome to attend this meeting if they would like to discuss any topics. The meetings are normally on the third Thursday of every month.

FERC Order 890 Case

- Although the ruling of this case was not in NCPA's favor, FERC suggested and PG&E has agreed to put in place a stakeholder process for projects which PG&E self approves and does not go through ISO's Transmission Planning Process. PG&E calls their process the Transmission Asset Management Planning Process (TAMPP). This process is its design stage right now, NCPA and the joint interveners continue to have meetings and talks with PG&E to make the process available as soon as possible. The next meeting with PG&E regarding this topic is scheduled for May 15th.
- During the TAMPP to a certain extent NCPA might be able to influence member specific projects. If a member has a project, modification, or upgrade in mind that can potentially benefit their system, please let the Power Management Team know.

TO-20 Rate Case

- This case is currently in settlement discussions. PG&E is asking for a return of equity (ROE) 12.5%, stating wildfire mitigation cost for this increase. Typically the ROE is somewhere in the low 9 percent range.
- SCE is asking for 11.5% ROE in its 2018 rate case and SDG&E is asking for 11.2% in their TO-5 rate case. SCE in their new filing for their 2019 rate is asking for 17.12% ROE, the justification again is wildfire cost and mitigation. The main issue here is if any one utility is allowed a higher ROE it sets the precedence for other utilities. NCPA is actively monitoring and considering a more active role in SCE's rate case.

Cotenancy Agreement

- As a result of CDWR's intent to terminate its ownership share in the Cotenancy Agreement, PG&E will provide a draft amended Agreement for all parties to review.
- NCPA will evaluate taking a pro-rata share of CDWR's entitlement or other avenues to maintain full deliverability of Geo Plants while terminating NCPA's and SVP's share of the Cotenancy lines.

Debt and Financial Management

- At the April/May meeting, the Federal Reserve (Fed) left rates unchanged at 2.25% to 2.50%. The latest economic data has indicated some recovery in jobs and retail sales growth, while the unemployment rate remains low, as well. Plus, GDP grew 3.2% in the first quarter, exceeding expert economists' predictions of 2.5%. This data supports the Fed's outlook for a growing economy and its decision to keep interest rates unchanged. Policymakers continued to signal that the Fed will be patient with monetary policy moving forward.
- While policy remains on hold for now, economist Tim Duy has indicated that weak inflation numbers should still push the Fed to cut rates before the end of the year – "If the Fed is serious about the inflation target, then the odds favor a rate cut over a rate hike," he writes. Given Powell's reassurance of the Fed's strong commitment to its inflation goal, a rate cut could certainly be in the near future.
- Following the Federal Reserve's comments, yields rose with the 10-year Treasury note moving five basis points higher at 2.55%, while the yield on the 30-year Treasury bond was up at 2.94%.
- On April 30th, NCPA terminated the 2008B Hydroelectric interest rate swap with Citi and received a termination payment of \$169,400. Staff used these funds in addition to funds already collected from the project participants and restricted funds released by the Trustee to redeem the \$910,000 of the remaining 2008B bonds.

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. Business Analysis and software development is underway in preparation for a market simulation as early as July 2019 and is anticipated to go live in early 2020.
- Configuration of the various bid-to-bill software for EBCE is underway to meet the start date of June 1, 2019
- Santa Clara's new RIOB SCID is being configured for testing and rollout mid-June 2019.
- Work continues to develop the replacement for the NCPA Automated Dispatch System. Completion is anticipated middle of next year.

Network

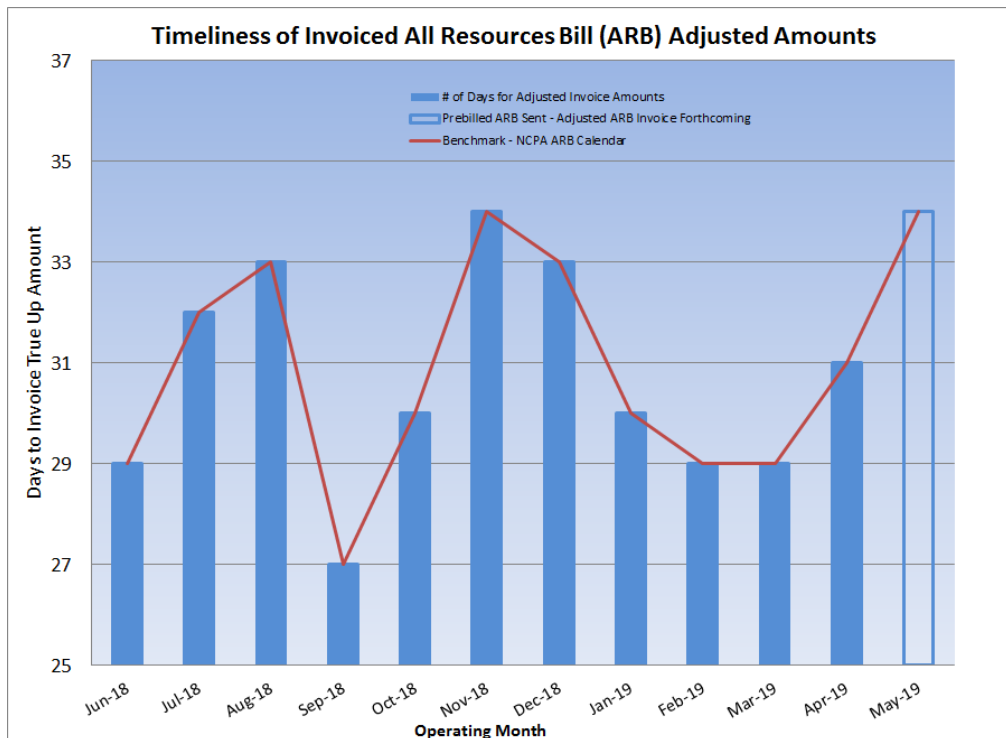
- Progress continues to be made upgrading staff to Windows 10 with over 55% of the Agency on the new Operating System. The goal is to have all workstations moved over before the end of 2020.
- IS successfully upgraded the T1 circuit at Gridley solar as part of a larger project to enhance the reliability of the ECN circuits. Currently working with the CTs to update Lodi CT this May.
- The Ops and Support team recently brought on Jeremiah Wiltron as our new SCADA Engineer to help provide ongoing support and expansion of the dispatch control center's telemetry.
- The IS department is working with Collabware to implement a records retention workflow strategy that will be incorporated into the Agency's SharePoint implementation. Software installation is expected in May 2019 with testing starting shortly thereafter.
- The Ops and Support team are currently evaluating Fortinet firewalls as a potential replacement for the end of life Cisco ASA security access points. It is anticipated that a decision will be made in the next few weeks and purchase to be made before the end of the fiscal year.

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 May 2019 NCPA All Resources Bill (ARB) monthly invoice sent to members on April 23, 2019 contains:

- May 2019 monthly pre-billed budget/forecast amounts;
- March 2019 (1st Adjustment) NCPA Project and CAISO Initial settlement true-ups;
- February 2019 (2nd Adjustment) NCPA Project settlement true-up and T+12 business day recalculated CAISO settlement true-up allocations;
- December 2018 (3rd Adjustment) T+55 business day recalculated CAISO settlement true-up allocations and NCPA Projects true-up;
- June 2018 (4th Adjustment) T+9 month recalculated CAISO settlement true-up allocations;
- August 2017 (5th Adjustment) T+18 month recalculated CAISO settlement true-up allocations;
- May 2016 (6th Adjustment) T+33 month recalculated CAISO settlement true-up;
- February 2016 (7th Adjustment) T+35 month CAISO settlement true-up;



Legislative & Regulatory

Political Arena State/Federal/Western Programs

- The Legislative and Regulatory Affairs team is reviewing responses to a competitive solicitation released on April 19th seeking Wildfire Mitigation Plan Technical Advisory and/or Independent Evaluation Services. Selected respondents will be notified on May 20th.
- NCPA continues to engage in discussions at the State Capitol on key legislation as bills work through fiscal committees in their house of origin and move on to their second house. The Governor released his “May Revision” to his proposed State budget released in January. The Senate and Assembly are now working through budget subcommittee processes to develop a legislative budget package for the Governor’s signature. By statutory requirement, the budget must be passed by midnight on June 15th; the approved budget will be for the 2019-20 State fiscal year and will go into effect on July 1, 2019.
- NCPA is closely monitoring the activity of the Commission on Catastrophic Wildfire Cost and Recovery in anticipation of the Commission’s release of draft recommendations in late May. At the end of April, NCPA responded to the Commission’s request for public comments by submitting a joint comment filing with the California Municipal Utilities Association, Southern California Public Power Authority, and Golden State Power Cooperative.
- There were several key developments on the Federal power program last month. On April 12, 2019, NCPA submitted its final comments on the Bureau of Reclamation’s Central Valley Project Cost Allocation Study. As drafted, the study yields a \$32 million reduction to CVP preference powers’ share of the joint CVP costs, despite our objections that Reclamation overstated power benefits, improperly excluded Central Valley Project Improvement Act (CVPIA) costs, and may unfairly apply results to a portion of the CVP joint costs.
- While Reclamation did not approve this year’s \$10 million CVPIA credit (Crossoffsets), in late April Reclamation reduced this year’s Restoration Fund obligation by \$8 million. Attaining equitable cost allocation for both the Cost Allocation Study and CVPIA were key topics during our April Federal Policy Conference and meeting with the Department of Interior’s Principal Assistant Deputy Secretary Kiel Weaver.
- We continued our efforts on the CVP Power Initiative to improve the value of the CVP resource; we sought protections from the State’s now defunct twin tunnels project and will monitor as planning begins for a new one-tunnel conveyance option, and we commented on environmental actions related to CVP operations.

Human Resources

Hires:

Jeremiah Wiltron joined NCPA on April 22, 2019 as a Computer Technology Analyst III at our Headquarters Facility in Roseville, CA. Jeremiah brings with him eight years of engineering experience and recently worked at PG&E as a SCADA specialist in their Electric Ops SCADA division. Jeremiah has a Bachelor of Science degree in Mechanical Engineering, is currently working through his Masters in Engineering Management and is a Civil Engineering Officer in the US Air Force Reserve.

John Tangermann joined NCPA on April 24, 2019 as Storekeeper III at our Geothermal Facilities in Middletown, CA. John brings over 17 years of warehouse and operational experience having most recently worked as a Manager of Network Services with AT&T.

Intern Hires:

None.

Promotions/Position Changes:

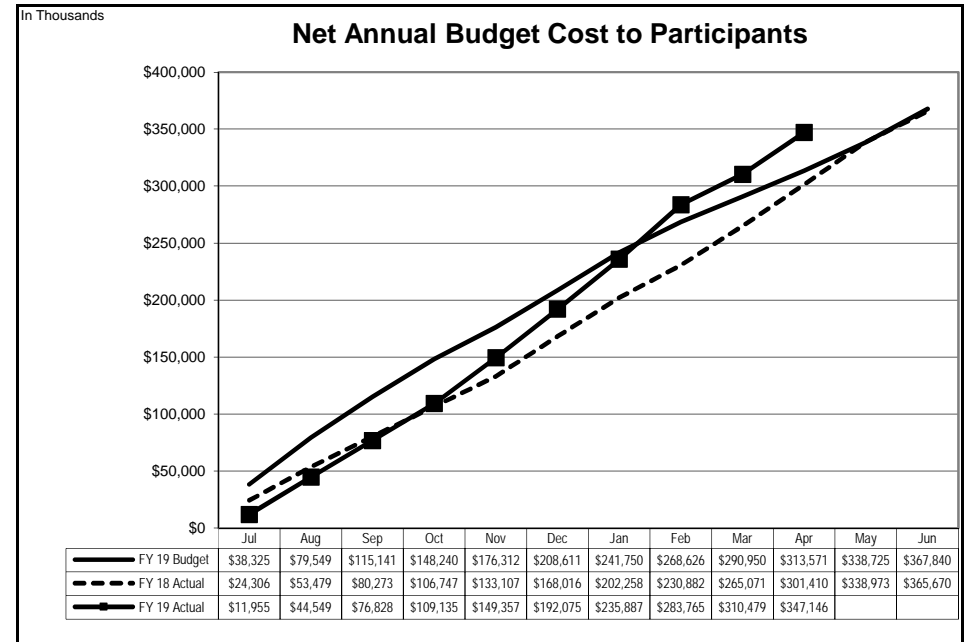
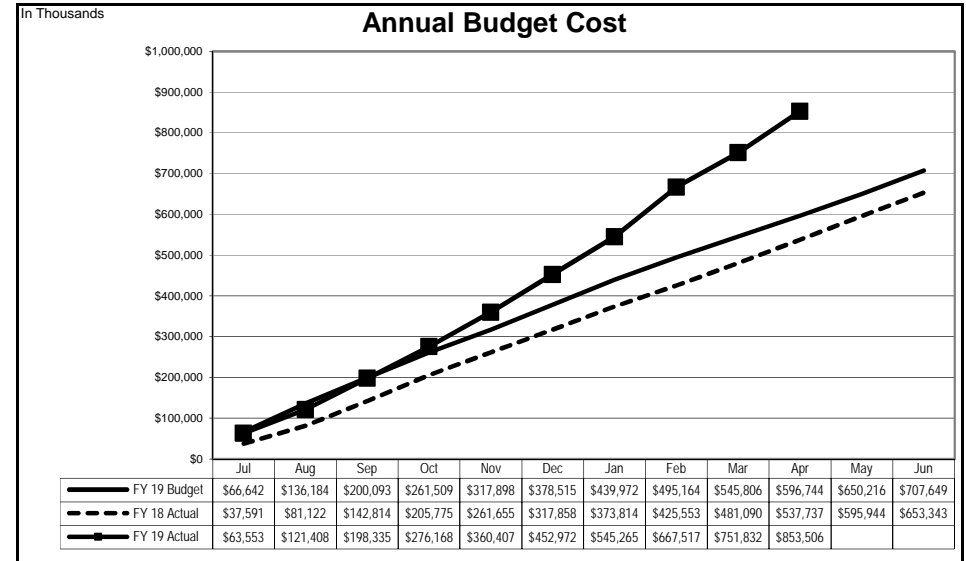
None.

Separations:

Mike Ropp, a CT Specialist V, retired from the Lodi Energy Center on May 2, 2019 after over 18 years of service with NCPA.

Annual Budget 2018-2019 Fiscal Year To Date As of April 30, 2019

In Thousands	Program			
	Annual Budget	Actual	Under(Ovr) Budget	YTD % Remaining
GENERATION RESOURCES				
NCPA Plants				
Hydroelectric	51,857	42,166	\$ 9,691	19%
Geothermal Plant	34,425	29,077	5,349	16%
Combustion Turbine No. 1	8,106	7,231	874	11%
Combustion Turbine No. 2 (STIG)	8,743	7,954	789	9%
Lodi Energy Center	83,717	86,551	(2,834)	-3%
Member Resources - Energy	186,847	172,979	13,868	7%
Member Resources - Natural Gas	64,449	47,975	16,474	26%
Western Resource	3,098	3,614	(516)	-17%
Market Power Purchases	31,350	18,152	13,198	42%
Load Aggregation Costs - ISO *	15,539	20,175	(4,636)	-30%
Net GHG Obligations	273,858	468,122	(194,264)	-71%
	1,123	2,124	(1,001)	-89%
	576,264	733,140	(156,876)	-27%
TRANSMISSION				
Independent System Operator	112,822	106,374	6,448	6%
MANAGEMENT SERVICES				
Legislative & Regulatory				
Legislative Representation	2,023	1,635	388	19%
Regulatory Representation	887	514	372	42%
Western Representation	848	543	305	36%
Member Services	438	187	252	57%
	4,196	2,879	1,317	31%
Judicial Action	625	558	67	11%
Power Management				
System Control & Load Dispatch	6,107	4,759	1,348	22%
Forecasting & Prescheduling	2,775	2,087	688	25%
Industry Restructuring	439	293	146	33%
Contract Admin, Interconnection Svcs & Ext. Affairs	1,135	687	448	39%
Green Power Project	3	0	3	91%
Gas Purchase Program	78	52	25	33%
Market Purchase Project	112	69	43	38%
	10,649	7,948	2,701	25%
Energy Risk Management	260	169	90	35%
Settlements	941	447	495	53%
Integrated System Support	273	155	118	43%
Participant Pass Through Costs	1,619	1,088	531	33%
Support Services	-	749	(749)	
	18,563	13,992	4,571	25%
TOTAL ANNUAL BUDGET COST	707,649	853,506	(145,857)	-21%
LESS: THIRD PARTY REVENUE				
Plant ISO Energy Sales	100,456	144,504	(44,048)	-44%
Member Resource ISO Energy Sales	28,187	32,300	(4,113)	-15%
NCPA Contracts ISO Energy Sales	14,720	23,389	(8,669)	-59%
Western Resource ISO Energy Sales	23,183	20,266	2,916	13%
Load Aggregation Energy Sales	131,329	260,213	(128,885)	-98%
Ancillary Services Sales	4,409	4,537	(128)	-3%
Transmission Sales	110	92	18	17%
Western Credits, Interest & Other Income	37,414	21,059	16,356	44%
	339,808	506,360	(166,551)	-49%
NET ANNUAL BUDGET COST TO PARTICIPANTS	367,840	347,146	\$ 20,694	6%

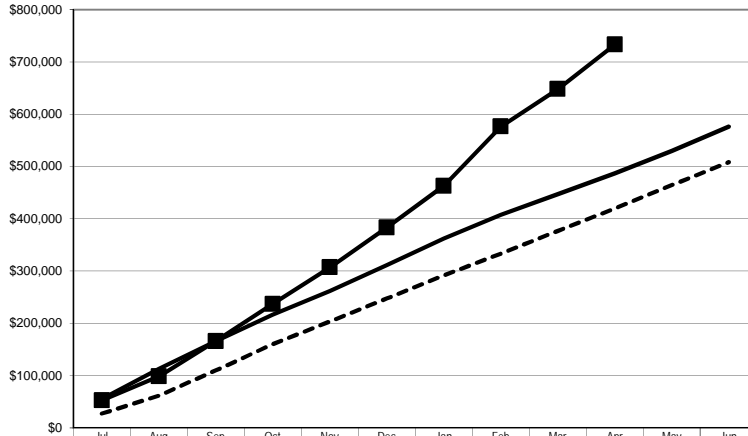


* Load Aggregation Costs - ISO adjusted to include year to date customer ISO Load Aggregation Costs (non-budgeted). Costs of \$76 million were incurred during the months of July 2018 through January 2019.

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

In Thousands

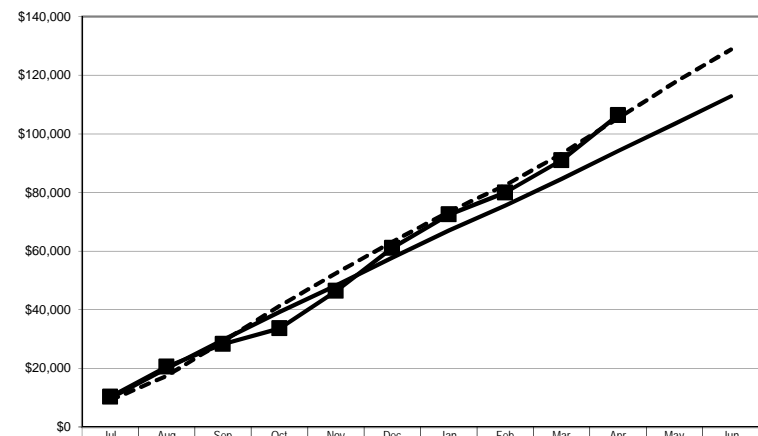
Generation Resources



FY 19 Budget	\$55,270	\$113,084	\$165,773	\$216,177	\$261,937	\$311,494	\$362,100	\$407,288	\$447,265	\$487,091	\$529,877	\$576,264
FY 18 Actual	\$27,457	\$61,486	\$110,071	\$159,932	\$203,497	\$247,442	\$291,750	\$333,238	\$376,666	\$419,645	\$464,289	\$508,257
FY 19 Actual	\$52,459	\$98,414	\$166,029	\$237,122	\$307,103	\$383,425	\$462,967	\$576,569	\$648,144	\$733,140		

In Thousands

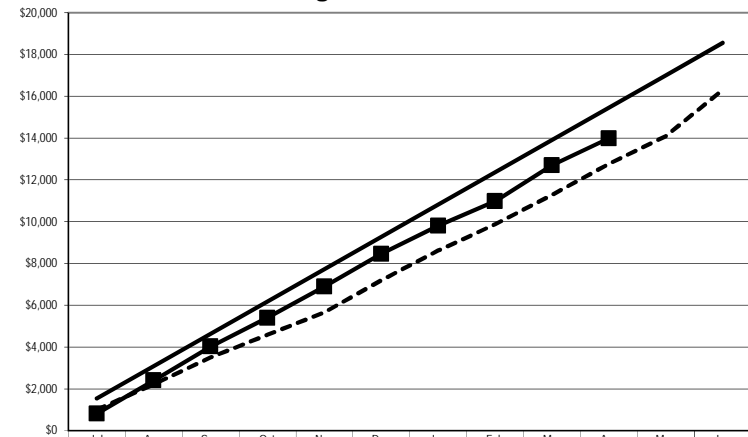
Transmission-ISO



FY 19 Budget	\$9,825	\$20,006	\$29,679	\$39,145	\$48,226	\$57,739	\$67,044	\$75,501	\$84,619	\$94,184	\$103,323	\$112,822
FY 18 Actual	\$9,126	\$17,413	\$29,207	\$41,243	\$52,490	\$63,218	\$73,436	\$82,442	\$93,137	\$105,326	\$117,555	\$128,774
FY 19 Actual	\$10,278	\$20,580	\$28,273	\$33,646	\$46,400	\$61,084	\$72,491	\$79,965	\$90,983	\$106,374		

In Thousands

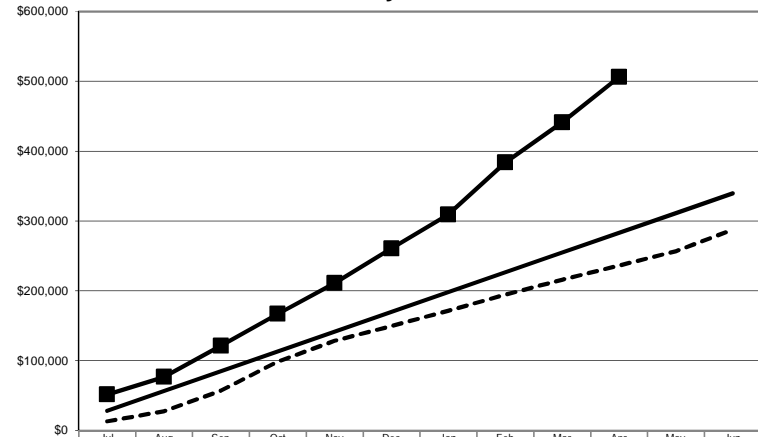
Management Services



FY 19 Budget	\$1,547	\$3,094	\$4,641	\$6,188	\$7,735	\$9,282	\$10,828	\$12,375	\$13,922	\$15,469	\$17,016	\$18,563
FY 18 Actual	\$1,008	\$2,223	\$3,516	\$4,600	\$5,667	\$7,198	\$8,628	\$9,873	\$11,287	\$12,766	\$14,100	\$16,311
FY 19 Actual	\$816	\$2,414	\$4,033	\$5,400	\$6,904	\$8,463	\$9,807	\$10,983	\$12,706	\$13,992		

In Thousands

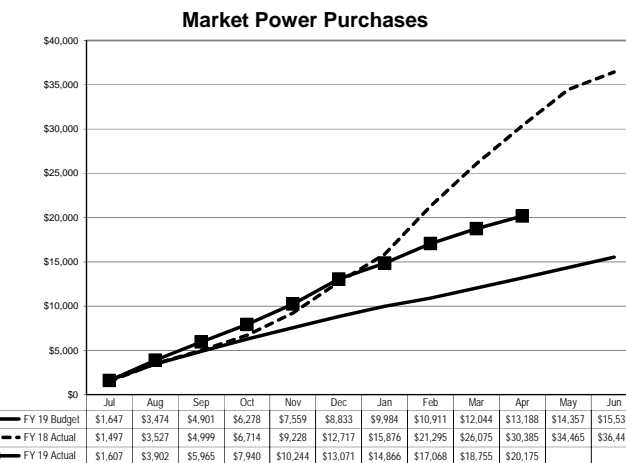
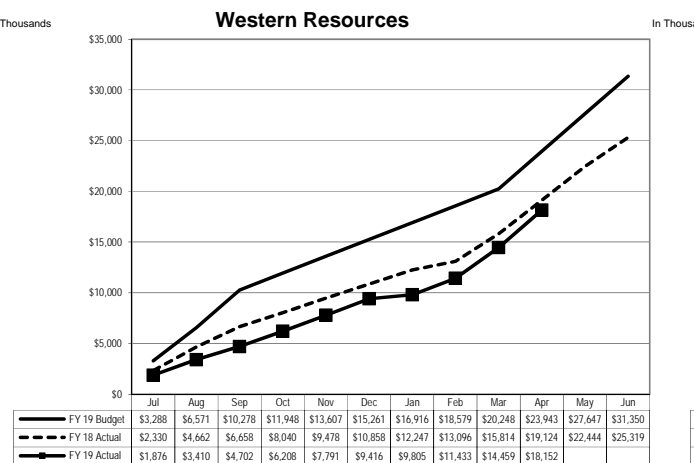
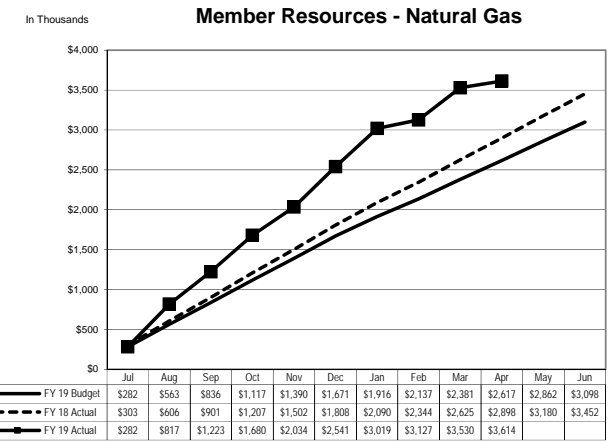
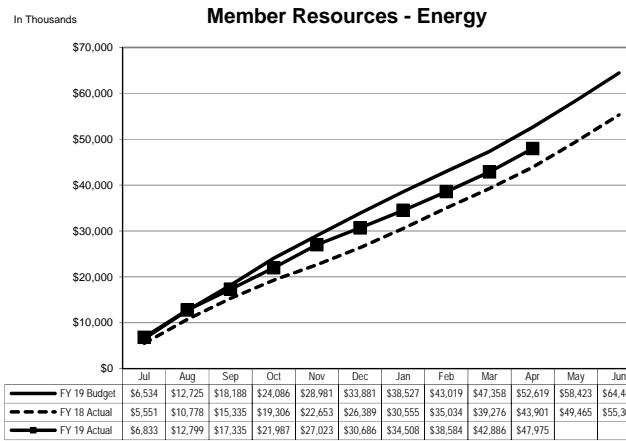
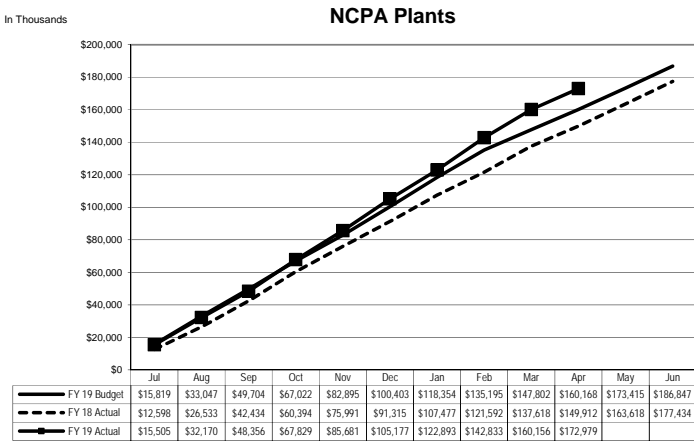
Third Party Revenue



FY 19 Budget	\$28,317	\$56,635	\$84,952	\$113,269	\$141,587	\$169,904	\$198,221	\$226,539	\$254,856	\$283,173	\$311,491	\$339,808
FY 18 Actual	\$13,285	\$27,643	\$57,380	\$99,028	\$128,548	\$149,842	\$171,556	\$194,671	\$216,019	\$236,327	\$256,971	\$287,673
FY 19 Actual	\$51,598	\$76,859	\$121,507	\$167,033	\$211,049	\$260,897	\$309,378	\$383,752	\$441,354	\$506,360		

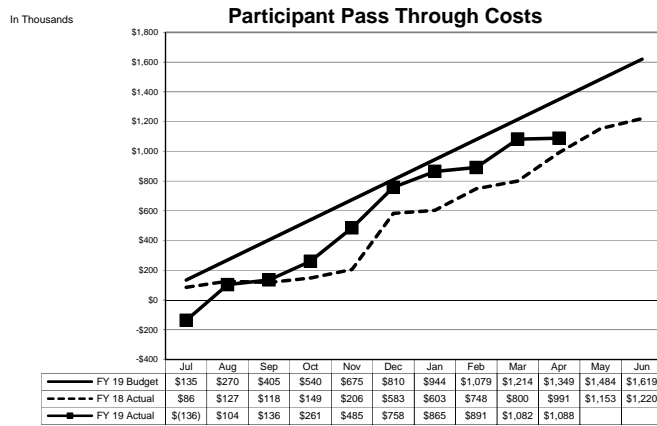
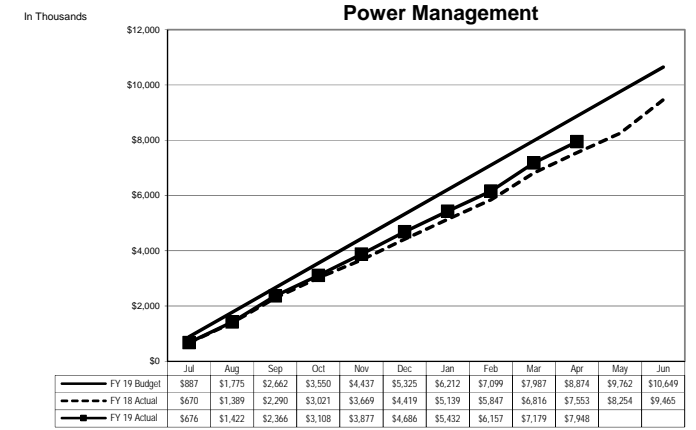
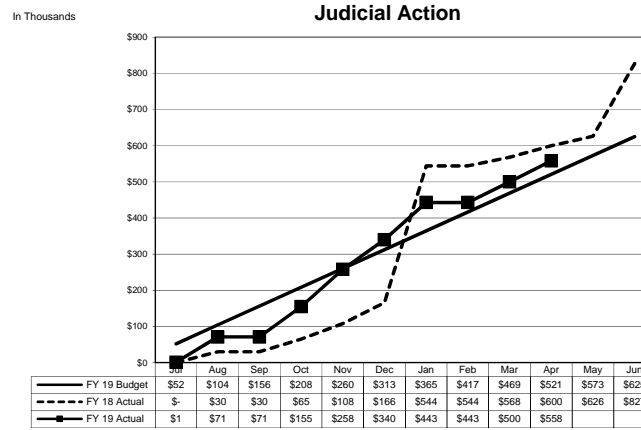
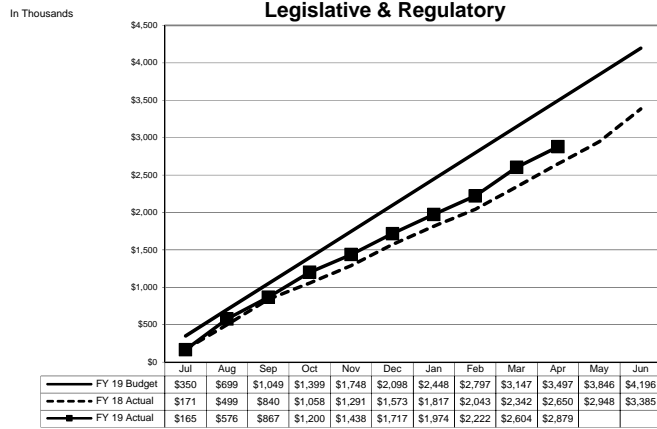
Footnote: Transmission is solely reflective of Independent System Operator (ISO) costs

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

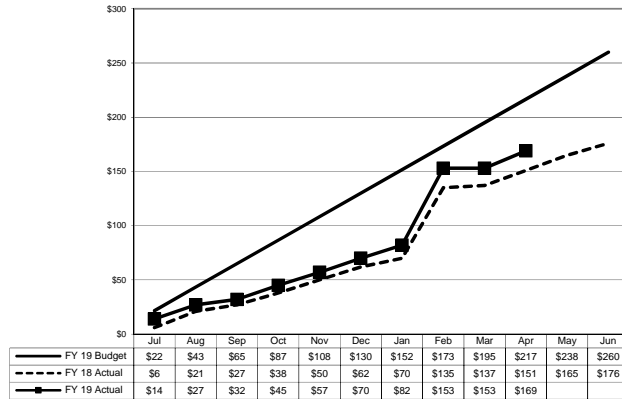


**Annual Budget Cost
Management Services Analysis By Source
As of April 30, 2019**

In Thousands

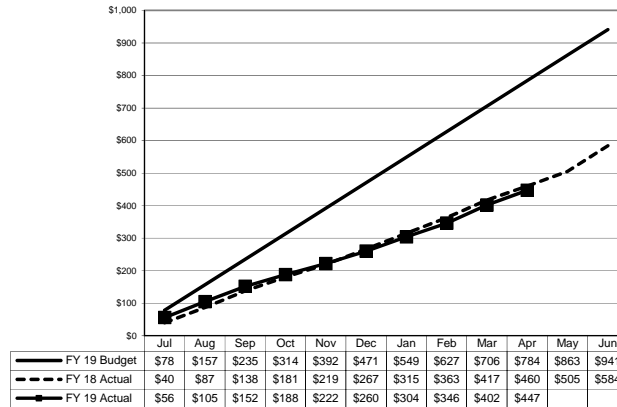
Energy Risk Management

In Thousands

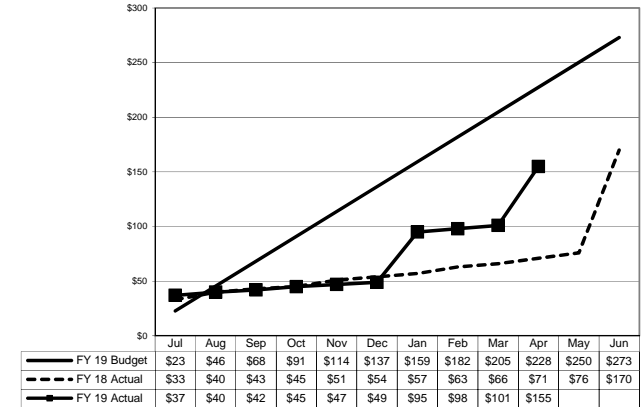


Settlements

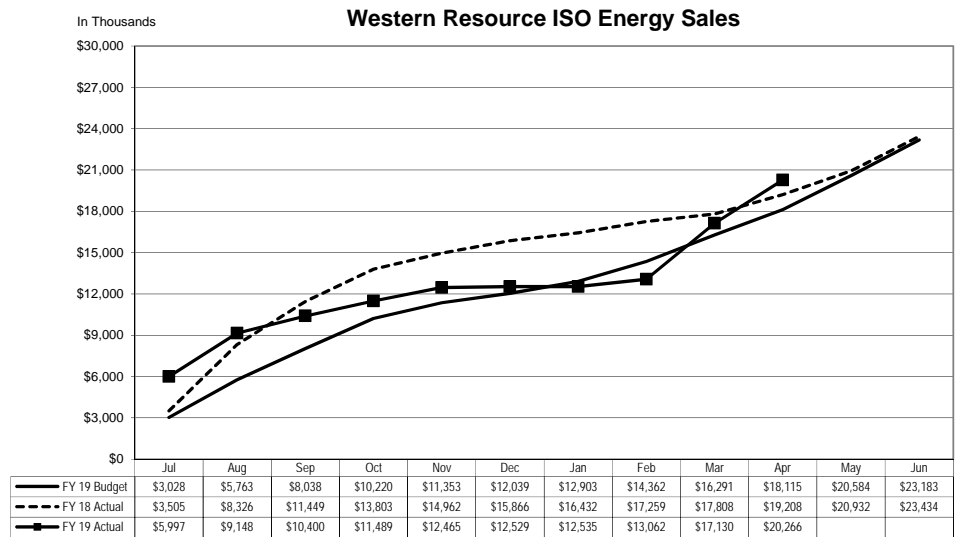
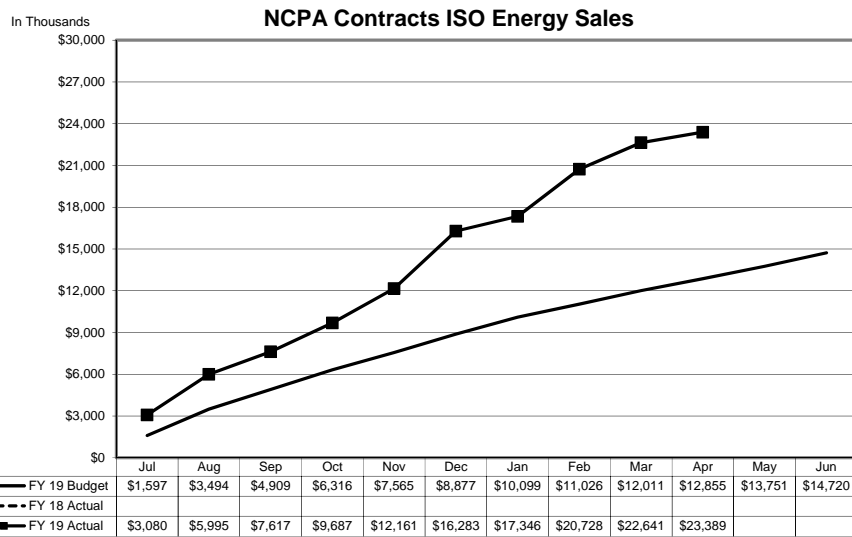
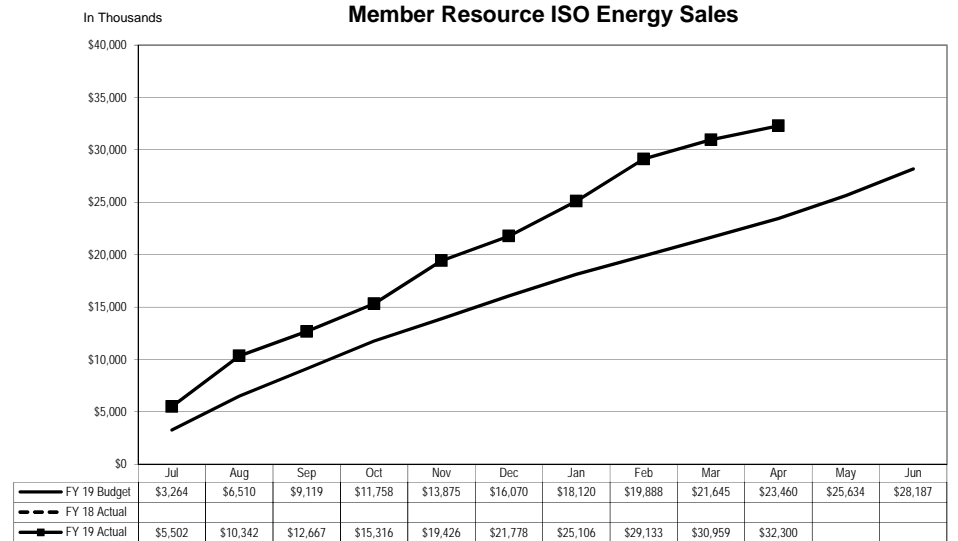
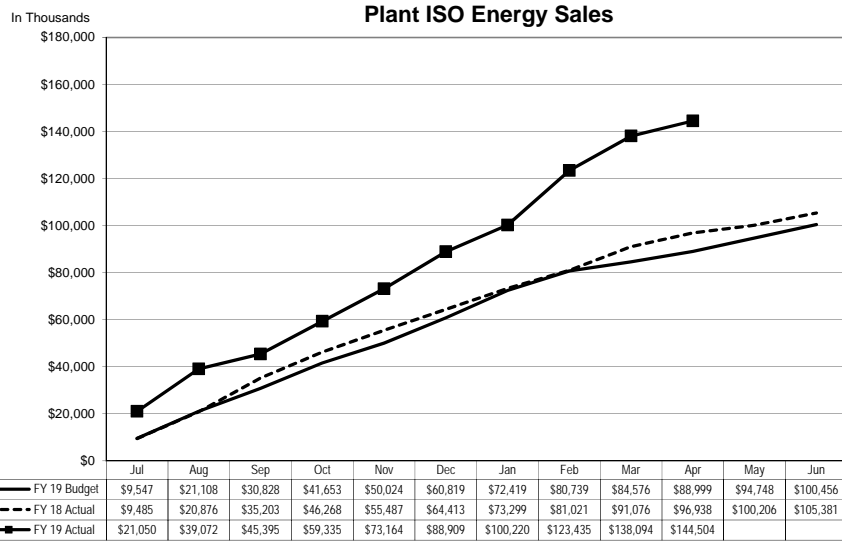
In Thousands



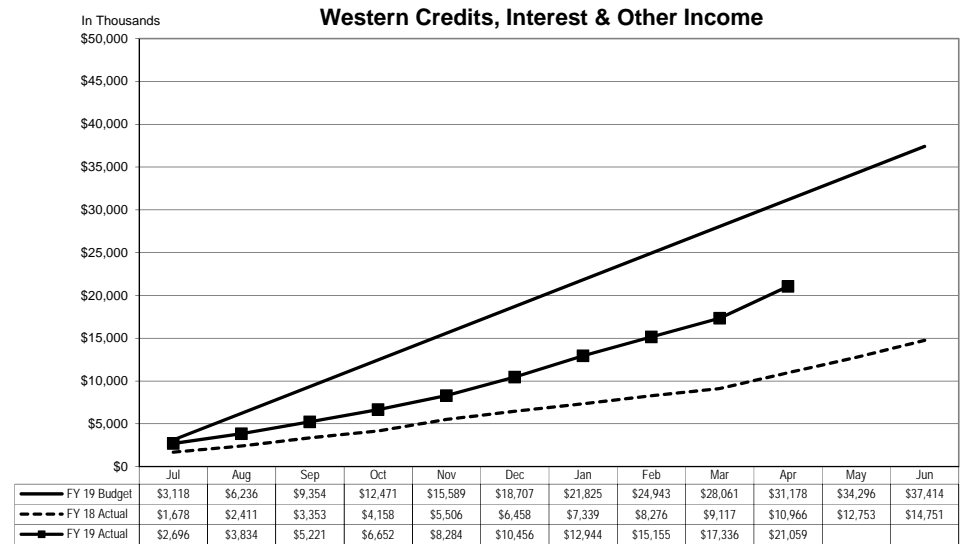
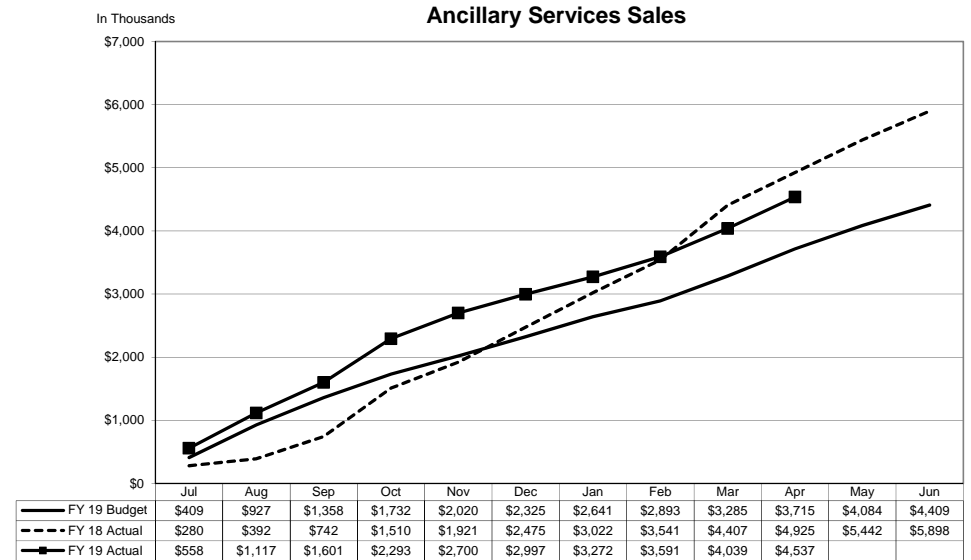
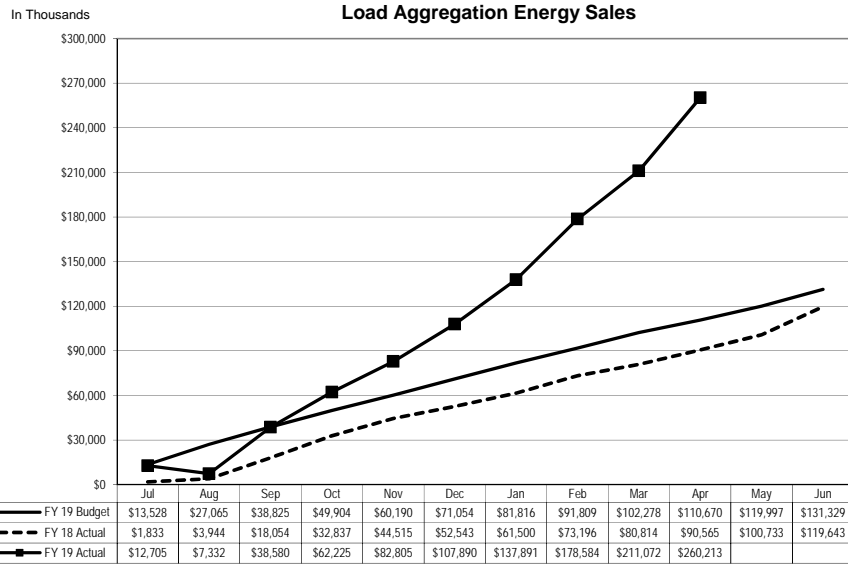
Integrated Systems Support



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



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



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

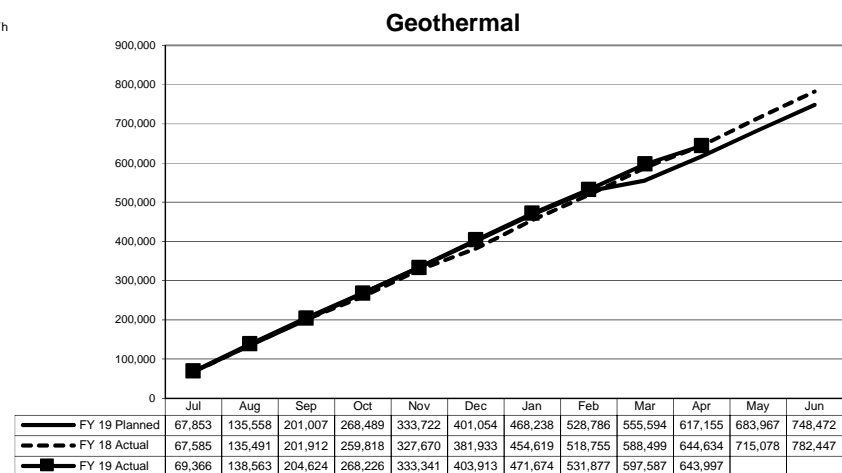
Generation Cost Analysis

\$ in thousands

	Geothermal				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 17,793	\$ 14,988	\$ 23.27	\$ 2,805	16%
Capital Assets/Spare Parts Inventories	3,267	3,172	4.93	95	3%
Other Costs	8,137	5,984	9.29	2,154	26%
CA ISO Charges	291	819	1.27	(528)	-181%
Debt Service	4,937	4,114	6.39	823	17%
Annual Budget	34,425	29,077	45.15	5,349	16%
Less: Third Party Revenue					
Interest Income	382	341	0.53	42	11%
ISO Energy Sales	26,285	31,497	48.91	(5,212)	-20%
Ancillary Services Sales	-	-	-	-	-
Effluent Revenues	700	1,383	2.15	(683)	-98%
Misc	110	94	0.15	16	15%
	27,477	33,315	51.73	(5,837)	-21%
Net Annual Budget Cost to Participants	\$ 6,948	\$ (4,238)	\$ (6.58)	\$ 11,186	161%
Net Generation--MWh @ Meter	748,472	643,997			
\$/MWh (A)	\$ 2.69	\$ (12.97)			

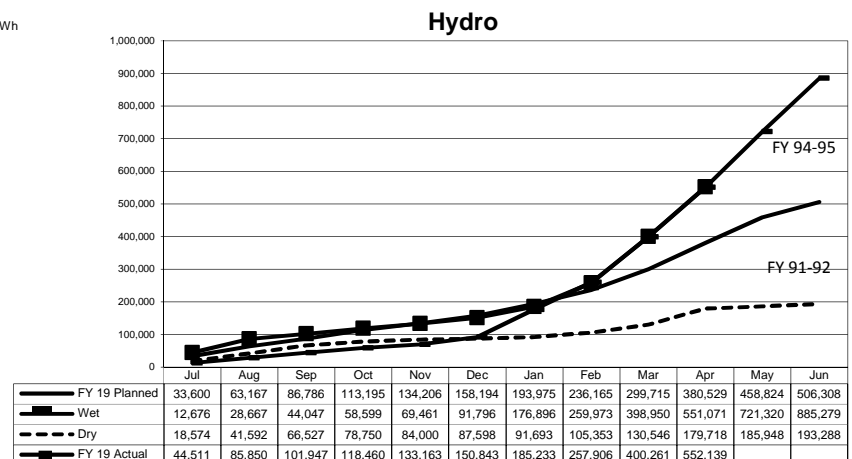
MWhs Generated

In MWh



	Hydroelectric				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 8,685	\$ 6,519	\$ 11.81	\$ 2,166	25%
Capital Assets/Spare Parts Inventories	1,975	1,269	2.30	706	36%
Other Costs	3,238	2,238	4.05	1,000	31%
CA ISO Charges	2,801	3,321	6.01	(520)	-19%
Debt Service	35,157	28,819	52.20	6,338	18%
Annual Budget	51,857	42,166	76.37	9,691	19%
Less: Third Party Revenue					
Interest Income	670	433	0.78	237	35%
ISO Energy Sales	20,783	33,537	60.74	(12,754)	-61%
Ancillary Services Sales	3,048	2,036	3.69	1,012	33%
Misc	-	1	0.00	(1)	-47%
	24,501	36,006	65.21	(11,506)	
Net Annual Budget Cost to Participants	\$ 27,356	\$ 6,160	\$ 11.16	\$ 21,196	
Net Generation--MWh @ Meter	506,308	552,139			
\$/MWh (A)	\$ (15.41)	\$ (41.04)			

In MWh



Footnotes:

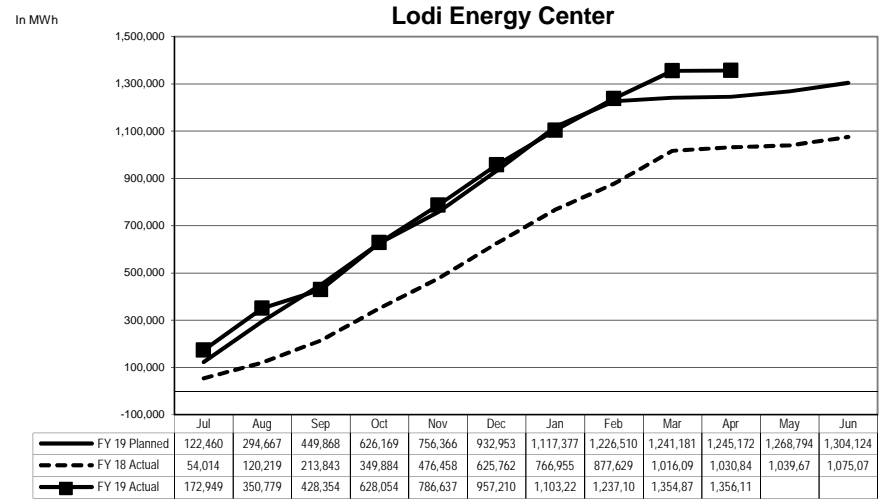
(A) Aggregate fiscal year generation in \$/MWh (excluding debt service)

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

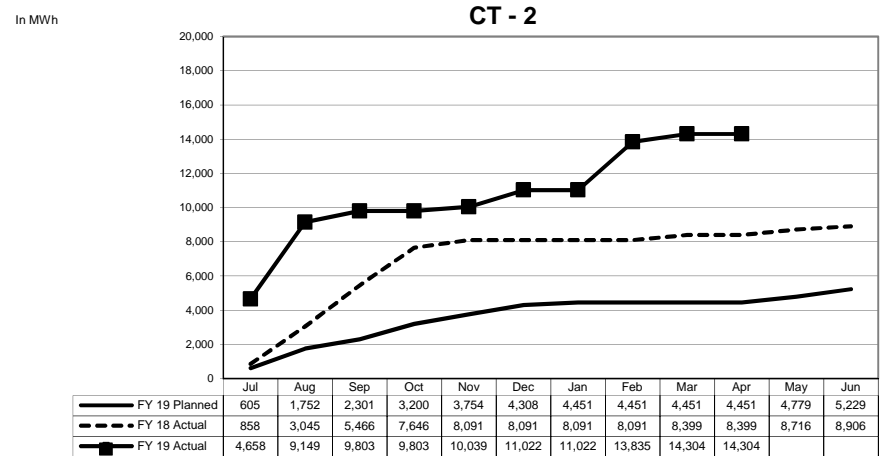
Generation Cost Analysis

	Lodi Energy Center				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 13,965	\$ 10,931	\$ 8.06	\$ 3,034	22%
Fuel	33,092	44,933	33.13	(11,841)	-36%
AB 32 GHG Offset	-	-	-	-	0%
CA ISO Charges and Energy Purchases	5,665	5,101	3.76	563	10%
Capital Assets/Spare Parts Inventories	1,613	1,259	0.93	354	22%
Other Costs	3,302	2,594	1.91	708	21%
Debt Service	26,080	21,733	16.03	4,347	17%
Annual Budget	83,717	86,551	63.82	(2,834)	-3%
Less: Third Party Revenue					
Interest Income	386	572	0.42	(186)	-48%
ISO Energy Sales	52,415	75,535	55.70	(23,120)	-44%
Ancillary Services Sales	1,029	1,539	1.13	(510)	-50%
Transfer Gas Credit	-	-	-	-	0%
Misc	-	2	0.00	(2)	0%
	53,829	77,647	57.26	(23,818)	-44%
Net Annual Budget Cost to Participants	\$ 29,887	\$ 8,904	\$ 6.57	\$ 20,983	70%
Net Generation--MWh @ Meter	1,304,124	1,356,118			
\$/MWh (A)	\$ 2.92	\$ (9.46)			

MWhs Generated



	Combustion Turbine No. 2 (STIG)				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 1,481	\$ 1,195	\$ 83.55	\$ 285	19%
Fuel and Pipeline Transport Charges	977	1,473	102.97	(495)	-51%
Capital Assets/Spare Parts Inventories	60	31	2.15	29	49%
Other Costs	506	345	24.11	161	32%
CA ISO Charges	2	147	10.25	(145)	-7141%
Debt Service	5,717	4,764	333.06	953	17%
Annual Budget	8,743	7,954	556.08	789	9%
Less: Third Party Revenue					
Interest Income	109	91	6.36	18	16%
ISO Energy Sales	401	2,080	145.45	(1,679)	-418%
Ancillary Service Sales	-	-	-	-	0%
Fuel and Pipeline Transport Credits	990	2,064	144.33	(1,074)	-109%
Misc	-	-	-	-	0%
	1,500	4,236	296.13	(2,736)	-182%
Net Annual Budget Cost to Participants	\$ 7,243	\$ 3,718	\$ 259.95	\$ 3,525	49%
Net Generation--MWh @ Meter	5,229	14,304			
\$/MWh (A)	\$ 291.87	\$ (73.10)			



Footnotes:

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

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

Generation Cost Analysis

	Combustion Turbine No. 1				
	Budget	Actual	\$/MWh Actual	Under(Over) Budget	YTD % Remaining
Routine O & M	\$ 1,560	\$ 2,059	\$ 202.76	\$ (499)	-32%
Fuel and Pipeline Transport Charges	497	1,154	113.62	(656)	-132%
Capital Assets/Spare Parts Inventories	5,465	3,147	309.98	2,318	42%
Other Costs	580	410	40.38	170	29%
CA ISO Charges	3	462	45.47	(459)	-15738%
Debt Service	-	-	-	-	-
Annual Budget	8,106	7,231	712.23	874	11%
Less: Third Party Revenue					
Interest Income	-	1		(1)	
ISO Energy Sales	572	1,855	182.69	(1,283)	-224%
Ancillary Services Sales	-	-	-	-	0%
Misc	-	16	1.54	(16)	0%
	572	1,871	184.24	(1,299)	-227%
Net Annual Budget Cost to Participants	\$ 7,533	\$ 5,360	\$ 527.92	\$ 2,173	29%
Net Generation--MWh @ Meter	7,533	10,153			
\$/MWh (A)	\$ 1,000.05	\$ 527.92			

Footnotes:

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

MWhs Generated

In MWh

CT - 1

