



Northern California Power Agency
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BUSINESS PROGRESS REPORT

2018

November



Table of Contents

| | |
|--|----|
| Generation Costs & Reliability | 1 |
| Environmental, Health & Safety Projects | 4 |
| Power Management/NCPA Market Results..... | 5 |
| Debt & Financial Management | 11 |
| Schedule Coordination Goals..... | 11 |
| NCPA Bills & Settlements..... | 13 |
| Political Arena State/Federal/Western Programs | 14 |
| Human Resources..... | 15 |
| Annual Budget FY to Date..... | 16 |
| Budget vs. Actual by Major Area | 17 |
| Generation Resources Analysis by Source | 18 |
| Management Services Analysis by Source | 19 |
| Third Party Revenue Analysis by Source | 21 |
| Generation Detail Analysis by Plant | 23 |

Generation Costs & Reliability

Combustion Turbine Project

Unit Operation for October 2018

| Unit | Availability | | Production | | Reason for Run |
|---|--------------|--------|-------------|---------|------------------------|
| CT1 Alameda | Unit 1 | Unit 2 | Unit 1 | 0.0 MWh | Out of Service / CAISO |
| | 0.0% | 95.4% | Unit 2 | 825.2 | |
| Curtailments, Outages, and Comments: | | | | | |
| <p>10/01/18 Alameda CT U1 o/s for compressor blade repair, ETR 11/6 OMS 6125777 10/12/18 Alameda CT U1 transmission induced outage 0630-0800 OMS 6489131, 6489152 10/12/18 Alameda CT U1 transmission induced outage 1600-1800 OMS 6540235, 6540242 10/19/18 Alameda CT U1 Transmission Induced Outage, 1430-1600 OMS 6541691 10/19/18 Alameda CT U1 Transmission Induced Outage, 1600-1800 OMS 6543451 / 10/01/18 Alameda CT U2 o/s due to intermittent comm trouble ETR 1200 on 10/02 OMS 6491853 10/12/18 Alameda CT U2 transmission induced outage 0630-0800 OMS 6489131, 6489152 10/12/18 Alameda CT U2 transmission induced outage 1600-1800 OMS 6540235, 6540242 10/19/18 Alameda CT U2 Transmission Induced Outage, 1430-1600 OMS 6541687 10/19/18 Alameda CT U2 Transmission Induced Outage, 1600-1754 OMS 6543470 10/27/18 Alameda Unit 2 o/s IGV trouble OMS 6595021, returned to service 10/31/18 Alameda CT U2 o/s for maintenance 0700-1023 OMS 6604048</p> | | | | | |
| Unit | Availability | | Production | | Reason for Run |
| CT1 Lodi | 82.1% | | 156.3 MWh | | 0 |
| Curtailments, Outages, and Comments: | | | | | |
| <p>10/15/18 Lodi CT Ratchet Clutch Issue Forced Out 1800, returned to service on 10/18/18 2359 OMS 6554247 10/21/18 Lodi CT Ratchet Clutch Issue Forced Out 1836, returned to service on 10/23/18 2000 OMS 6575055 10/26/18 Lodi CT borescope inspection OMS 6588392</p> | | | | | |
| Unit | Availability | | Production | | Reason for Run |
| CT2 STIG | 100.0% | | 0.0 MWh | | CAISO |
| Curtailments, Outages, and Comments: | | | | | |
| No Comment. | | | | | |
| Unit | Availability | | Production | | Reason for Run |
| LEC | 99.3% | | 199,705 MWh | | 0 |
| Curtailments, Outages, and Comments: | | | | | |
| LEC O/S from 1558-2139 OMS 6501061, 6502941. Failed ST I/O Card. | | | | | |

Maintenance Summary – Specific per asset above.

Geothermal Facilities

Availability/Production for October 2018

| Unit | Availability | Net Electricity Generated/Water Delivered | Out-of-Service/Descriptors |
|--|--------------|---|---|
| Unit 1 | 100 % | 22,825 MWh | U1 had no outages for the month |
| Unit 2 | 100 % | *20,487 MWh | U2 had no outages for the month |
| Unit 3 | N/A % | N/A | Unit 3 remains out of service. |
| Unit 4 | 65.73 % | 20,319 MWh | U4 was out of service from 0915 10/21/18 to 2400 10/31/18 due to EHC system failure |
| Southeast Geysers Effluent Pipeline | 100% | 259.1 mgallons | Average flow rate: 5,873 gpm |
| Southeast Solar Plant | N/A | 89,045 KWh | Year-to-date KWh: 1,688,391 |
| Bear Canyon Pump Station Zero Solar | N/A | 68,604 KWh | Year-to-date KWh: 2,927,820 |

* Accounts for an additional 2,574 MWh of house load for the 21KV power supply to the effluent pipeline supplied from Unit #2.

Hydroelectric Project

Availability/Production for October 2018

| Units | Availability | Net Electricity Generated | Out-of-Service |
|----------------------------|--------------|---------------------------|---|
| Collierville Unit 1 | 100.00 % | 16045 MWh | CV #1 unit no reportable outages. |
| Collierville Unit 2 | 0.00 % | 0 MWh | CV #2 unit was out of service on, 10/01/18 at 0000 through 10/31/18 at 2359 due to generator rewind. |
| Spicer Unit 1 | 24.77 % | 170 MWh | NSM #1 unit was out of service on, 10/08/18 at 0714 through 10/15/18 at 0900 due to PG&E Salt Springs outage/annual maintenance. NSM #1 unit was out of service on, 10/15/18 at 0900 through 10/31/18 at 1456 due to PG&E Salt Springs–Cabbage Patch 21KV cable fault |
| Spicer Unit 2 | 24.78 % | 250 MWh | NSM #2 unit was out of service on, 10/08/18 at 0718 through 10/15/18 at 0900 due to PG&E Salt Springs outage/annual maintenance. NSM #2 unit was out of service on, 10/15/18 at 0900 through 10/31/18 at 1456 due to PG&E Salt Springs–Cabbage Patch 21KV cable fault |
| Spicer Unit 3 | 24.83 % | 47 MWh | NSM #3 unit was out of service on, 10/08/18 at 0737 through 10/15/18 at 0900 due to PG&E Salt Springs outage/annual maintenance. NSM #3 unit was out of service on, 10/15/18 at 0900 through 10/31/18 at 1456 due to PG&E Salt Springs–Cabbage Patch 21KV cable fault |

Operations & Maintenance Activities:

- CMMS work orders
- CV2 Generator rewind
- NSM Campground season shutdown and winterizing
- Planning Tunnel ROV inspection
- NSM 1 and 2 annual maintenance items

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

- No lost time accidents, recordable incidents, or vehicle accidents occurred in October.
- 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 as updated through the payroll period ended October 27, 2018.
- 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.

October 2018 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 | 2 | 0 | 0 |
| Days since Recordable | 91 | 95 | 1,300 | 6,368 |
| Work Hours Since Last Recordable | 9,059 | 19,988 | 191,741 | 2,303,392 |
| LTA's (this month) | 0 | 0 | 0 | 0 |
| LTA's (calendar year) | 0 | 0 | 0 | 0 |
| Days without LTA | 4,026 | 1,163 | 9,204 | 5,297 |
| Work Hours without LTA | 369,509 | 236,963 | 633,105 | 1,925,410 |
| Vehicle Incident (month) | 0 | 0 | 0 | 0 |
| Vehicle Incident (calendar year) | 1 | 0 | 2 | 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 October 27, 2018.

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 2018 Data

| | October 2018 | | Calendar Year 2018 | |
|-----------|--------------------|---------|--------------------|-----------|
| | Peak MW | MWh | Peak MW | MWh |
| NCPA Pool | 334.11 10/2 @1600 | 190,804 | 419.2 7/25 @1700 | 1,926,227 |
| SVP | 495.82 10/8 @1600 | 315,891 | 529.29 8/9 @1700 | 3,087,090 |
| MSSA | 821.49 10/2 @ 1600 | 506,695 | 945.44 8/9 @ 1700 | 5,013,317 |

Last Year 2017 Data*

| | October 2017 | | Calendar Year 2017 | |
|-----------|---------------------|---------|--------------------|-----------|
| | Peak MW | MWh | Peak MW | MWh |
| NCPA Pool | 349.88 10/24 @1700 | 190,738 | 485.85 9/1 @1700 | 2,000,338 |
| SVP | 520.95 10/25 @1600 | 319,920 | 586.59 9/1 @1600 | 3,114,751 |
| MSSA | 868.03 10/24 @ 1700 | 510,658 | 1070.79 9/1 @ 1700 | 5,115,089 |

*Last year's data added for comparison purposes only

System Peak Data

| | All Time Peak Demand | 2018 Peak Demand |
|-----------|-----------------------------|-------------------|
| NCPA Pool | 517.83 MW on 7/24/06 @ 1500 | 419.2 7/25 @ 1700 |
| SVP | 586.59 MW on 9/1/17 @ 1600 | 529.29 8/9 @ 1700 |
| MSSA | 1070.79 MW on 9/1/17 @ 1700 | 945.44 8/9 @ 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 | | |
|---------------------------------|--------------|--------------------|
| | October 2018 | Calendar Year 2018 |
| MSSA % Within the Band | 93.66% | 97.27% |

- Spicer Meadows:
 - October 8 – 15, all units separated from the grid for PG&E work at Salt Springs. Same time, hydro personnel performed annual maintenance on Unit 1 and 2.
 - October 15 – 31, units remained separated due to multiple faults on the Salt Springs – Cabbage Patch 21kV cable.
 - Unit 3 remained on providing station service power for the duration.

- Geothermal Units:
 - October 21 @ 0858, Unit 4 trip off line due to trouble with EHC system. Unit remains o/s as of October 31

- Lodi Energy Center:
 - October 1 @ 1558 – 2139, plant off line due to control system trouble

- Alameda CTs:
 - October 1 - 31, Unit 1 remains o/s due to compressor blade failure
 - October 1 @ 0940, Unit 2 returned to service from comm circuit failure outage.
 - October 13 @ 0630 – 0800 & 1600 – 1800, units unavailable due to PG&E transmission outage.
 - October 15 @ 0800 - 1400, units unavailable due to PG&E transmission outage.
 - October 19 @ 1447 - 1754, units unavailable due to PG&E transmission outage.
 - October 24 @ 1042 – 1125, Unit 2 o/s due to fire system trouble.
 - October 26 @ 1200 - 1300, units unavailable due to PG&E transmission outage.
 - October 26 @ 1945 – October 27 @ 1928, Unit 2 o/s due to IGV trouble.
 - October 31 @ 0700 – 1023, Unit 2 o/s for generator circuit breaker maintenance.

- Lodi CT:
 - October 15 @ 1801 – October 18 @ 2359, unit o/s due to generator circuit breaker trouble.
 - October 21 @ 2000 - October 23 @ 2000, unit o/s due to ratchet trouble.
 - October 25 @ 0800 - October 26 @ 1725, unit o/s for borescope inspection.

- Collierville Units:
 - October 1 – 31, Unit 2 remains o/s for stator rewind and annual maintenance.

- STIG:
 - No curtailments

Pooling, Portfolio Planning & Forecasting

- NCPA Pool load in October 2018 was 190,756 MWh, which was 98.2% of the pre-month forecast of 194,213 MWh. From November 1, 2018 through November 13, 2018, the NCPA Pool load was 80,054 MWh. It is unlikely that the NCPA Pool load will reach the initial forecast of 187,335 MWh due to the normally light load over the Thanksgiving holiday.
- The Lodi Energy Center (LEC) generated 73,610 MWh for the Pool in October 2018, due to numerous full-day runs. The Pool's share of generation through November 13, 2018 was 11,588 MWh, with a full-month forecast of 32,734 MWh.
- For the month of October 2018, 1.0" of rain was recorded at the Big Trees gage. October Big Trees average precipitation is 3.38".
- The Value of Storage (VOS) of New Spicer Meadow Reservoir (NSMR) has been increased from \$70/MWh to \$150/MWh.
- NSMR storage as of October 31, 2018 was at 87,683 acre feet. The historical average NSMR storage at the end of October is 93,437 acre feet. As of November 15, 2018 NSMR storage is 84,579 acre feet. The current NCPA Pool share of NSMR storage is 43,043 acre feet.
- Combined Calaveras Project generation for the Pool in October 2018 totaled 7.6 GWh, down from 8.3 GWh in September 2018. The Pool's 7.6 GWh in October 2018 was below the pre-month forecast of 13.4 GWh. Through November 15, 2018 Calaveras generation for the Pool is 2.5 GWh.
- Western Base Resource (BR) deliveries for the Pool in October 2018 were 23,113 MWh, or 100.2% of Western's 22.6-GWh forecast. Through November 13, 2018, BR allocations for the Pool were 5.9 GWh (the Displacement program is hibernating). The most recent Western forecast for both November and December was zero MWh.
- The PG&E Citygate gas index averaged \$4.51/MMBtu for November 14, 2018 delivery and has traded well above \$3 since July 21, 2018. This compares to an average of \$3.73/MMBtu (and a high \$4.15/MMBtu) in October 2018. The November 2018 PG&E Bidweek price is \$4.05, up \$0.76 from the October Bidweek price, but below the SoCal Citygate November 2018 Bidweek price of \$5.82/MMBtu.
- Day-ahead NP15 electricity prices averaged \$48.04/MWh (HLH) and \$37.29 (LLH) during October 2018, with the hourly TH_NP15 maximum at \$102.35/MWh on October 26 and minimum \$25.40. In November, on-peak prices have averaged \$44.95, with highs reaching over \$100 on several evenings.

| NCPA Pool Loads & Resources Value Summary | | | | | | | | |
|---|-----------------------------------|----------------|--------------------|--------------|----------------------------|---------------------------|------------------------|--------------|
| | Peak and Energy Summary Oct-18 | | | | Estimated Production Costs | | Cost of Serving Demand | |
| | Coincident Peak (MW) | Total MWh | Forecast Values | | NCPA Pool | | Totals | Avg (\$/MWh) |
| | | | | Avg. MW | Cost/Revenue (Estimate) | Variable Cost (\$/MWh) | | |
| Demand | 334.1 | 190,756 | 194,223 | 256.4 | N/A | N/A | | |
| WAPA | 1.0 | 23,113 | 22,599 | 31.1 | \$ 1,170,723 | \$ 50.65 | \$ 8,641,365 | \$ 45.30 |
| Geothermal | - | 26,329 | 27,944 | 35.4 | 500,245 | 19.00 | | |
| Hydro | - | 7,960 | 7,958 | 10.7 | 47,760 | 6.00 | | |
| Stig & CTs | - | 564 | 423 | 0.8 | 7,959 | 14.10 | | |
| LEC | - | 35,910 | 31,235 | 48.3 | 1,357,055 | 37.79 | | |
| Contracts | 72.1 | 90,287 | 82,711 | 121.4 | 5,459,991 | 60.47 | \$ 8,849,570 | \$ 46.39 |
| Market - Net (Net Sales = Negative) | 261.0 | 6,592 | 21,353 | 8.9 | 228,707 | 34.69 | | |
| Net Total | 334.1 | 190,756 | 194,223 | 256.4 | \$ 8,772,440 | \$ 46.39 | | |

| 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 10/1/2018 (\$/MWh) | 11/13/2018 (\$/MWh) | |
| Jan-18 | 195,093 | \$ 34.68 | \$ 43.74 | Nov-18 | \$ 39.47 | \$ 48.52 |
| Feb-18 | 173,464 | \$ 32.12 | \$ 43.94 | Dec-18 | 46.86 | 70.65 |
| Mar-18 | 190,023 | \$ 31.58 | \$ 39.43 | Jan-19 | 46.99 | 60.70 |
| Apr-18 | 175,890 | \$ 26.51 | \$ 39.05 | Q1 2019 | \$ 40.32 | \$ 52.30 |
| May-18 | 185,890 | \$ 22.58 | \$ 40.72 | Q2 2019 | 30.14 | 34.32 |
| Jun-18 | 193,859 | \$ 30.75 | \$ 38.31 | Q3 2019 | 51.42 | 62.29 |
| Jul-18 | 217,009 | \$ 63.64 | \$ 52.34 | CY2019 | \$ 40.23 | \$ 48.36 |
| Aug-18 | 211,074 | \$ 55.31 | \$ 44.06 | CY2020 | 37.77 | 42.65 |
| Sep-18 | 191,121 | \$ 35.51 | \$ 51.48 | CY2021 | 40.01 | 43.62 |
| Oct-18 | 190,756 | \$ 45.30 | \$ 46.39 | CY2022 | 41.18 | 44.44 |
| Nov-18 | | | | CY2023 | 42.26 | 45.46 |
| Dec-18 | | | | CY2024 | 43.46 | 46.49 |

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.

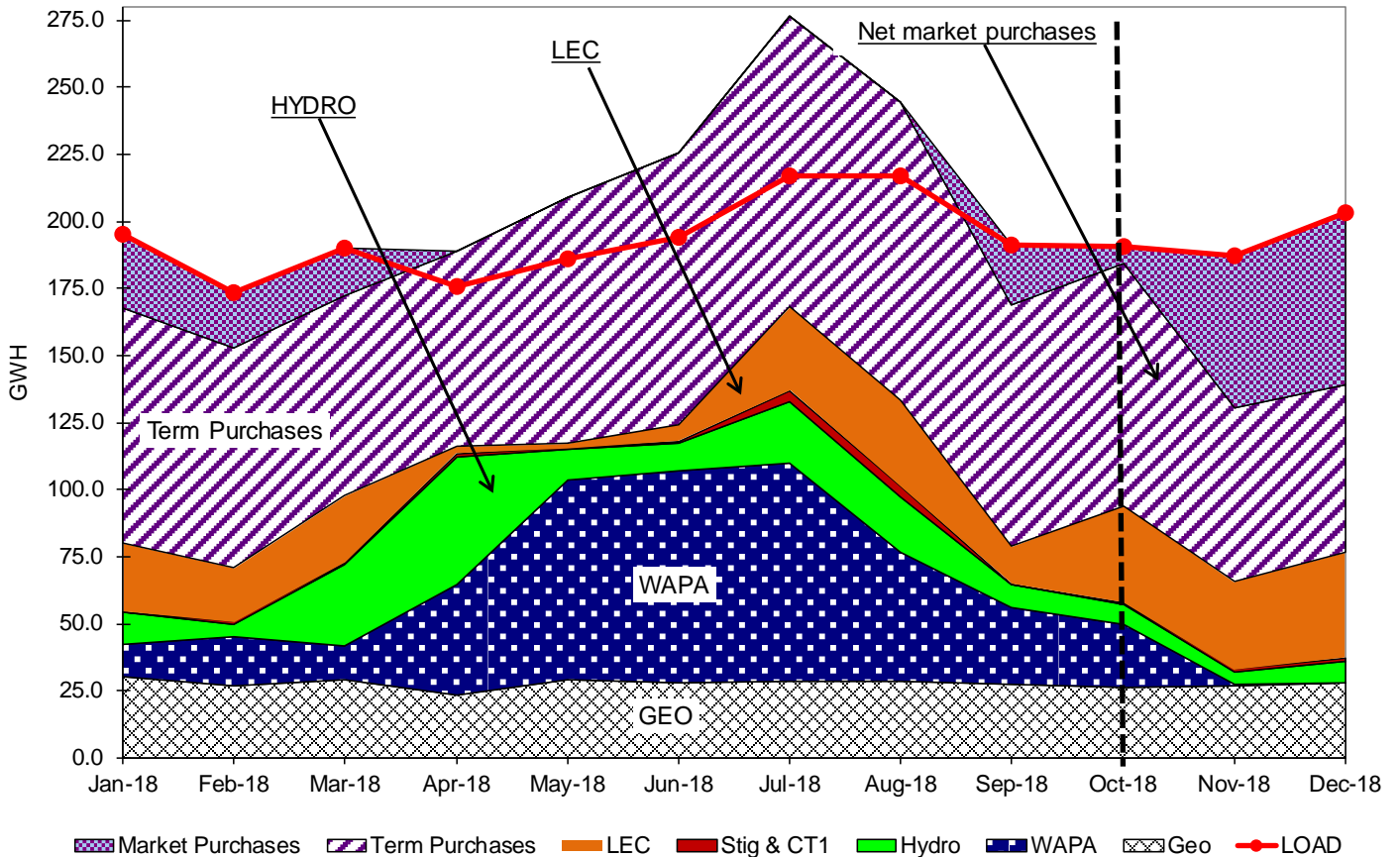
* STIG & CT costs reflect \$2.60 and \$1.62/MWh variable O&M costs per 6-12-06 GSCA.

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.

NCPA POOL RESOURCES 2018 CALENDAR YEAR: January - October Actual / balance forecasted



Market Purchases Term Purchases LEC Stig & CT1 Hydro WAPA Geo LOAD

Industry Restructuring, Contracts and Interconnection Affairs

Resource Adequacy Compliance Filings

- NCPA made the following Resource Adequacy compliance filings with the CAISO for the 2019 Annual compliance period:
 - 2019 Annual Local, Flexible and System Resource Adequacy Demonstration (filed October 31, 2018)
 - 2019 Annual Supply Plan (filed October 31, 2018)
- NCPA made the following Resource Adequacy compliance filings with the CAISO for the compliance period January 2019:
 - Monthly System Resource Adequacy Demonstration (filed November 16, 2018)
 - Monthly Supply Plan (filed November 16, 2018)

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 the current 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.

Day-Ahead Market Enhancements

- In this initiative, CAISO will consider enhancements to combine the Integrated Forward Market with the Residual Unit Commitment process, change the day-ahead scheduling granularity from hourly to 15-minute, and add an imbalance reserve product. Additional design elements needed to extend the day-ahead market to EIM entities will also be considered. Recently, the CAISO indicated that they are considering breaking the DAME initiative into two (2) separate stakeholder initiatives (the details of such have not be made available).

Flexible Resource Adequacy Criteria and Must Offer Obligation (FRAC MOO Phase 2)

- This initiative will explore further enhancements to flexible capacity requirements to help address generation oversupply and ramps less than three hours. This effort also seeks new rules to allow inertia resources and storage resources' not operating under non-generator resource provisions to provide flexible capacity. Through this effort, CAISO will also assess the impact of merchant variable energy resources on flexible capacity requirements.

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.

Western

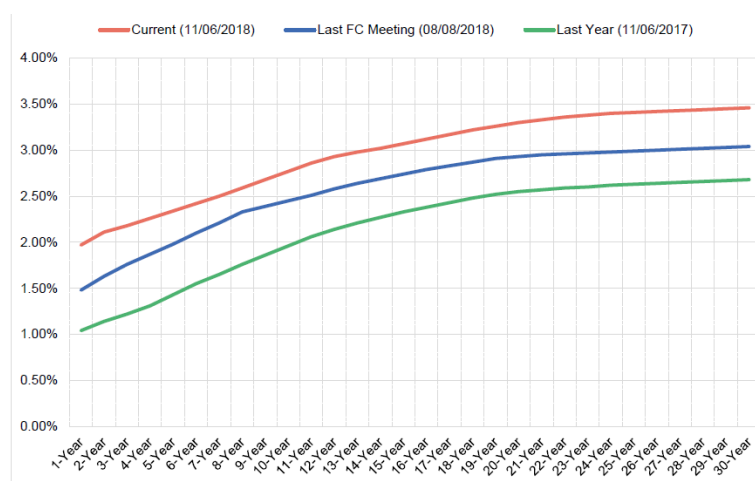
Western Base Resource Tracking (NCPA Pool)

| 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 | - | 0 | \$1,170,723 | \$ 40.31 | \$ - | \$ 34.24 |
| Dec-18 | 16,349 | - | 0 | \$1,170,723 | \$ 71.61 | \$ - | \$ 35.25 |
| Jan-19 | 20,572 | - | 0 | \$1,170,723 | \$ 56.91 | \$ - | \$ 35.39 |
| Feb-19 | 37,432 | - | 0 | \$1,170,723 | \$ 31.28 | \$ - | \$ 34.81 |
| Mar-19 | 56,569 | - | 0 | \$1,170,723 | \$ 20.70 | \$ - | \$ 32.71 |
| Apr-19 | 61,300 | - | 0 | \$2,278,398 | \$ 37.17 | \$ - | \$ 32.22 |
| May-19 | 86,402 | - | 0 | \$2,278,398 | \$ 26.37 | \$ - | \$ 33.01 |
| Jun-19 | 83,927 | - | 0 | \$2,278,398 | \$ 27.15 | \$ - | \$ 33.92 |
| 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. | | | | | | | |

- The Displacement Program for the Pool members show October 2018 activity of 1,300 MWh for an estimated saving of \$7,400, or about \$5.50/MWh.
- Pool members' total savings under MEEA pricing (Market Efficiency Enhancement Agreement) was about \$3,500 for the Pool in October 2018.

Debt and Financial Management

- In its first meeting since October's market turmoil and midterm elections, the Federal Reserve voted to maintain the current level of its benchmark interest rate. The policymaking Federal Open Market Committee (FOMC), as expected, unanimously approved keeping the federal funds rate in a range of 2 percent to 2.25 percent. Markets figured the central bank would hold the line at this meeting and probably approve a quarter-point hike in December, which would be the fourth of the year.
- Despite keeping rates unchanged, the U.S. Treasury yield curve continues to rise while keeping its shape. The chart below details this comparison of rates from today, the last FOMC meeting, and one year ago.



- At the November 13th Finance Committee meeting, NCPA staff was directed by the members of the Committee to move forward with refunding the Hydroelectric bonds, Series 2010A and begin the process of replacing (or extending the term of) the Letter of Credit (LOC) on the 2008 Series A&B bonds. The LOC is set to expire in September 2019 and economically made sense to proceed now. In addition, NCPA recommended using RBC Capital Markets as Underwriter (UW) for the 2010A bonds and the Committee confirmed this recommendation.

Schedule Coordination Goals

Software Development

- NCPA IS staff is assisting Santa Clara to transition its MSS portfolio from scheduling via Web Service into the use of the new client-based NCPA Scheduling Suite. Parallel testing and end-user training will be performed throughout October. Phase 1 involved SVP SC entering RT schedules directly into PAGES. Phase 2 will involve SVP SC scheduling the DA using Prescheduler and PAGES for the December 1, 2018 operating date. Phase 3 will immediately follow to focus on deal capture. The Scheduling apps have been further enhanced to handle Energy and AS bids, not only for the SNCL (MSS) but also for the Pool and SNCL (SC).

- The NCPA Automated Dispatch System is undergoing necessary code review and updates to ensure its reliability in responding to CAISO ADS instructions. A new, more robust design has been developed to eventually replace the current version. Completion of the new version anticipated before the end of 2018. In the meantime, the current version has been enhanced to properly handle RTCD and testing for Collierville is underway.
- Work is in progress to automate and integrate members' monthly Resource Adequacy demonstrations and supply plans into NCPA's bid-to-bill system.
- Work continues to configure the Accounting Software for Hometown Connections Inc. Configuration inputs have been loaded into the test environment.

Network

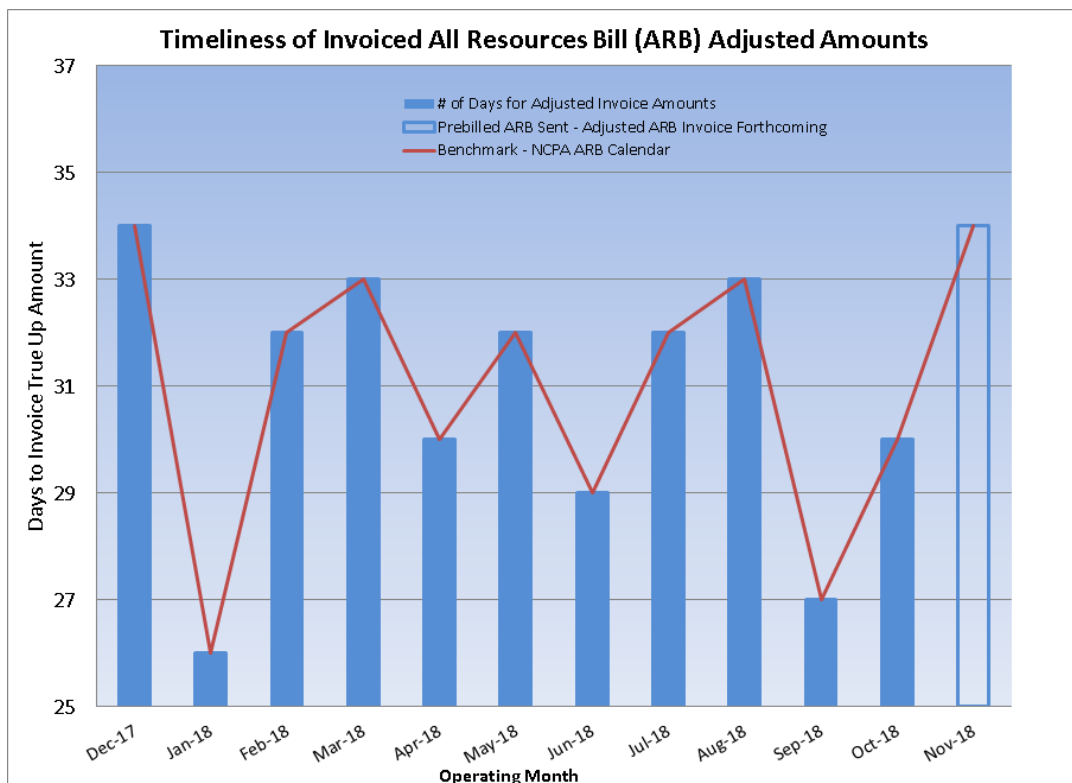
- The IS Operations and Support group continues to migrate the remaining 10% of data over to the new Nimble storage array as part of a SAN upgrade project. The project will be completed by end of the calendar year.
- The IS department is currently working to perform a migration from SharePoint 2013 to SharePoint 2016, which is part of the larger plan to implement records retention for documents within libraries. The migration will be completed by fall of 2018.
- In adherence to the Agency's records retention policy, new email retention policies have been implemented on 95% of the Agency's mailboxes. The remaining 5% will be completed by this November.
- Progress continues to be made upgrading staff to Windows 10 with about 50% of the Agency on the new Operating System. The goal is to have all workstations moved over before the end of 2020.
- IS supported Dispatch Operations in a successful hard failover to the Disaster Recovery Center at the end of October. A lessons learned meeting is scheduled for mid-November to correct identified problems and to enhance the process for next year.
- The IS Operations and Support group is preparing to replace the current backup solution this fiscal year. Requirements are being drafted and a Request for Information will soon be developed and sent to vendors to begin discussions and demonstrations of their products.
- IS, along with Power Management and Settlements, is actively updating contingency plans for applications and services that support the bid-to-bill process. This is an effort to identify any gaps and provide recommendations to help reduce risks associated with unplanned downtime. This project is expected to be completed by the end of the 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 November 2018 NCPA All Resources Bill (ARB) monthly invoice sent to members on October 22, 2018 contains:

- November 2018 monthly pre-billed budget/forecast amounts;
- September 2018 (1st Adjustment) NCPA Project and CAISO Initial settlement true-ups;
- August 2018 (2nd Adjustment) NCPA Project settlement true-up and T+12 business day recalculated CAISO settlement true-up allocations;
- June 2018 (3rd Adjustment) T+55 business day recalculated CAISO settlement true-up allocations and NCPA Projects true-up;
- December 2017 (4th Adjustment) T+9 month recalculated CAISO settlement true-up allocations;
- February 2017 (5th Adjustment) T+18 month recalculated CAISO settlement true-up allocations;
- November 2015 (6th Adjustment) T+33 month recalculated CAISO settlement true-up;
- August 2015 (7th Adjustment) T+35 month CAISO settlement true-up;



Legislative & Regulatory

Political Arena State/Federal/Western Programs

- NCPA participated in a Central Valley Project (CVP) Power Forum led by Bureau Commissioner Brenda Burman, Western Area Power Administration's CEO Mark Gabriel, and Reclamation's Regional Director David Murillo. They expressed a commitment to partner with CVP power customers to elevate and address key power-related issues. Toward that end, soon-to-be-formed workgroups will have goals to 1) address cost stability, (2) increase power production, and (3) improve the value of the CVP resource. NCPA members attended in strength, and pushed for a comprehensive solution that included reducing the risk and uncertainty surrounding the economic viability of the CVP resource. NCPA supports the Commissioner's goal to develop a plan within six months and will be actively engaging in the work groups.
- NCPA will host a member session on December 6th to review its draft Crisis Communications Plan. The Plan is designed to work hand-in-hand with our facility emergency response plans, and includes resources to help NCPA effectively and efficiently communicate with external parties. This training will provide members with an inside-look at NCPA's planned processes for communications in times of crisis. In addition, the Plan, as well as the consultant leading the preparation process, can be made available for individual member use should there be an interest in customizing plans for a given utility.
- NCPA staff worked with the City of Healdsburg Utilities team to put together an informational tour of NCPA's geothermal plant at the Geysers. A group of Healdsburg residents and local media representatives attended the meeting and learned about NCPA, our projects, and how NCPA members worked together to achieve economies of scale. It was a great opportunity for Healdsburg and NCPA to connect with the community and educate the public on the value of the Geysers in providing local, carbon-free electricity. As a follow-up to the meeting, a reporter from The Healdsburg Tribune published an article that provides great informational background on NCPA and our partnership with our members. The article is available [online](#).

Human Resources

Hires:

None.

Intern Hires:

None.

Promotions/Position Changes:

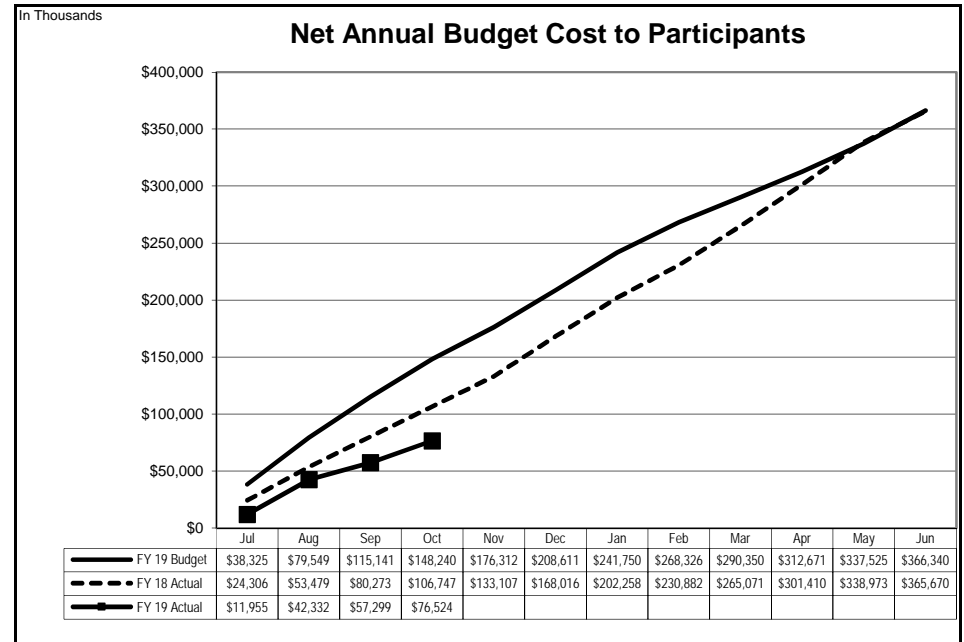
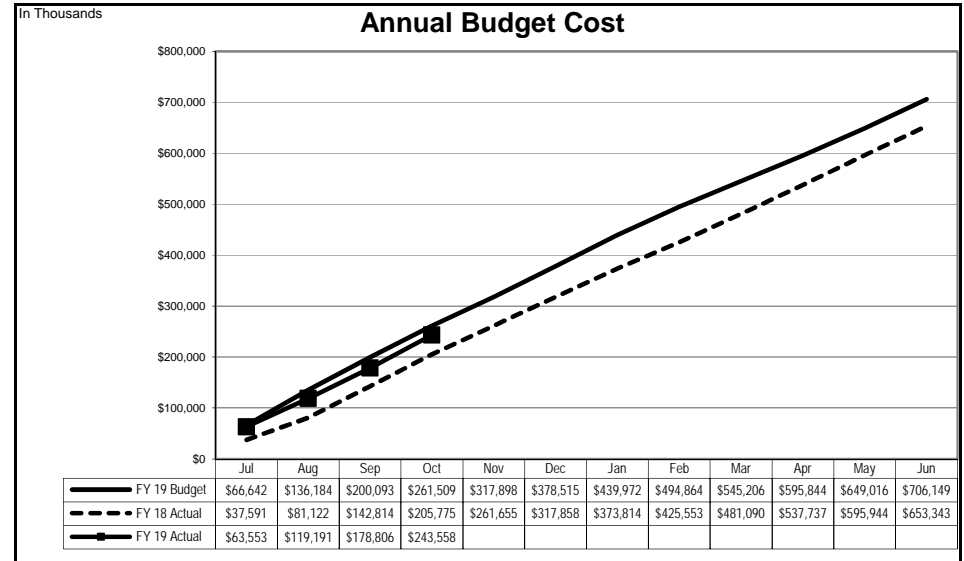
None.

Separations:

Les Drake, Geologist IV, retired from our Geothermal Facilities after 13 years of service on October 30, 2018.

**Annual Budget
2018-2019 Fiscal Year To Date
As of October 31, 2018**

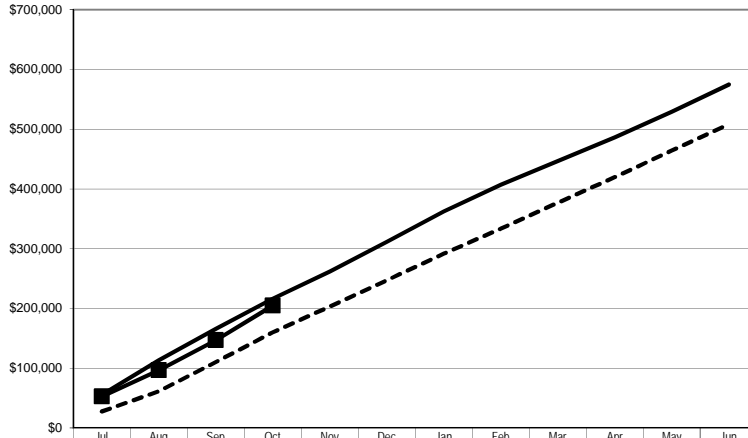
| In Thousands | Program | | | |
|---|---------------|---------|-------------------|-----------------|
| | Annual Budget | Actual | Under(Ovr) Budget | YTD % Remaining |
| GENERATION RESOURCES | | | | |
| NCPA Plants | | | | |
| Hydroelectric | 51,857 | 17,005 | \$ 34,851 | 67% |
| Geothermal Plant | 34,425 | 11,972 | 22,454 | 65% |
| Combustion Turbine No. 1 | 6,606 | 2,221 | 4,385 | 66% |
| Combustion Turbine No. 2 (STIG) | 8,743 | 3,310 | 5,432 | 62% |
| Lodi Energy Center | 83,717 | 33,321 | 50,396 | 60% |
| | 185,347 | 67,829 | 117,518 | 63% |
| Member Resources - Energy | 64,449 | 21,987 | 42,461 | 66% |
| Member Resources - Natural Gas | 3,098 | 1,680 | 1,418 | 46% |
| Western Resource | 31,350 | 6,208 | 25,142 | 80% |
| Market Power Purchases | 15,539 | 7,940 | 7,599 | 49% |
| Load Aggregation Costs - ISO | 273,858 | 98,252 | 175,606 | 64% |
| Net GHG Obligations | 1,123 | 615 | 508 | 45% |
| | 574,764 | 204,511 | 370,253 | 64% |
| TRANSMISSION | | | | |
| Independent System Operator | 112,822 | 33,646 | 79,175 | 70% |
| MANAGEMENT SERVICES | | | | |
| Legislative & Regulatory | | | | |
| Legislative Representation | 2,023 | 716 | 1,307 | 65% |
| Regulatory Representation | 887 | 182 | 705 | 79% |
| Western Representation | 848 | 191 | 657 | 78% |
| Member Services | 438 | 112 | 327 | 75% |
| | 4,196 | 1,200 | 2,996 | 71% |
| Judicial Action | 625 | 155 | 470 | 75% |
| Power Management | | | | |
| System Control & Load Dispatch | 6,107 | 1,881 | 4,227 | 69% |
| Forecasting & Prescheduling | 2,775 | 811 | 1,964 | 71% |
| Industry Restructuring | 439 | 91 | 348 | 79% |
| Contract Admin, Interconnection Svcs & Ext. Affairs | 1,135 | 277 | 858 | 76% |
| Green Power Project | 3 | 0 | 3 | 97% |
| Gas Purchase Program | 78 | 21 | 57 | 73% |
| Market Purchase Project | 112 | 29 | 83 | 74% |
| | 10,649 | 3,108 | 7,540 | 71% |
| Energy Risk Management | 260 | 45 | 215 | 83% |
| Settlements | 941 | 188 | 754 | 80% |
| Integrated System Support | 273 | 45 | 228 | 84% |
| Participant Pass Through Costs | 1,619 | 261 | 1,358 | 84% |
| Support Services | - | 398 | (398) | |
| | 18,563 | 5,400 | 13,163 | 71% |
| TOTAL ANNUAL BUDGET COST | 706,149 | 243,558 | 462,591 | 66% |
| LESS: THIRD PARTY REVENUE | | | | |
| Plant ISO Energy Sales | 100,456 | 59,335 | 41,121 | 41% |
| Member Resource ISO Energy Sales | 28,187 | 15,316 | 12,871 | 46% |
| NCPA Contracts ISO Energy Sales | 14,720 | 9,687 | 5,034 | 34% |
| Western Resource ISO Energy Sales | 23,183 | 11,489 | 11,694 | 50% |
| Load Aggregation Energy Sales | 131,329 | 62,225 | 69,104 | 53% |
| Ancillary Services Sales | 4,409 | 2,293 | 2,116 | 48% |
| Transmission Sales | 110 | 37 | 74 | 67% |
| Western Credits, Interest & Other Income | 37,414 | 6,652 | 30,762 | 82% |
| | 339,808 | 167,033 | 172,775 | 51% |
| NET ANNUAL BUDGET COST TO PARTICIPANTS | 366,340 | 76,524 | \$ 289,816 | 79% |



Annual Budget Budget vs. Actual By Major Area As of October 31, 2018

In Thousands

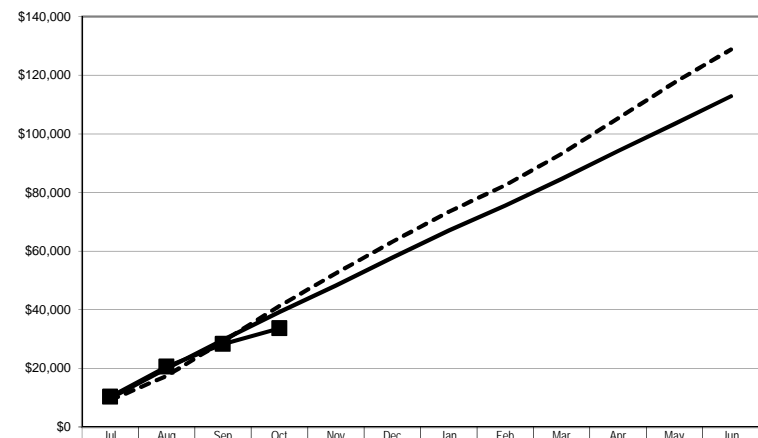
Generation Resources



| | | | | | | | | | | | | |
|--------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| FY 19 Budget | \$55,270 | \$113,084 | \$165,773 | \$216,177 | \$261,937 | \$311,494 | \$362,100 | \$406,988 | \$446,665 | \$486,191 | \$528,677 | \$574,764 |
| 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 | \$96,197 | \$146,500 | \$204,511 | | | | | | | | |

In Thousands

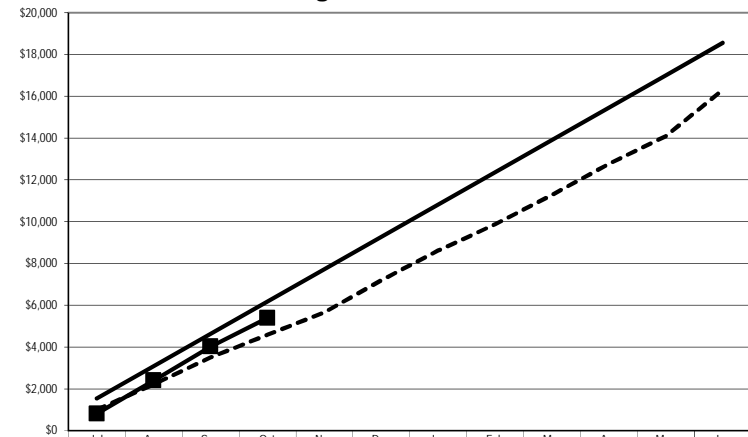
Transmission-ISO



| | | | | | | | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| 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 | | | | | | | | |

In Thousands

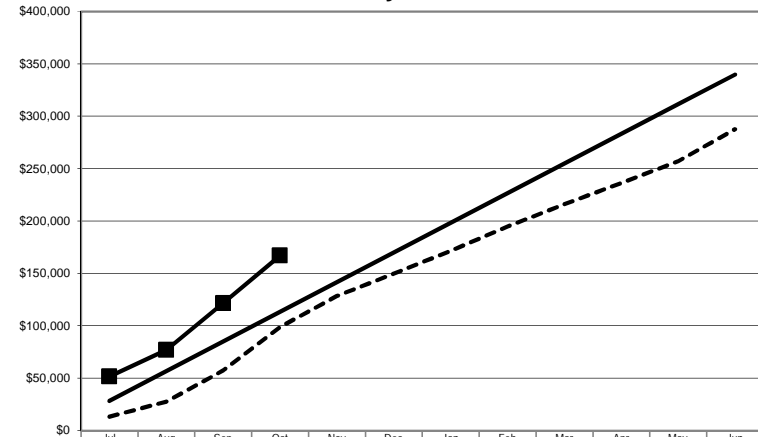
Management Services



| | | | | | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|
| 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 | | | | | | | | |

In Thousands

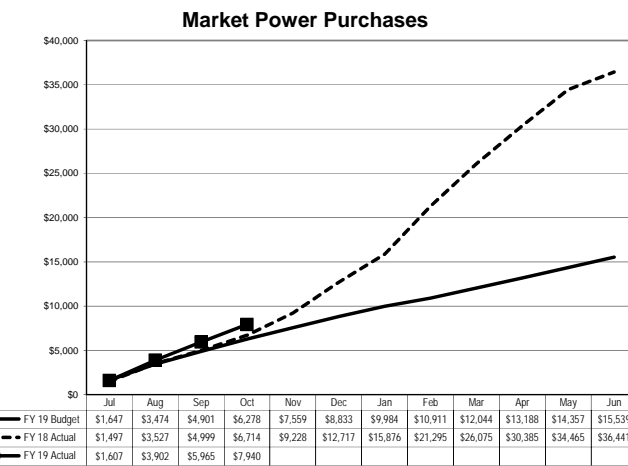
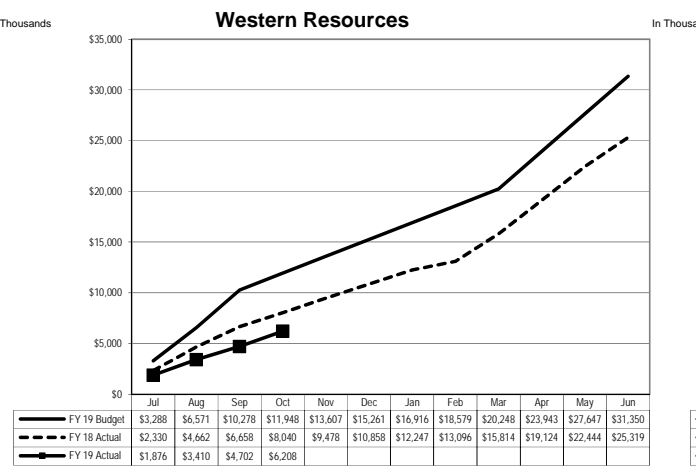
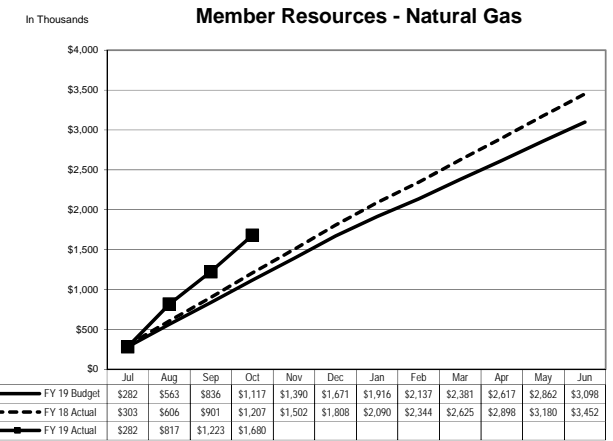
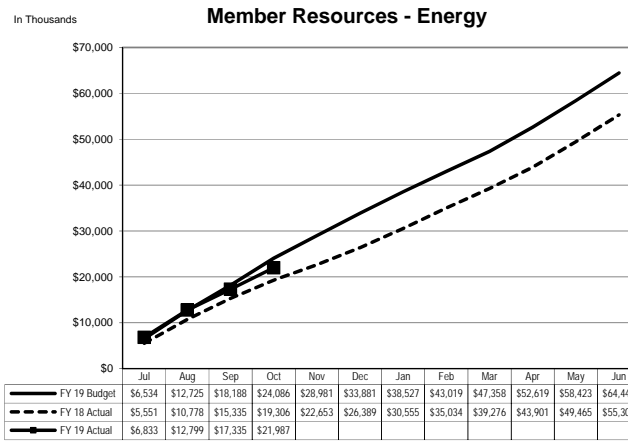
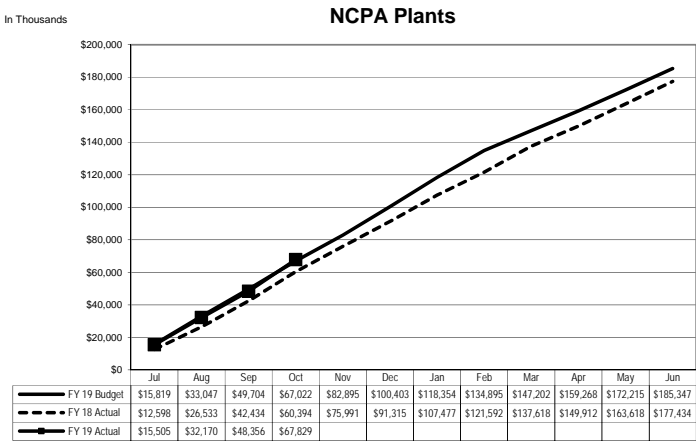
Third Party Revenue



| | | | | | | | | | | | | |
|--------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 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 | \$171,856 | \$194,671 | \$216,019 | \$236,327 | \$256,971 | \$287,673 |
| FY 19 Actual | \$51,598 | \$76,859 | \$121,507 | \$167,033 | | | | | | | | |

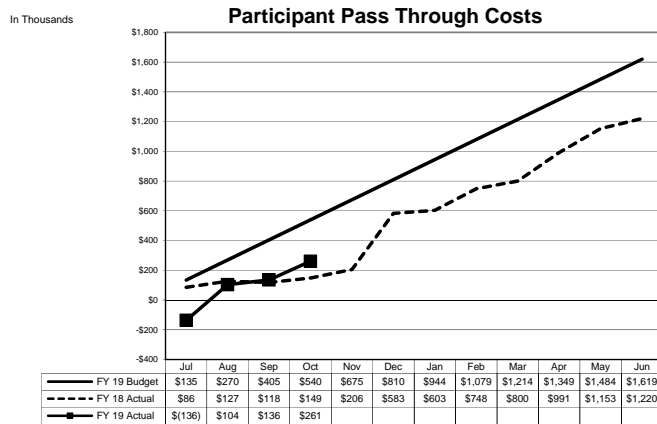
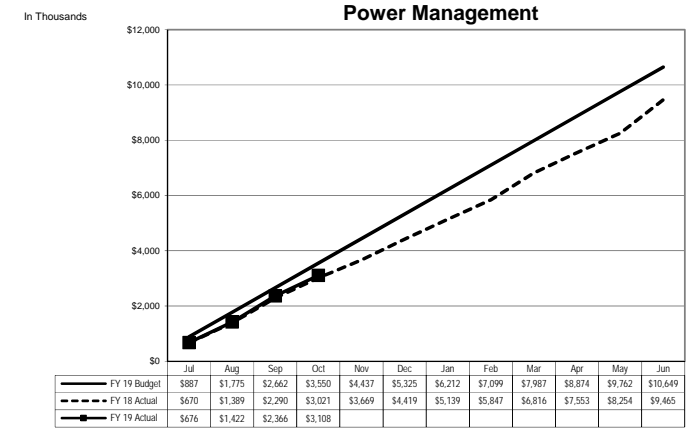
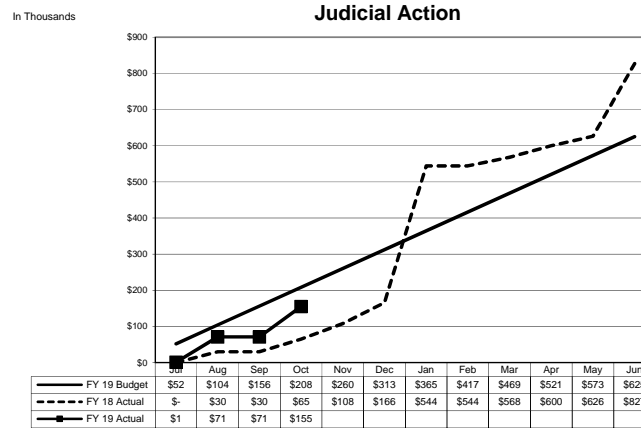
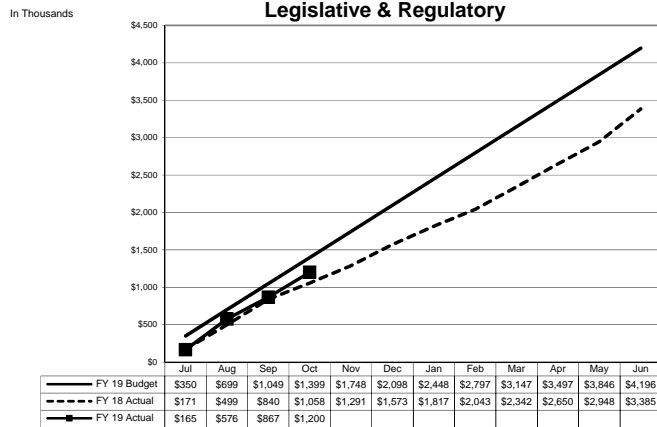
Footnote: Transmission is solely reflective of Independent System Operator (ISO) costs

**Annual Budget Cost
Generation Resources Analysis By Source
As of October 31, 2018**



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

Annual Budget Cost Management Services Analysis By Source As of October 31, 2018

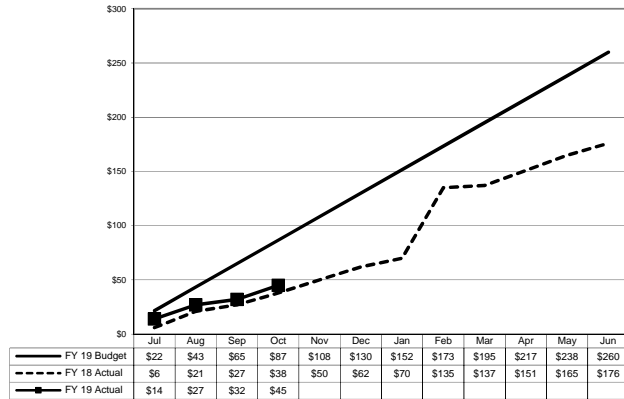


**Annual Budget Cost
Management Services Analysis By Source
As of October 31, 2018**

In Thousands

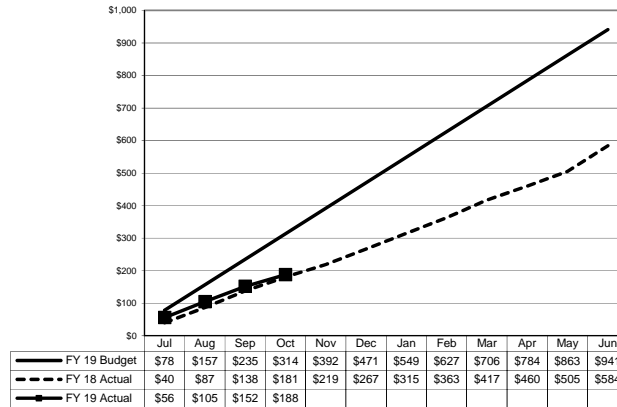
Energy Risk Management

In Thousands

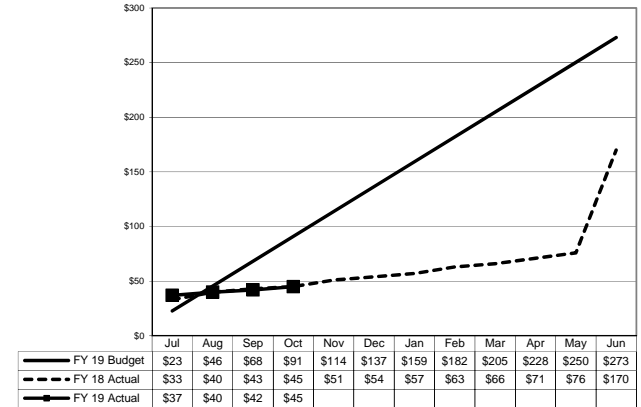


Settlements

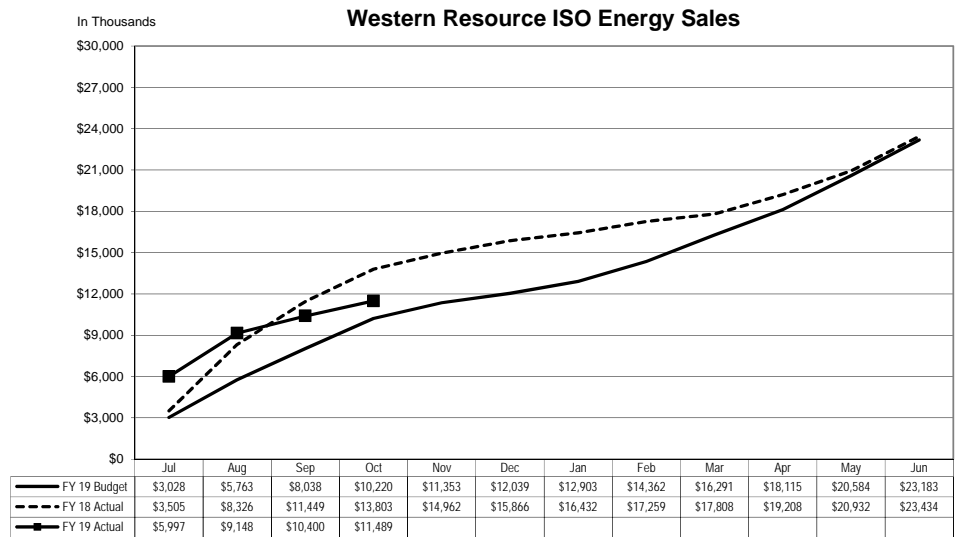
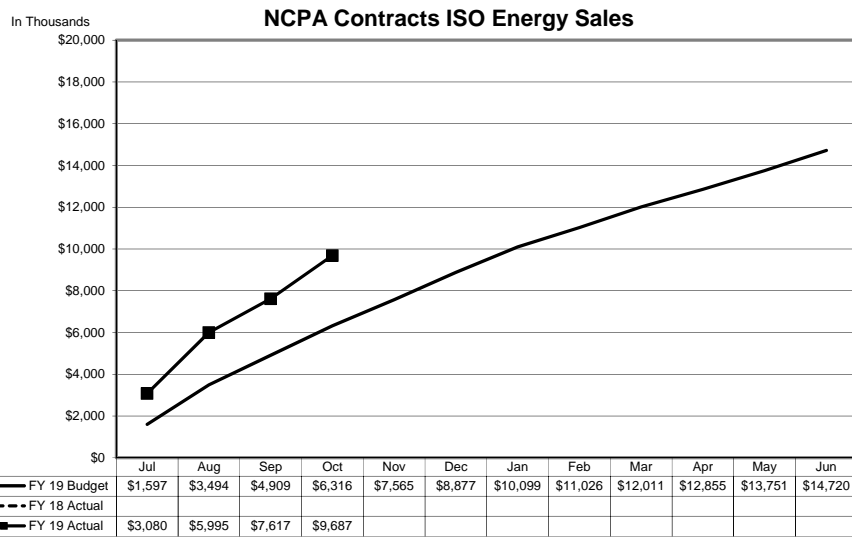
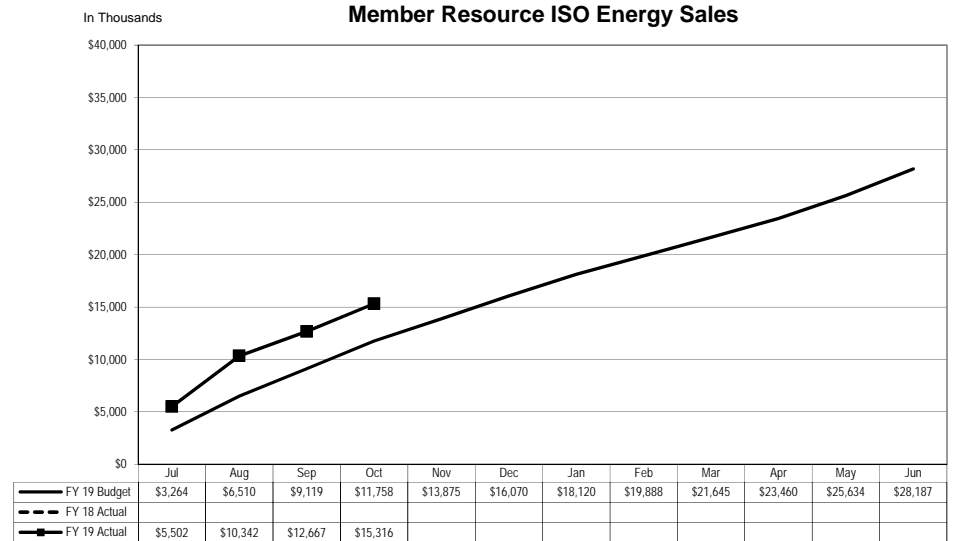
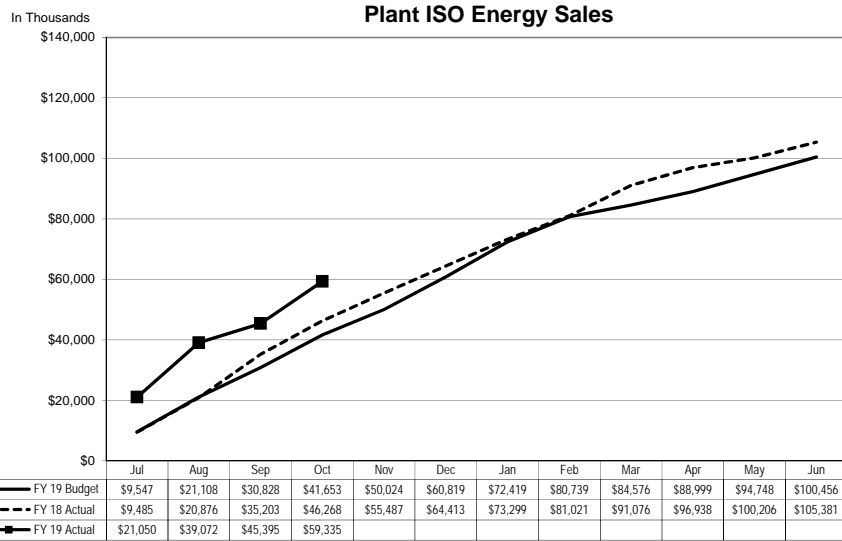
In Thousands



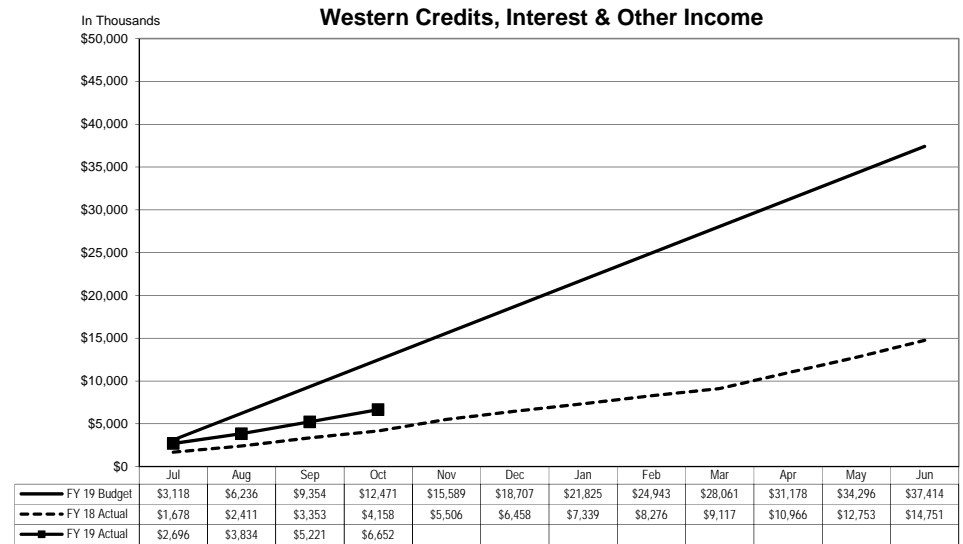
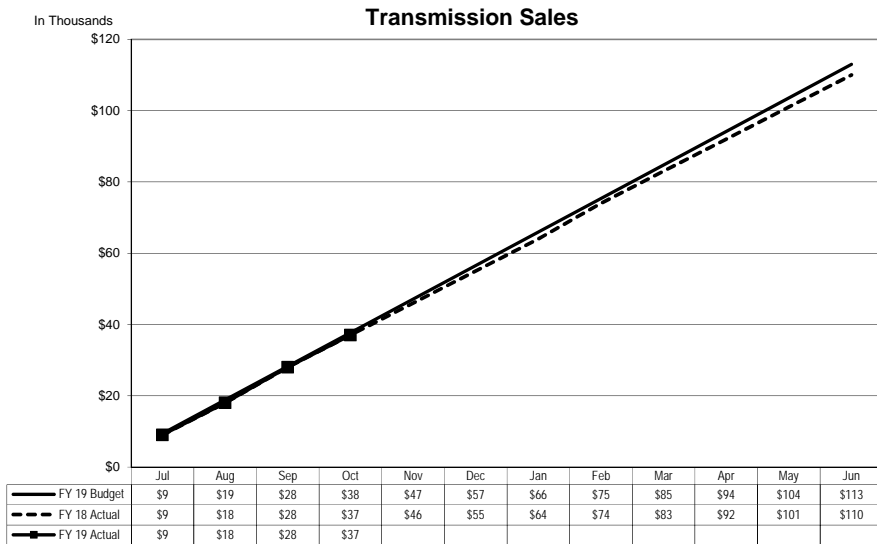
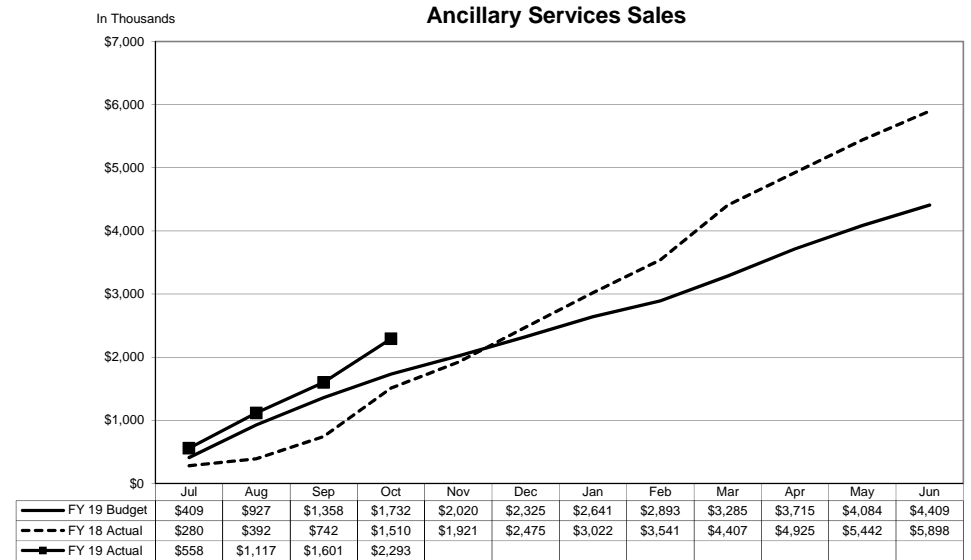
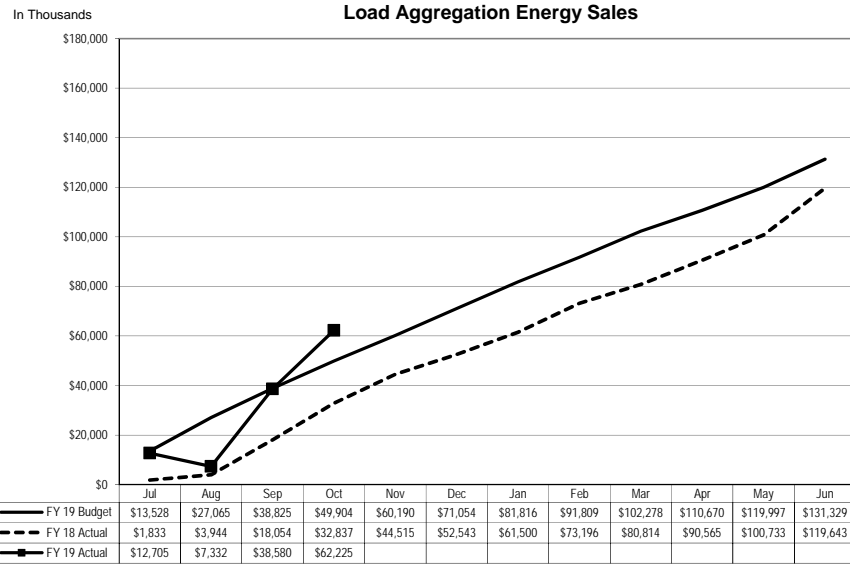
Integrated Systems Support



**Annual Budget Cost
Third Party Revenue Analysis By Source
As of October 31, 2018**



**Annual Budget Cost
Third Party Revenue Analysis By Source
As of October 31, 2018**



**Annual Budget
NCPA Generation Detail Analysis By Plant
As of October 31, 2018**

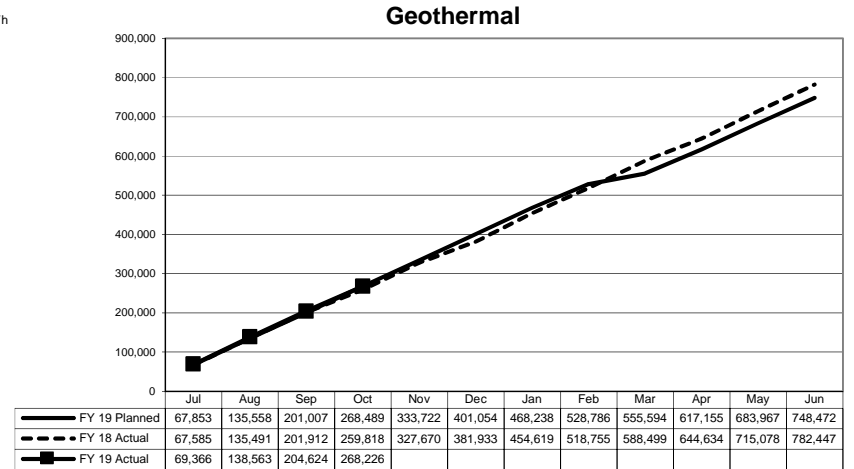
Generation Cost Analysis

\$ in thousands

| | Geothermal | | | | |
|--|------------|------------|---------------|--------------------|-----------------|
| | Budget | Actual | \$/MWh Actual | Under(Over) Budget | YTD % Remaining |
| Routine O & M | \$ 17,793 | \$ 5,791 | \$ 21.59 | \$ 12,002 | 67% |
| Capital Assets/Spare Parts Inventories | 3,267 | 1,253 | 4.67 | 2,014 | 62% |
| Other Costs | 8,137 | 2,446 | 9.12 | 5,691 | 70% |
| CA ISO Charges | 291 | 837 | 3.12 | (545) | -187% |
| Debt Service | 4,937 | 1,646 | 6.14 | 3,291 | 67% |
| Annual Budget | 34,425 | 11,972 | 44.63 | 22,454 | 65% |
| Less: Third Party Revenue | | | | | |
| Interest Income | 382 | 120 | 0.45 | 262 | 69% |
| ISO Energy Sales | 26,285 | 12,887 | 48.05 | 13,398 | 51% |
| Ancillary Services Sales | - | - | - | - | - |
| Effluent Revenues | 700 | 449 | 1.67 | 251 | 36% |
| Misc | 110 | 38 | 0.14 | 73 | 66% |
| | 27,477 | 13,494 | 50.31 | 13,984 | 51% |
| Net Annual Budget Cost to Participants | \$ 6,948 | \$ (1,522) | \$ (5.67) | \$ 8,470 | 122% |
| Net Generation--MWh @ Meter | 748,472 | 268,226 | | | |
| \$/MWh (A) | \$ 2.69 | \$ (11.81) | | | |

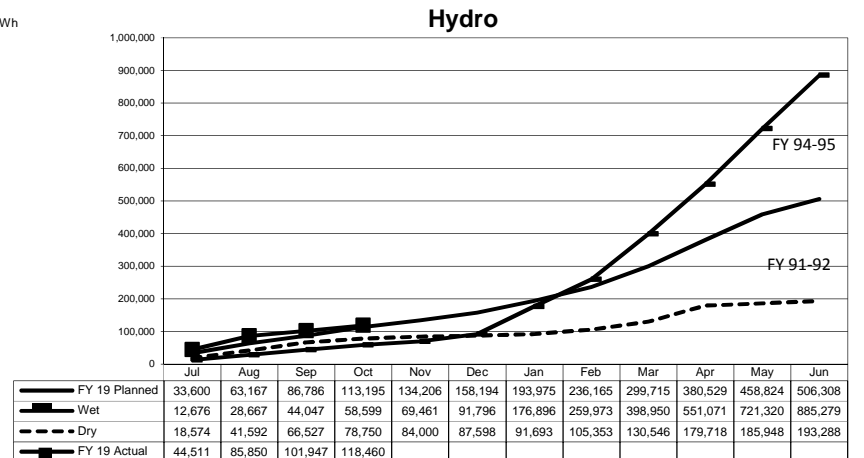
MWhs Generated

In MWh



| | Hydroelectric | | | | |
|--|---------------|------------|---------------|--------------------|-----------------|
| | Budget | Actual | \$/MWh Actual | Under(Over) Budget | YTD % Remaining |
| Routine O & M | \$ 8,685 | \$ 2,235 | \$ 18.86 | \$ 6,450 | 74% |
| Capital Assets/Spare Parts Inventories | 1,975 | 637 | 5.38 | 1,338 | 68% |
| Other Costs | 3,238 | 911 | 7.69 | 2,327 | 72% |
| CA ISO Charges | 2,801 | 1,504 | 12.69 | 1,298 | 46% |
| Debt Service | 35,157 | 11,719 | 98.93 | 23,438 | 67% |
| Annual Budget | 51,857 | 17,005 | 143.55 | 34,851 | 67% |
| Less: Third Party Revenue | | | | | |
| Interest Income | 670 | 145 | 1.23 | 525 | 78% |
| ISO Energy Sales | 20,783 | 10,691 | 90.25 | 10,092 | 49% |
| Ancillary Services Sales | 3,048 | 1,294 | 10.92 | 1,753 | 58% |
| Misc | - | 0 | 0.00 | (0) | - |
| | 24,501 | 12,131 | 102.40 | 12,370 | 50% |
| Net Annual Budget Cost to Participants | \$ 27,356 | \$ 4,875 | \$ 41.15 | \$ 22,481 | |
| Net Generation--MWh @ Meter | 506,308 | 118,460 | | | |
| \$/MWh (A) | \$ (15.41) | \$ (57.78) | | | |

In MWh



Footnotes:

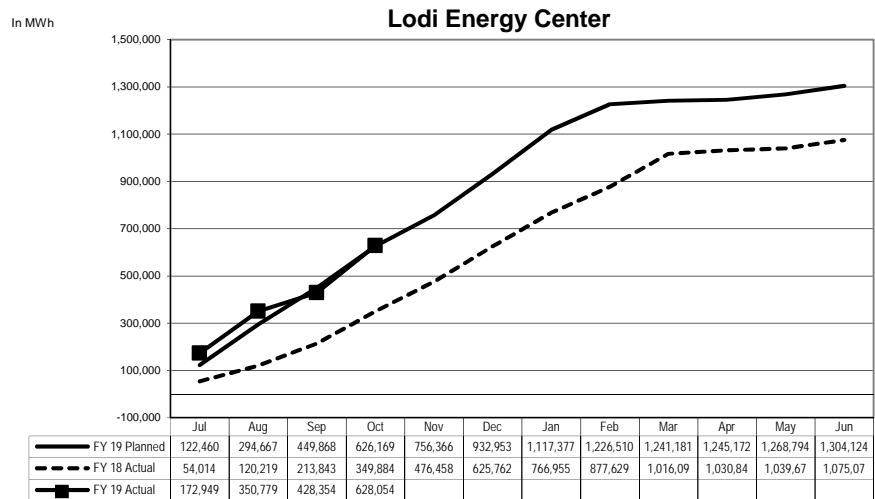
(A) Aggregate fiscal year generation in \$/MWh (excluding debt service)

**Annual Budget
NCPA Generation Detail Analysis By Plant
As of October 31, 2018**

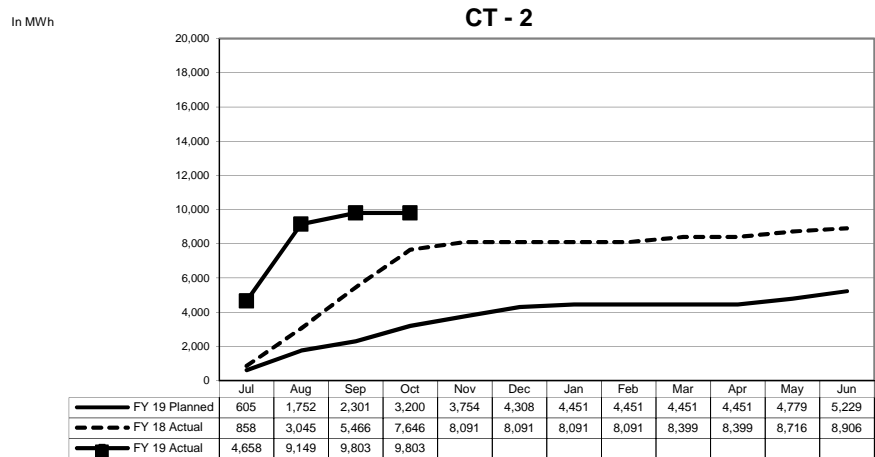
Generation Cost Analysis

| | Lodi Energy Center | | | | |
|---|--------------------|-------------------|------------------|--------------------|-----------------|
| | Budget | Actual | \$/MWh Actual | Under(Over) Budget | YTD % Remaining |
| Routine O & M | \$ 13,965 | \$ 4,357 | \$ 6.94 | \$ 9,608 | 69% |
| Fuel | 33,092 | 16,480 | 26.24 | 16,612 | 50% |
| AB 32 GHG Offset | - | - | - | - | 0% |
| CA ISO Charges and Energy Purchases | 5,665 | 2,489 | 3.96 | 3,175 | 56% |
| Capital Assets/Spare Parts Inventories | 1,613 | 492 | 0.78 | 1,121 | 69% |
| Other Costs | 3,302 | 809 | 1.29 | 2,493 | 76% |
| Debt Service | 26,080 | 8,693 | 13.84 | 17,387 | 67% |
| Annual Budget | 83,717 | 33,321 | 53.05 | 50,396 | 60% |
| Less: Third Party Revenue | | | | | |
| Interest Income | 386 | 207 | 0.33 | 179 | 46% |
| ISO Energy Sales | 52,415 | 33,096 | 52.70 | 19,319 | 37% |
| Ancillary Services Sales | 1,029 | 668 | 1.06 | 361 | 35% |
| Transfer Gas Credit | - | - | - | - | 0% |
| Misc | - | 0 | 0.00 | (0) | 0% |
| | 53,829 | 33,971 | 54.09 | 19,858 | 37% |
| Net Annual Budget Cost to Participants | \$ 29,887 | \$ (651) | \$ (1.04) | \$ 30,538 | 102% |
| Net Generation--MWh @ Meter | 1,304,124 | 628,054 | | | |
| \$/MWh (A) | \$ 2.92 | \$ (14.88) | | | |

MWhs Generated



| | Combustion Turbine No. 2 (STIG) | | | | |
|---|---------------------------------|-------------------|------------------|--------------------|-----------------|
| | Budget | Actual | \$/MWh Actual | Under(Over) Budget | YTD % Remaining |
| Routine O & M | \$ 1,481 | \$ 516 | \$ 52.65 | \$ 964 | 65% |
| Fuel and Pipeline Transport Charges | 977 | 659 | 67.24 | 318 | 33% |
| Capital Assets/Spare Parts Inventories | 60 | 1 | 0.12 | 59 | 98% |
| Other Costs | 506 | 139 | 14.21 | 367 | 72% |
| CA ISO Charges | 2 | 89 | 9.09 | (87) | -4303% |
| Debt Service | 5,717 | 1,906 | 194.38 | 3,811 | 67% |
| Annual Budget | 8,743 | 3,310 | 337.69 | 5,432 | 62% |
| Less: Third Party Revenue | | | | | |
| Interest Income | 109 | 31 | 3.19 | 77 | 71% |
| ISO Energy Sales | 401 | 1,452 | 148.09 | (1,050) | -262% |
| Ancillary Service Sales | - | - | - | - | 0% |
| Fuel and Pipeline Transport Credits | 990 | 682 | 69.54 | 308 | 31% |
| Misc | - | - | - | - | 0% |
| | 1,500 | 2,165 | 220.82 | (665) | -44% |
| Net Annual Budget Cost to Participants | \$ 7,243 | \$ 1,146 | \$ 116.87 | \$ 6,097 | 84% |
| Net Generation--MWh @ Meter | 5,229 | 9,803 | | | |
| \$/MWh (A) | \$ 291.87 | \$ (77.51) | | | |



Footnotes:

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

**Annual Budget
NCPA Generation Detail Analysis By Plant
As of October 31, 2018**

Generation Cost Analysis

| | Combustion Turbine No. 1 | | | | |
|---|---------------------------------|------------------|----------------------|---------------------------|------------------------|
| | Budget | Actual | \$/MWh Actual | Under(Over) Budget | YTD % Remaining |
| Routine O & M | \$ 1,560 | \$ 775 | \$ 139.95 | \$ 785 | 50% |
| Fuel and Pipeline Transport Charges | 497 | 440 | 79.47 | 57 | 11% |
| Capital Assets/Spare Parts Inventories | 3,965 | 515 | 92.96 | 3,450 | 87% |
| Other Costs | 580 | 167 | 30.21 | 413 | 71% |
| CA ISO Charges | 3 | 323 | 58.37 | (320) | -10991% |
| Debt Service | - | - | - | - | |
| Annual Budget | 6,606 | 2,221 | 400.96 | 4,385 | 66% |
| Less: Third Party Revenue | | | | | |
| Interest Income | - | 1 | | (1) | |
| ISO Energy Sales | 572 | 1,209 | 218.27 | (637) | -111% |
| Ancillary Services Sales | - | - | - | - | 0% |
| Misc | - | 16 | 2.82 | (16) | 0% |
| | 572 | 1,225 | 221.10 | (653) | -114% |
| Net Annual Budget Cost to Participants | \$ 6,033 | \$ 996 | \$ 179.77 | \$ 5,038 | 83% |
| Net Generation--MWh @ Meter | 7,533 | 5,539 | | | |
| \$/MWh (A) | \$ 800.92 | \$ 179.77 | | | |

Footnotes:

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

MWhs Generated

In MWh

CT - 1

