

Northern California Power Agency 651 Commerce Drive | Roseville, California 95678 (916) 781-3636 | www.ncpa.com

# BUSINESS PROGRESS REPORT



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# **Generation Costs & Reliability**

# **Combustion Turbine Project**

# Unit Operation for May 2021

| Unit  | Availability Production Reason for Run |                           |                     |  |  |  |  |  |
|---|--|---------------------------|---------------------|--|--|--|--|--|
| CT1 Alameda   | Unit 1 Unit 2                          | Unit 1 547.1 MW           | CAISO / CAISO       |  |  |  |  |  |
|   | 97.8% 97.8%                            | Unit 2 471.3 MWI          | 1                   |  |  |  |  |  |
| Curtailments, Outa  | ges, and Commen                        | ts:                       |                     |  |  |  |  |  |
| Unit 1: 5/04 @ 19:54 - 5/05 @11:27; Fuel gas compressor trouble, OMS 10112688   |  |                           |                     |  |  |  |  |  |
| Unit 2:   | 5/04 @ 19:54 - 5<br>10112686           | /05 @11:27; Fuel gas comp | ressor trouble, OMS |  |  |  |  |  |
| Unit  | Availability                           | Production                | Reason for Run      |  |  |  |  |  |
| CT1 Lodi  | CAISO                                  |                           |                     |  |  |  |  |  |
| Normal operation.   |  |                           |                     |  |  |  |  |  |
| Unit  | Availability                           | Production                | Reason for Run      |  |  |  |  |  |
| CT2 STIG  | 94.5%                                  | 4,431.0 MWł               | CAISO               |  |  |  |  |  |
| Curtailments, Outages, and Comments:<br>5/15 @ 00:00 - 21:00; Exhaust Duct Gasket; OMS 10145361<br>5/22 @ 00:00 - 19:40; Boiler Tube Leaks; OMS 10180369  |  |                           |                     |  |  |  |  |  |
| Unit  | Availability Production Reason for     |                           |                     |  |  |  |  |  |
| LEC   | 99.6%                                  | 161,260 MWI               | CAISO               |  |  |  |  |  |
| Curtailments, Outages, and Comments:<br>5/01 @ 12:07 - 13:40; Combustion Turbine Trip, OMS 10099943<br>5/20 @ 10:40 - 12:00; Fuel Gas Compressor Trouble, |  |                           |                     |  |  |  |  |  |

Maintenance Summary – Specific per asset above.

# **Geothermal Facilities**

| Unit                                   | Availability | Net Electricity<br>Generated/Water<br>Delivered | Out-of-Service/Descriptors  |  |
|--|--------------|---|---|--|
| Unit 1                                 | 66.80 %      | 16,213 MWh                                      | U1 was offline 5/5 0001 until 5/16 0700<br>for plant maint, hvac and fire system<br>install                   |  |
| Unit 2                                 | 66.33 %      | *17,159 MWh                                     | U2 was offline 5/5 0001 until 5/16 1030 for plant maint, hvac and fire system install                         |  |
| Unit 3                                 | N/A %        | N/A   | Unit 3 remains out of service.  |  |
| Unit 4                                 | 62.77 %      | 21,091 MWh                                      | Unit 4 was out of service from 5/19 1045<br>through 5/31 for H2 system repair and L/O<br>booster pump failure |  |
| Southeast Geysers<br>Effluent Pipeline | 44%          | 71.2 mgallons                                   | Average flow rate: 1,663 gpm  |  |
| Southeast<br>Solar Plant               | N/A          | 149,706 KWh                                     | Year-to-date KWh: 3,665,374   |  |
| Bear Canyon Pump<br>Station Zero Solar | N/A          | 282,809 KWh                                     | Year-to-date KWh: 5,465,277   |  |

# Availability/Production for May 2021

\* Accounts for an additional 897 MWh of house load for the 21KV power supply to the effluent pipeline supplied from Unit #2.

## Hydroelectric Project

#### Availability/Production for May 2021

| Units               | Availability | Net Electricity<br>Generated | Out-of-Service  |
|---------------------|--------------|------------------------------|---|
| Collierville Unit 1 | 98.95%       | 7665 MWh                     | CV Unit 1 – Out of Service on 5/18/21<br>from 0803 to 1553 for Oil Leak Repair  |
| Collierville Unit 2 | 100%         | 7872 MWh                     | CV Unit 2 – No Outages  |
| Spicer Unit 1       | 96.65%       | 95 MWh                       | NSM1- out of service on 5/17/21 from<br>0642 to 1936 for PG&E line outage and<br>on 5/23/17 from 0547 to 1744 for PG&E<br>line outage                       |
| Spicer Unit 2       | 96.65%       | 0 MWh                        | NSM2- out of service on 5/17/21 from<br>0642 to 1936 for PG&E line outage and<br>on 5/23/17 from 0547 to 1744 for PG&E<br>line outage                       |
| Spicer Unit 3       | 89.81%       | 186 MWh                      | NSM3- out of service on 5/17/21 to<br>5/19/21 from 0642 to 0757 for PG&E line<br>outage and on 5/23/21 to 5/24/21 from<br>0547 to 0819 for PG&E line outage |

**Operations & Maintenance Activities:** 

- CMMS work orders
- NSM Campground Opening
- Hazard Tree work in Union, Utica, NSM, and Alpine areas
- Transmission Line Vegetation Maintenance
- Submitted STIDs to FERC for Spicer and McKays
- Awarded Alpine and Union Dam Maintenance Contracts
- Conducted 3<sup>rd</sup> party FERC-required 1 in 10 year Security Assessments for 11563 and 2409
- Submitted inundation Maps for 11563 and 2409 Dams to DSOD

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

- There were no Cal OSHA Recordable, or Lost Time accidents in the month of May. There was one vehicle accident which occurred at NCPA's Geothermal facility on May 3, 2021. An employee driving an NCPA vehicle home after work was stopped at an intersection when he was rear-ended by a vehicle behind him that failed to stop. Damange to the vehicle was minimal and no injuries were reported.
- 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 May 22, 2021.
- 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.

|                                     | Hydro   | GEO     | CT<br>Group * | NCPA<br>HQ ** |
|-------------------------------------|---------|---------|---------------|---------------|
| Cal OSHA Recordable (this month)    | 0       | 0       | 0             | 0             |
| Cal OSHA Recordable (calendar year) | 0       | 0       | 0             | 0             |
| Days since Recordable               | 223     | 1,033   | 2,238         | 3,222         |
| Work Hours Since Last Recordable    | 18,146  | 215,296 | 336,712       | 2,678,361     |
| LTA's (this month)                  | 0       | 0       | 0             | 0             |
| LTA's (calendar year)               | 0       | 0       | 0             | 0             |
| Days without LTA                    | 4,972   | 2,101   | 10,142        | 6,235         |
| Work Hours without LTA              | 450,716 | 132,271 | 747,256       | 2,300,379     |
| Vehicle Incident (month)            | 0       | 1       | 0             | 0             |
| Vehicle Incident (calendar year)    | 0       | 1       | 0             | 0             |

#### May 2021 Generation Services Safety Report

\* 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 May 22, 2021.

# **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:

|           | May 2021           |         | Calendar Year 2    | 021       |  |  |  |  |
|-----------|--------------------|---------|--------------------|-----------|--|--|--|--|
|           | Peak MW            | MWh     | Peak MW            | MWh       |  |  |  |  |
| NCPA Pool | 349.23 5/31 @ 1800 | 183,809 | 349.23 5/31 @ 1800 | 895,238   |  |  |  |  |
| SVP       | 525.51 5/10 @ 1700 | 339,066 | 525.51 5/10 @ 1700 | 1,618,968 |  |  |  |  |
| MSSA      | 853.26 5/31 @ 1800 | 522,875 | 853.26 5/31 @ 1800 | 2,514,206 |  |  |  |  |

#### **Current Year 2021 Data**

#### Last Year 2020 Data\*

|           | May 2020           |         | Calendar Year 2020  |           |  |  |
|-----------|--------------------|---------|---------------------|-----------|--|--|
|           | Peak MW            | MWh     | Peak MW             | MWh       |  |  |
| NCPA Pool | 417.87 5/26 @1800  | 178,729 | 467.45 8/14 @ 1700  | 900,746   |  |  |
| SVP       | 555.36 5/27 @1400  | 316,656 | 586.3 8/14 @ 1700   | 1,535,708 |  |  |
| MSSA      | 960.71 5/26 @ 1800 | 495,385 | 1053.75 8/14 @ 1700 | 2,436,454 |  |  |

\*Last year's data added for comparison purposes only

#### System Peak Data

|           | All Time Peak Demand        | 2021 Peak Demand   |
|-----------|-----------------------------|--------------------|
| NCPA Pool | 517.83 MW on 7/24/06 @ 1500 | 349.23 5/31 @ 1800 |
| SVP       | 587.78 MW on 6/11/19 @ 1600 | 525.51 5/10 @ 1700 |
| MSSA      | 1070.79 MW on 9/1/17 @ 1700 | 853.26 5/31 @ 1800 |

 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 Dev               | viation Band Perform | ance               |
|------------------------|----------------------|--------------------|
|                        | May 2021             | Calendar Year 2021 |
| MSSA % Within the Band | 98.45%               | 98.52%             |

- NCPA continues to operate in split operation with the SC's working out of the backup control center and the system dispatchers working out of the primary control center due to COVID-19.
- CAISO issued a System Operating Message for 10 days warning of a potential for over supply during the middle part of the day.
- CAISO issued a System Operating Message for zero days warning of a Contingency in progress.
- There were no Public Safety Power Shutoff (PSPS) warnings issued by PG&E.

## Pooling, Portfolio Planning & Forecasting

- NCPA Pool load during May 2021 was 183,810 MWh, or 97.5% of forecast due to generally moderate temperatures. Pool load during May increased 2.8% over pandemic- influenced May 2020. The current weather outlook for June 2021 is for above-normal temperatures, with the pool load forecast at 195,208 MWh.
- Lodi Energy Center (LEC) ran every day but one during May, producing more than double the forecasted energy for the month: 28,999 MWh for the pool. Natural gas and power prices are significantly higher than a year ago, partly due to the lack of water behind the dams this year, meaning that summer gas-fired generation will likely be high, exceeding the June forecast of 13,935 MWh for the pool.
- During May 2021, 0.35" of rain was recorded at the Big Trees gauge. Average May Big Trees precipitation is 2.62".
- The Value of Storage (VOS) of New Spicer Meadow Reservoir (NSMR) has been maintained at \$200/MWh.
- NSMR storage as of May 31, 2021 was at 94,860-acre feet. The historical average NSMR storage at the end of May is 139,965-acre feet. As of June 7, 2021 NSMR storage is 94,207-acre feet. The current NCPA Pool share of NSMR storage is 48,264-acre feet.
- Combined Calaveras Project generation for the Pool in May 2021 totaled 7.8 GWh, down from 16.7 GWh in April 2021. The Pool's 7.8 GWh in May 2021 was below the pre-month forecast of 13.2 GWh which is due to a dry months of April and May as well as persistent drought conditions.
- Western Base Resource (BR) deliveries for the Pool during May 2021, at 32,716 MWh, exceeded the pre-month forecast of 31,151 MWh, due to the early completion of snowpack runoff. Displacement program energy totaled 830 MWh. Western's latest forecast for the Pool's share of June 2021 generation is 67,634 MWh.
- The PG&E Citygate gas index averaged \$4.045/MMBtu for delivery on June 3, 2021, above the average PG&E gas price during May of \$3.87/MMBtu as both NYMEX gas and basis prices have been rising due to flat production, growing exports of natural gas and normal spring maintenance interruptions. Prices look higher for the summer, with increased power burn expected to spur regional price competition. The June 2021 PG&E Citygate Bidweek price is \$4.22/MMBtu, up 8 cents from May's.

• Day-Ahead NP15 electricity prices averaged \$35.95/MWh (on-peak hours) and higher, \$37.75 during the off-peak hours during May 2021, with a high of \$110.41 and a low of exactly zero. Prices this May were 103% higher than in May 2020, due to warmer temperatures plus a nuclear outage and other maintenance.

|                        | NCPA Pool Loads & Resources Value Summary |              |           |         |  |               |                  |                    |  |  |
|------------------------|---|--------------|-----------|---------|--|---------------|------------------|--------------------|--|--|
|                        | Pea                                       | ak and Energ | y Summary |         | Estimated Production Costs Cost of Serving D |               |                  | ving Demand        |  |  |
|                        |   | iviay-4      | Pre-Month |         |  |               |                  |                    |  |  |
|                        | Coincident                                | -            | Forecast  |         |  |               |                  |                    |  |  |
|                        | Peak (WW)                                 | Total MWh    | Values    | Avg. MW | NUPA   | A POOI        |                  | 1                  |  |  |
|                        | May-31-21                                 |              |           |         | Cost/Revenue                                 | Variable Cost |                  |                    |  |  |
|                        | Hour 18                                   |              |           |         | (Estimate)                                   | (\$/MWh)      | Totals           | Avg (\$/MWh)       |  |  |
| Demand                 | 349.2                                     | 183,810      | 188,470   | 247.1   | N/A  | N/A           |                  |                    |  |  |
|                        |   |              |           |         |  |               | at Market C      | learing Price      |  |  |
| WAPA                   | -   | 32,716       | 31,151    | 44.0    | \$ 1,943,287                                 | \$ 59.40      | \$ 7,097,510     | \$ 38.61           |  |  |
| Geothermal             | -   | 22,550       | 23,642    | 30.3    | 428,451                                      | 19.00         |                  |                    |  |  |
| Hydro                  | -   | 7,800        | 23,634    | 10.5    | 46,800                                       | 6.00          |                  |                    |  |  |
| Stig & CTs             | -   | 3,300        | 648       | 4.4     | 195,143                                      | 59.13         | at Variable Cost | of Pool Generation |  |  |
| LEC                    | -   | 28,999       | 14,384    | 39.0    | 1,108,632                                    | 38.23         |                  |                    |  |  |
| Contracts              | -   | 126,340      | 107,286   | 169.8   | 5,796,267                                    | 45.88         | \$ 7,891,611     | \$ 42.93           |  |  |
| Market - Net           | 349.2                                     | (37,895)     | (12,275)  | (50.9)  | 0.9) 44,444 37.75                            |               |                  |                    |  |  |
| (Net Sales = Negative) |   |              |           |         |  | X             |                  |                    |  |  |
| Net Total              | 349.2                                     | 183,810      | 188,470   | 247.1   | \$ 9,563,024                                 | \$ 42.93      |                  |                    |  |  |

|        | Monthly Market Summary |    |           |          |                           |  | rу |                      |                         |                         |   |
|--------|------------------------|----|-----------|----------|---------------------------|--|----|----------------------|-------------------------|-------------------------|---|
|        |                        |    |           | Av<br>Co | g Variable<br>ost of Pool | Forward Prices (EOX NP15 HLH Ask Prices) |    | <u>H</u> Ask Prices) | NOTES TO SUMMARY TABLE: |                         |   |
|        | Pool Energy            | HL | H Avg MCP | G        | eneration                 |  |    | NP15 5/3/2021        | 6/                      | <b>/4/2021</b> (\$/MWh) |   |
|        | (MWh)                  |    | (\$/MWh)  |          | (\$/MWh)                  |  |    | (\$/MWh)             |                         |                         | Peak and Energy Summary:  |
| Jul-20 | 203,610                | \$ | 27.80     | \$       | 37.25                     | Jul-21                                   | \$ | 97.23                | \$                      | 118.51                  | * Monthly generation summary of Coincidental Peak (hour in which pool demand peaked),           |
| Aug-20 | 216,986                | \$ | 59.74     | \$       | 41.08                     | Aug-21                                   |    | 115.60               |                         | 140.06                  | total MWH for the month, and pre-month forecasted values for report period.                     |
| Sep-20 | 195,756                | \$ | 46.66     | \$       | 45.40                     | Sep-21                                   |    | 77.19                |                         | 103.46                  | * Generation totals are for POOL SHARE of the projects.   |
| Oct-20 | 216,986                | \$ | 59.74     | \$       | 45.47                     | Q3 2021                                  | \$ | 96.67                | \$                      | 120.68                  | * Hydro totals include Collierville and Spicer generation.                                      |
| Nov-20 | 181,145                | \$ | 40.43     | \$       | 44.27                     | Q4 2021                                  |    | 54.85                |                         | 55.77                   | Estimated Production Costs:   |
| Dec-20 | 194,203                | \$ | 42.06     | \$       | 44.17                     | Q1 2022                                  |    | 51.70                |                         | 52.07                   | * Fixed project costs not included except for WAPA, where total month's project costs           |
| Jan-21 | 190,971                | \$ | 35.05     | \$       | 47.79                     | bal2021                                  | \$ | 68.04                | \$                      | 83.17                   | are used to calculate the average unit cost.  |
| Feb-21 | 167,671                | \$ | 63.86     | \$       | 46.94                     | CY2022                                   |    | 50.90                |                         | 53.06                   | * STIG and CT costs include forward natural gas and basis hedge transactions.                   |
| Mar-21 | 181,260                | \$ | 34.53     | \$       | 46.66                     | CY2023                                   |    | 44.85                |                         | 47.29                   | * STIG & CT costs reflect \$2.60 and \$1.62/MWH variable O&M costs per 6-12-06 GSCA.            |
| Apr-21 | 171,421                | \$ | 36.69     | \$       | 43.02                     | CY2024                                   |    | 40.19                |                         | 41.91                   | Cost of Serving Demand:   |
| May-21 | 183,810                | \$ | 38.61     | \$       | 42.93                     | CY2025                                   |    | 38.96                |                         | 40.93                   | Compares price of meeting total monthly demand with (1) Hourly pool market clearing price;      |
| Jun-21 |                        |    |           |          |                           | CY2026                                   |    | 38.16                |                         | 40.15                   | (2) Variable cost of pool gen. Pool Gen is sum of estimated costs divided by sum of generation. |

NCPA POOL RESOURCES FY-2021: Jul20 - May21 Actual - bal. Forecast



# 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 of August 2021:
  - Monthly System Resource Adequacy Demonstration (filed June 17, 2021)
  - Monthly Supply Plan (filed June 17, 2021)

## 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:

Energy Storage Enhancements (ESE)

- As CAISO integrates GWs of battery capacity into its grid, CAISO and battery operators are encountering challenges with developing bidding strategies that optimize the resources in Day Ahead and Real Time Markets and maintain availability in critical net peak hours. As part of the Market Enhancements for Summer 2021 Needs, CAISO imposed a contentious Minimum State of Charge requirement for Resource Adequacy (RA) batteries that CAISO will enforce during periods of "Residual Unit Commitment (RUC) under-generation feasibility" for two years. The primary goal of ESE is to develop a permanent replacement for the MSOC requirement once it expires. CAISO explains that the main challenge is CAISO developed its current markets around gas-fired resources that are available 24X7 and the Real Time Market Multiple Interval Optimization (MIO) can only look out 65 minutes, which results in exhausting the batteries prior to the high value net peak hours. CAISO explained that expanding the MIO is technologically infeasible and the only current large-scale battery operator expressed concerns that, even if it was feasible, that it would be too inaccurate and could exacerbate the problem. CAISO and battery operators are proposing new products and other financial incentives to address these issues such as:
  - Scarcity pricing
  - Apply prices to existing MSOC tool
  - Energy shift product
  - Biddable state of charge product
  - Variable charging rates
  - Exceptional dispatch enhancements including payment for maintaining MSOC
- NCPA has concerns that these solutions could be unnecessary costs for ratepayers and unfair advantages to the storage fleet and drafted comments accordingly.
  - Batteries are not the only use limited resources negatively impacted by the fact the CAISO market was designed around natural gas fired generation with 24x7 availability. CAISO must revisit use-limited eligibility and associated opportunity costs for other resources such as certain hydro and near end-oflife thermal units. Special storage rules could violate CAISO's guiding principle for its markets to be technology agnostic.
  - NCPA believes current CAISO markets including Resource Adequacy Incentives and bilateral RA payments are sufficient tools to ensure availability during Availability Assessment Hours.
  - Storage does not have enough experience in the market to conclude that new, storage specific, products are necessary and CAISO should suspend

this initiative at least until after GWs of storage have achieved deliverability and have time to optimize bidding strategies.

# Extended Day-Ahead Market

- This initiative has been put on hold pending Day Ahead Market Enhancements initiative development.
- Bundle 1 consists of Resource Sufficiency Evaluations (RSE), Congestion and Transfer revenue allocation, and Transmission cost allocation.
- RSE is relatively uncontroversial and is similar in concept to ISO/CPUC RA program in that it is intended to ensure that EDAM participants have sufficient capacity, transmission, flexibility, and reserves to serve own loads and prevent leaning on other participants. RSE is currently active in EIM. Congestion and Transfer revenue allocations relatively uncontroversial as well. Congestion is intra-BAA and allocated to load that pays for transmission. Transfers occur inter-BAA and will be allocated to transmission owners. The controversial topic is transmission cost allocation. CAISO proposes to declare most transmission costs as sunk and only apply usage fee to incremental exports and EIM wheeling transfers. NCPA and others are concerned that those paying for transmission will not be fairly compensated.
- This initiative will develop an approach to extend participation in the Day-Ahead market to the Western Energy Imbalance Market (EIM) entities in a framework similar to the existing EIM approach for the real-time market, rather than requiring full integration into the CAISO balancing area. The extended Day-Ahead market (EDAM) will improve market efficiency by integrating renewable resources using Day-Ahead unit commitment and scheduling across a larger area.

#### **Resource Adequacy Enhancements**

- Phase 1 implementation began in June 2021 with planned outage enhancements including substitution requirements for all RA outages and removal of substitution exemption for planned transmission induced generator outages effective July 1, 2021.
- Phase 2A draft final proposal and Phase 2B seventh revised straw proposal publication is TBD.
- Phase 1 will include planned outage process enhancements, RA Import requirements, operationalizing storage, and backstop capacity procurement focused on CPM for local energy sufficiency. The planned outage process enhancements are scheduled to become effective June 2021 while the others are slated to go live in time for the 2022 RA year (Jan. 2022). The primary outage process enhancement is requiring generators to submit substitution up front for all planned RA outages shortly after month ahead submittals. CAISO rejected NCPA's response to keep status quo whereby substitution is only required after a study produces an assignment. RA Import enhancements focus on determining the source of an RA import. Western is sufficiently covered under the new definition of resource specific since it includes a "system of resources" such as CVP.
- Phase 2 includes unforced capacity evaluations, determining system RA requirements, system RA showings and sufficiency testing, individual assessments, must offer obligations and bid insertion modifications, UCAP for local studies, backstop capacity procurement, and further planned outage process enhancements including implementation of a substitute capacity pool. Issues with this phase include counting rules being taken from the LRA and handed to the CPUC or other LRAs. However, CAISO is maintaining MSS exemptions to bid insertion and must offer obligations.

Day-Ahead Market Enhancements

- This initiative has been delayed due to the Summer 2021 Readiness Initiative taking priority.
- CAISO delayed publication of next straw proposal and announced that it will propose enhancements to RUC. NCPA seeking clarity for if new Reliability Capacity product remains.
- CAISO responded to NCPA's proposed redlines regarding Load Following Metered Sub-system treatment but we will need to see how they fit in with the next proposal.
  - o Rejected language exempting LFMSS from reliability cost allocations
  - Accepted IRP Tier 1 proposal to base cost on LFMSS net portfolio deviations
  - Rejected IRP Tier 2 proposal to base cost on LFMSS net portfolio deviations and countered by proposing to base cost on net metered demand
  - Rejected NCPA tariff redlines.
- This initiative will explore new Day-Ahead products that will address ramping needs between intervals and uncertainty that can occur between the Day-Ahead and real-time markets.
- CAISO reviewed the need for new products along with data supporting uncertainty concerns:
  - Uncertainty between Day-Ahead and real-time market has increased from 2017 to 2019 and CAISO operators are addressing this development with out of market actions which disrupts market efficiency
  - Historically, generators had higher certainty to know if they would be scheduled in real-time
  - Due to uncertainty and changing resource fleet, commitment decisions are no longer necessarily known
  - Gas, hydro, storage, and imports need to cover costs to be available for dispatch in real-time – this will be accomplished with imbalance reserves
- New products:
  - Imbalance Reserve Product (IRP) will be designed to address granularity and uncertainty between Day-Ahead and real-time markets:
    - Hourly product;15-minute dispatchable; Biddable; Covers granularity difference and uncertainty between DAM and FMM; All awards are cooptimized and settled simultaneously; DAM has no energy price formation issue because the market solves all hours in a single optimization; Stepped relaxation parameters (proposed)
    - NCPA has requested CAISO to allocate LF-MSS costs similar Flexible Ramping Product cost allocations.
  - Addition of Up and Down Reliability Capacity in RUC process used to address gaps between bid in demand and forecast demand. NCPA is advocating to retain right to opt out of RUC.
- Implementation date is to be determined.

# Transmission Access Charge Structure Enhancements

- CAISO has pushed the initiative back to Q4 2022 in the latest Policy Roadmap and Annual Plan.
- Initiative is currently on hold pending developments from EDAM initiative.
- This initiative considers 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 at an approximately 50/50 split in order to address costs shifts as well as the full impact of high coincident peak demand, low load factor UCD areas that have relatively lower volumetric use compared to high load factor areas. It received general support from the market and will be presented to the CAISO Board in 2021 and will be implemented at a to be determined point thereafter. The CAISO is working to align the TAC Board consideration with the Extended Day-Ahead Market (EDAM) process so they are aligned to the extent possible. The TAC proposal may possibly need to be updated if the EDAM proposal aspects related to transmission issues drive changes to the TAC initiative.
- 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.

### <u>Western</u>

| Western Base Resource Tracking (NCPA Pool) |
|--|
|--|

|        |                       | West           | ern Base R    | esource Tracking      | g - NCPA P              | ool                       |                              |  |  |  |  |  |  |
|--------|-----------------------|----------------|---------------|-----------------------|-------------------------|---------------------------|------------------------------|--|--|--|--|--|--|
|        |                       | Actual         |               | Costs & Rates         |                         |                           |                              |  |  |  |  |  |  |
|        | BR                    | BR             |               | Base Resource &       | Monthly                 | CAISO LMP                 | 12-Mo Rolling                |  |  |  |  |  |  |
|        | Forecast <sup>1</sup> | Delivered      | Difference    | Restoration Fund      | Cost of BR <sup>2</sup> | Differential <sup>3</sup> | Avg. Cost of BR <sup>4</sup> |  |  |  |  |  |  |
|        | (MWh)                 | (MWh)          | (MWh)         | (\$)                  | (\$/MWh)                | (\$/MWh)                  | (\$/MWh)                     |  |  |  |  |  |  |
| Jul-20 | 83,801                | 81,392         | (2,409)       | \$1,825,459           | \$ 22.43                | \$ 0.13                   | \$ 27.37                     |  |  |  |  |  |  |
| Aug-20 | 61,985                | 59,998         | (1,987)       | \$1,826,020           | \$ 30.43                | \$ (0.23)                 | \$ 27.68                     |  |  |  |  |  |  |
| Sep-20 | 41,023                | 41,391         | 368           | \$1,811,655           | \$ 43.77                | \$ 0.60                   | \$ 27.62                     |  |  |  |  |  |  |
| Oct-20 | 30,317                | 22,596         | (7,721)       | \$909,162             | \$ 40.24                | \$ 11.76                  | \$ 29.62                     |  |  |  |  |  |  |
| Nov-20 | 14,598                | 13,280         | (1,318)       | \$909,162             | \$ 68.46                | \$ 0.10                   | \$ 30.44                     |  |  |  |  |  |  |
| Dec-20 | 13,128                | 14,102         | 974           | \$909,162             | \$ 64.47                | \$ 0.79                   | \$ 31.48                     |  |  |  |  |  |  |
| Jan-21 | 6,278                 | 7,174          | 896           | \$909,162             | \$ 126.73               | \$ 1.02                   | \$ 32.15                     |  |  |  |  |  |  |
| Feb-21 | 16,372                | 2,262          | (14,110)      | \$909,162             | \$ 401.93               | \$ (0.00)                 | \$ 33.53                     |  |  |  |  |  |  |
| Mar-21 | 26,497                | 16,106         | (10,391)      | \$909,162             | \$ 56.45                | \$ 0.33                   | \$ 34.70                     |  |  |  |  |  |  |
| Apr-21 | 41,629                | 27,179         | (14,450)      | \$1,953,132           | \$ 71.86                | \$ 0.04                   | \$ 37.32                     |  |  |  |  |  |  |
| May-21 | 74,036                | 32,716         | (41,320)      | \$1,953,132           | \$ 59.70                | \$ 0.30                   | \$ 41.86                     |  |  |  |  |  |  |
| Jun-21 | 93,177                | -              | (93,177)      | \$1,953,132           | \$ 20.96                | \$-                       | \$ 41.80                     |  |  |  |  |  |  |
| 1/ /   | As forecaste          | d in NCPA 20   | /21 Budget    |                       |                         |                           |                              |  |  |  |  |  |  |
| 2/ :   | = (Western (          | Cost + Restora | ation Fund)/B | R Delivered, for Pool | Participants            | only.                     |                              |  |  |  |  |  |  |
| 3/ :   | = (MEEA LMF           | P - PG&E LAP   | LMP) using p  | ublic market informat | tion (i.e. not          | settlement qua            | ality).                      |  |  |  |  |  |  |

4/ Based on BR Delivered (Actual) when available and BR Forecast in all other cases. Includes CAISO LMP impact.

- NCPA Pool received 32,716 MWh Base Resource (BR) energy in May 2021. This includes 830 MWh of Displacement Energy for an estimated savings of \$6,000 or about \$7.22/MWh.
- Pool Members' cumulative net MEEA savings for NCPA FY 2021 is about \$250,190 and Displacement savings at approximately \$735,221, for July 2020 through May 2021.

# Integrated Resource Plan (IRP)

 Pursuant to the Western Base Resource Contract, NCPA, on behalf of the assignment members, is required to file a structured Integrated Resource Plan with Western every five (5) calendar years, and is subsequently required to file an update to the IRP each year. NCPA is on track to file the 2021 annual update report prior to the July 1<sup>st</sup>, 2021 deadline.

## **Interconnection Affairs**

# PG&E Update

### TO-18 Rate Case

- On October 15, 2020 FERC issued a ruling on the PG&E Transmission Owner Tariff 18 Filing.
- The ruling came over four years after the initial filing and over two years from an initial favorable decision back in 2018.
- The ruling is not the end of TO-18 as FERC has requested further testimony and briefs on ROE matters. The initial decision reduced ROE from 10.40% to 9.13%.
- Once ROE is decided, TO-18 rates will be effective for a 12-month period from March 1, 2017 Feb 28, 2018.
- TO-19, which was settled at a TRR of 98.85% of TO-18 will be effective for a 14month period from March 1, 2018 – April 30, 2019.
- Recent Developments: PG&E has offered to settle the entire case (ROE and non-ROE Issues) on a "black box" basis. This will result in immediate refunds for both TO-18 and 19.
- Joint Intervenors determined the terms of PG&E's settlement offer are not a productive starting point for negotiations. ROE is still outstanding.

### Permanent Inter-Tie Switch Between Geo Plants 1 and 2

- The permanent no-load intertie switch has been approved by the CAISO. The switch can be used when either the Fulton or Lakeville line is out of service to combine the outputs of Geo Plant 1 and Plant 2.
- NCPA and PG&E operating procedure is complete.
- Use of the Intertie Switch is still pending CPUC approval. Interim solution if necessary will be to use the temporary jumpers as in Jan of 2020.

### Cotenancy Agreement

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

 In Feb 2021, PG&E came across an opportunity to engage in mediation with CDWR to address the cost of removal issue. NCPA has agreed to join the mediation with PG&E.

#### Transmission Planning BPM Updated Modeling Data Submittal

- CAISO is requiring Generators to submit updated modeling data to ensure CAISO has current and accurate system information.
- NCPA has submitted updated data and power flow models for Hydro, all Geo, and all CT units. With the exception of New Spicer Meadows, all NCPA units are deemed compliant by the ISO. New Spicer modeling data is due the first quarter of 2022.

#### Stakeholder Transmission Asset Review (STAR) Process

- NCPA's objective in PG&E's Stakeholder Transmission Asset Review process is to participate and influence lower cost alternatives where possible, identify projects which may benefit members, and introduce Member Specific Projects.
- On December 1, 2020, PG&E submitted a 10-year capital plan to all stakeholders. The list included 1,596 total projects (equal to or greater than \$1M) and over 500 supporting documents (Project Authorizations/Business Cases).
- NCPA drafted stakeholder comments with more emphasis on projects which are in planning (i.e. not in construction phase), projects which fall under the "work requested by others" category, projects which are on hold due to CAISO or CPUC action, and projects which might be related to non-CAISO controlled facilities.
- PG&E replied to stakeholders' comments and held a stakeholder meeting on March 4, 2021.
- Next step: Stakeholders may ask follow-up questions to PG&E responses and March 4th presentations. PG&E will submit updated 10-year capital plan again on June 1, 2021.

### 2020-2021 Transmission Plan - PG&E Area Wildfire Impact Assessment

Multiple PSPS events were carried out in 2019 and 2020. The worst case was on October 26, 2019 where customers in 36 counties were de-energized. The CASIO as part of the 2020-2021 TPP conducted studies to assess impacts of various PSPS scenarios in the PG&E area. Using the Cal Fire and CPUC Fire Threat Map, the CAISO identified transmission lines in tier 2 and tier 3 Fire Threat Zones

| Blanning Area               | 60     | )kV    | 11     | 5kV    | 23     | 0kV    | 50     | Total  |       |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Fianning Area               | Tier 2 | Tier 3 | TOLAI |
| Greater Bay Area            | 4      | 6      | 11     | 22     | 9      | 21     | 1      | 1      | 75    |
| North Coast/North<br>Bay    | 17     | 14     | 7      | 15     | 4      | 18     | 0      | 0      | 75    |
| Central Coast/Los<br>Padres | 7      | 3      | 17     | 10     | 2      | 9      | 0      | 2      | 50    |
| Greater Fresno Area         | 5      | 3      | 3      | 1      | 4      | 0      | 0      | 0      | 16    |
| Central Valley              | 22     | 14     | 18     | 19     | 11     | 3      | 0      | 0      | 87    |

| Humboldt     | 6  | 2  | 2  | 1  | 0  | 0  | 0 | 0 | 11  |
|--------------|----|----|----|----|----|----|---|---|-----|
| North Valley | 19 | 15 | 4  | 10 | 14 | 9  | 0 | 0 | 71  |
| Total        | 80 | 57 | 62 | 78 | 44 | 60 | 1 | 3 | 385 |

Next, the CAISO considered the following five study scenarios and ultimately choose Scenario 4 as the most realistic:

| Scenario<br>Number | Scenario Name  | Scenario Description   |
|--------------------|----------------|--|
| 1                  | All T 2&3      | All tier 2 & tier 3 lines de-energized   |
| 2                  | All T3         | All tier 3 lines de-energized  |
| 3                  | 10-26 PSPS     | Lines de-energized in October 26 2019 PSPS event   |
| 4                  | 10-26 PSPS-WFM | Lines de-energized based upon October 26 2019 PSPS event conditions with PG&E's wildfire mitigations   |
| 5                  | PSPS-HWC-All   | Based upon potential PSPS events corresponding to historical weather conditions, de-energize all lines |

Lines with the most amount of direct load reduction were identified as critical transmission lines during the study period and listed by PG&E planning area:

- Greater Bay Area (SVP, City of Alameda, City of Palo Alto, Port)
  - Monta Vista-Jefferson #1 230 kV line
  - Monta Vista-Jefferson #2 230 kV line and
  - Monta Vista-Burns 60 kV line
- North Coast & North Bay Area (City of Healdsburg, City of Ukiah)
  - Fulton-Pueblo 115 kV line
  - Eagle Rock-Fulton-Silverado 115 kV line
  - Sonoma-Pueblo 115 kV line
  - Windsor-Fitch Mountain 60 kV line and
  - Mendocino-Willits-Fort Bragg 60 kV line
- North Valley Area (Plumas Sierra)
  - Centerville-Table Mtn-Oroville 60 kV line
- Central Valley Area (City of Lodi, City of Biggs, City of Gridley)
  - El Dorado-Missouri Flat #1 115 kV line
  - El Dorado-Missouri Flat #2 115 kV line
  - West Point-Valley Springs 60 kV line
  - Drum-Rio Oso #1 115 kV line and
  - Drum-Rio Oso #2 115 kV line
- Central Coast & Los Padres Area (City of Lompoc)
  - None Identified

In conclusion, if critical transmission lines are excluded from PSPS Scope, the exclusion will have a significant reduction in direct load drop during a PSPS event. The ISO will coordinate with PG&E to evaluate mitigation options within PG&E's wildfire mitigation plan to be able to exclude critical transmission lines from future PSPS events.

# **Debt and Financial Management**

- While the Federal Reserve won't meet again until June 15-16<sup>th</sup>, the May jobs report was
  released on June 4th disappointing analysts again as companies across the country
  struggled to find enough help to satisfy booming demand, even as they raise wages and
  offer sign-on bonuses. Nonfarm payrolls grew by 559,000 but short of the 650,000 increase
  economists forecasted.
- The data together show the economic recovery continues, but growth is hamstrung by a labor shortage. The reasons are clear: many employers say enhanced unemployment benefits make it harder to hire in lower-wage jobs, working parents continue to struggle with child care, and some workers are sitting out because of ongoing Covid-19 concern. This report had little impact on the stock market but pushed rates for the 10-year and 30-year Treasuries lower. Shorter-term rates remained relatively flat.
- As the Agency prepares for summer readiness, the Treasurer-Controller, in conjunction with Power Management and Settlements, has positioned NCPA's investment portfolio with increased liquidity to cover the higher than expected CAISO invoices due to the forward price curve and seasonally higher fuel and power supply costs. The forward price curve continues to reflect high summer prices due to a loss of hydro generation.

# **Schedule Coordination Goals**

### Software Development

- LEC MSG Software Suite, including the updated Prescheduler and MIDS apps, was successfully rolled out in the production as of May 25, 2021 operating date.
- New applications and enhancements under development
  - ABISS (Accounting, Budget, Information and Settlements System) is under development. It will play a major piece to the new Accounting Reporting and Budgeting solution currently under evaluation. ABISS will combine most, if not all, relevant data sources coming from internal databases as well as from the new Budgeting data source.
  - Renewable Portfolio Standard Reporting app to be added as an enhancement to the Risk Management app. The report will provide members an automated RPS Balance Sheet of their RECs in a Compliance Period. Production release slated for June 2021

#### <u>Network</u>

- The LEC Project was successfully deployed as an MSG (Multi-Stage Generator) resource into the CAISO production market environment on 5/25/2021. This was an Agency-wide initiative that required extensive coordination and testing among NCPA's business units. The IS Ops & Support team performed modifications to its SCADA system to transmit operating instructions from the CAISO to LEC staff for the plant to transition between different operating states as required.
- IS continues to work on the development of security procedures and systems in preparation for transition to a NERC CIP Medium Impact entity for the NCPA Dispatch HQ and DRC Control Centers. Technical software to help meet technical compliance with the CIP-007 and CIP-010 standards are being evaluated and anticipated to be purchased by end of FY 21. IS staff performed a review on a number of potential supply chain vendors in support of this procurement process.
- IS has received RFP responses to its Phone System Replacement RFP issued in April that includes a single solution to each of the NCPA Head Quarters, Disaster Recovery Center (DRC), the NCPA Combustion Turbine location, NCPA Geothermal power plant, and the

NCPA Murphys location. Work is underway to evaluate the responses and determine next steps in the process.

# **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 2021 NCPA All Resources Bill (ARB) monthly invoice sent to members on April 25, 2021 contains:

- May 2021 monthly pre-billed budget/forecast amounts;
- March 2021 (1st Adjustment) NCPA Project and CAISO Initial settlement true-ups;
- February 2021 (2nd Adjustment) NCPA Project settlement true-up and T+12 business day recalculated CAISO settlement true-up allocations;
- December 2020 (3rd Adjustment) T+55 business day recalculated CAISO settlement true-up allocations and NCPA Projects true-up;
- June 2020 (4th Adjustment) T+9 month recalculated CAISO settlement true-up allocations;
- August 2019 (5th Adjustment) T+18 month recalculated CAISO settlement true-up allocations;
- May 2018 (6th Adjustment) T+33 month recalculated CAISO settlement true-up;
- February 2018 (7th Adjustment) T+36 month CAISO settlement true-up;



# Legislative & Regulatory

## State Update

- NCPA has been engaged and continues to participate in State Budget discussions to secure funding to support utility arrearages associated with COVID-19. The Governor and the Senate have both introduced proposals related to this issue. The State Budget must be finalized by June 15, 2021, with policy implementation discussions continuing thereafter.
- NCPA has been negotiating amendments and developing positions on several energy-related bills in the State Legislature. Major legislative issues include efforts to make changes to renewable energy planning and procurement requirements, support utility transportation decarbonization policies and programs, advance green hydrogen, and efforts related to wildfire mitigation.

## Customer Programs Update

 NCPA released an RFP on April 22, 2021, to aid Members in the administration of any customer or rate assistance programs that require income verification. The RFP was issued in response to Member requests, in light of an increasing emphasis on equity-focused programs, and continued need for programs providing COVID support and relief. The resulting enabling agreements will be administered through the Support Services Program for Member use. Responses are due by May 27, 2021, and we expect that contracts should be in place by September 2021.

# <u>Human Resources</u>

### Hires:

Eric Bostleman reinstated as a Hydro Tech with the Agency's Hydroelectric Operations team on May 27, 2021. Eric's responsibilities include operating and maintaining the turbine generator units, dams, and auxiliary equipment in our hydroelectric power plants and watershed facilities. Eric joins us from Idaho Power, where he was a Hydro Operations Generation Specialist responsible for operating and maintaining a hydro plant and performing necessary operating and maintenance functions essential to the safe and efficient operation of the area, plant and facilities. In addition to his time at Idaho Power, Eric worked as a Hydro Powerplant Supervisor and Technician with the Turlock Irrigation District, was a Journeyman Hydro Plant and Substation Operator with Avista Utilities, and was previously employed as a Hydro Tech with NCPA. Eric brings over 20 years of maintenance and operations experience within the power industry.

Maria Wong joined the Agency as a Power Settlements Analyst on June 7, 2021. In this new role, Maria will be responsible for the settlement validation and allocation of costs and revenues derived from transactions of wholesale energy products necessary to support the Member Pool, NCPA's Scheduling Coordinator activities, Member participation in the California, Western, and Federal electricity markets, and NCPA Power Management's Service Customers. Maria joins us from Energeia where she has been an Analyst since 2019. While Maria was at Energeia she was responsible for forecasting, load profile modelling, market research, grid impacts modelling, cost of service analysis and rate and program design in the domains of clean/renewable energy, distributed energy resources and advanced energy solutions for clients such as local governments, government agencies and utilities. Maria also holds a Bachelor of Science, in Pharmaceutical Chemistry from University of California Davis.

# Intern Hires:

The Agency welcomed Alex Tucker, Student Assistant III, on May 24, 2021. Alex will spend the summer interning with the Agency's Combustion Turbine (LEC) Department.

## Separations:

Jan Bonatto retired from her position as an Energy Resource Analyst IV with Power Management's Forecasting & Prescheduling Department on June 9, 2021. The Agency thanks Jan for her 15 years of service with NCPA and wishes her all the best in retirement!

#### Annual Budget 2020-2021 Fiscal Year To Date As of May 31, 2021

| n Thousands   | Program    |           |            |           |  |  |  |  |  |  |  |
|---|------------|-----------|------------|-----------|--|--|--|--|--|--|--|
| Γ   | Annual     |           | Under(Ovr) | YTD %     |  |  |  |  |  |  |  |
| SENERATION RESOURCES                                | Budget     | Actual    | Budget     | Remaining |  |  |  |  |  |  |  |
| NCPA Plants   |            |           |            |           |  |  |  |  |  |  |  |
| Hydroelectric                                       | 54,260     | 47,798    | \$ 6,462   | 12%       |  |  |  |  |  |  |  |
| Geothermal Plant                                    | 35,561     | 33,950    | 1,611      | 5%        |  |  |  |  |  |  |  |
| Combustion Turbine No. 1                            | 7,884      | 5,544     | 2,339      | 30%       |  |  |  |  |  |  |  |
| Combustion Turbine No. 2 (STIG)                     | 7,989      | 8,917     | (928)      | -12%      |  |  |  |  |  |  |  |
| Lodi Energy Center                                  | 92,551     | 76,190    | 16,361     | 18%       |  |  |  |  |  |  |  |
|   | 198,246    | 172,399   | 25,846     | 13%       |  |  |  |  |  |  |  |
| Member Resources - Energy                           | 60,056     | 54,787    | 5,269      | 9%        |  |  |  |  |  |  |  |
| Member Resources - Natural Gas                      | 2,442      | 2,417     | 25         | 1%        |  |  |  |  |  |  |  |
| Western Resource                                    | 29,870     | 24,344    | 5,525      | 18%       |  |  |  |  |  |  |  |
| Market Power Purchases                              | 27,423     | 32,779    | (5,356)    | -20%      |  |  |  |  |  |  |  |
| Load Aggregation Costs - ISO                        | 250,995    | 704,866   | (453,871)  | -181%     |  |  |  |  |  |  |  |
| Net GHG Obligations                                 | -          | 1,210     | (1,210)    |           |  |  |  |  |  |  |  |
|   | 569,031    | 992,802   | (423,771)  | -74%      |  |  |  |  |  |  |  |
| RANSMISSION   |            |           |            | l         |  |  |  |  |  |  |  |
| Independent System Operator                         | 120,026    | 114,430   | 5,596      | 5%        |  |  |  |  |  |  |  |
|   |            |           |            |           |  |  |  |  |  |  |  |
|   |            |           | 1          | 4         |  |  |  |  |  |  |  |
| Legislative & Regulatory                            |            |           |            | 0.5%      |  |  |  |  |  |  |  |
| Legislative Representation                          | 2,180      | 1,425     | 755        | 35%       |  |  |  |  |  |  |  |
| Regulatory Representation                           | 715        | 653       | 62         | 9%        |  |  |  |  |  |  |  |
| Western Representation                              | 716        | 529       | 187        | 26%       |  |  |  |  |  |  |  |
| Customer Programs                                   | 477        | 366       | 111        | 23%       |  |  |  |  |  |  |  |
|   | 4,088      | 2,973     | 1,115      | 27%       |  |  |  |  |  |  |  |
| Judicial Action                                     | 460        | 628       | (168)      | -36%      |  |  |  |  |  |  |  |
| Power Management                                    |            |           |            |           |  |  |  |  |  |  |  |
| System Control & Load Dispatch                      | 6,766      | 5,650     | 1,116      | 16%       |  |  |  |  |  |  |  |
| Forecasting & Prescheduling                         | 2,934      | 2,580     | 354        | 12%       |  |  |  |  |  |  |  |
| Industry Restructuring                              | 425        | 367       | 58         | 14%       |  |  |  |  |  |  |  |
| Contract Admin, Interconnection Svcs & Ext. Affairs | 1,000      | 877       | 123        | 12%       |  |  |  |  |  |  |  |
| Gas Purchase Program                                | 82         | 51        | 31         | 37%       |  |  |  |  |  |  |  |
| Market Purchase Project                             | 117        | 78        | 39         | 34%       |  |  |  |  |  |  |  |
| · · · ·   | 11 324     | 9 604     | 1 720      | 15%       |  |  |  |  |  |  |  |
| Energy Risk Management                              | 230        | 188       | 12         | 18%       |  |  |  |  |  |  |  |
| Settlements   | 230<br>024 | 574       | 350        | 38%       |  |  |  |  |  |  |  |
| Integrated System Support                           | 266        | 138       | 128        | 48%       |  |  |  |  |  |  |  |
| Participant Pass Through Costs                      | 1 591      | 1 334     | 257        | 16%       |  |  |  |  |  |  |  |
| Support Services                                    | -          | 1 937     | (1 937)    | .070      |  |  |  |  |  |  |  |
|   | 18 882     | 17 375    | 1 509      | 8%        |  |  |  |  |  |  |  |
| -   | 10,002     | 17,375    | 1,000      | 0.70      |  |  |  |  |  |  |  |
| OTAL ANNUAL BUDGET COST                             | 707,939    | 1,124,607 | (416,667)  | -59%      |  |  |  |  |  |  |  |
| -   |            |           |            | 1         |  |  |  |  |  |  |  |
| ESS: THIRD PARTY REVENUE                            |            |           |            | l         |  |  |  |  |  |  |  |
| Plant ISO Energy Sales                              | 105,258    | 108,209   | (2,951)    | -3%       |  |  |  |  |  |  |  |
| Member Resource ISO Energy Sales                    | 26,422     | 28,156    | (1,734)    | -7%       |  |  |  |  |  |  |  |
| Member Owned Generation ISO Energy Sales            | 69,679     | 77,843    | (8,164)    | -12%      |  |  |  |  |  |  |  |
| Customer Owned Generation ISO Energy Sales          | -          | 98        | (98)       |           |  |  |  |  |  |  |  |
| NCPA Contracts ISO Energy Sales                     | 18,915     | 21,517    | (2,602)    | -14%      |  |  |  |  |  |  |  |
| Western Resource ISO Energy Sales                   | 17,481     | 21,350    | (3,869)    | -22%      |  |  |  |  |  |  |  |
| Load Aggregation Energy Sales                       | -          | 332,976   | (332,976)  |           |  |  |  |  |  |  |  |
| Ancillary Services Sales                            | 3,988      | 8,434     | (4,446)    | -111%     |  |  |  |  |  |  |  |
| Transmission Sales                                  | 110        | 101       | 9          | 8%        |  |  |  |  |  |  |  |
| Western Credits, Interest & Other Income            | 34,902     | 172,759   | (137,858)  | -395%     |  |  |  |  |  |  |  |
| F   | 276,755    | 771,444   | (494,689)  | -179%     |  |  |  |  |  |  |  |
| -   | · · ·      | •         |            | 1         |  |  |  |  |  |  |  |
|   | 121 195    | 353 169   | \$ 78.000  | 18%       |  |  |  |  |  |  |  |
|   | 401,100    | 555,105   | ψ 10,022   | 1070      |  |  |  |  |  |  |  |





#### Annual Budget Budget vs. Actual By Major Area As of May 31, 2021



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

#### Annual Budget Cost Generation Resources Analysis By Source As of May 31, 2021





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

#### Annual Budget Cost Management Services Analysis By Source As of May 31, 2021





#### Annual Budget Cost Management Services Analysis By Source As of May 31, 2021



#### Annual Budget Cost Third Party Revenue Analysis By Source As of May 31, 2021









#### Annual Budget Cost Third Party Revenue Analysis By Source As of May 31, 2021









#### Annual Budget NCPA Generation Detail Analysis By Plant As of May 31, 2021

#### **Generation Cost Analysis**

#### \$ in thousands

|  |              |              | G  | eothermal |    |             |           |
|--|--------------|--------------|----|-----------|----|-------------|-----------|
|  |              |              |    | \$/MWh    | ι  | Inder(Over) | YTD %     |
|  | Budget       | Actual       |    | Actual    |    | Budget      | Remaining |
| Routine O & M                          | \$<br>19,252 | \$<br>17,239 | \$ | 24.53     | \$ | 2,013       | 10%       |
| Capital Assets/Spare Parts Inventories | 2,585        | 4,179        |    | 5.95      |    | (1,594)     | -62%      |
| Other Costs                            | 8,239        | 6,842        |    | 9.73      |    | 1,398       | 17%       |
| CA ISO Charges                         | 534          | 1,152        |    | 1.64      |    | (618)       | -116%     |
| Debt Service                           | 4,950        | 4,538        |    | 6.46      |    | 413         | 8%        |
| Annual Budget                          | 35,561       | 33,950       |    | 48.30     |    | 1,611       | 5%        |
| Less: Third Party Revenue              |              |              |    |           |    |             |           |
| Interest Income                        | 382          | 137          |    | 0.19      |    | 246         | 64%       |
| ISO Energy Sales                       | 25,811       | 29,110       |    | 41.42     |    | (3,300)     | -13%      |
| Ancillary Services Sales               | -            | -            |    | -         |    | -           |           |
| Effluent Revenues                      | 750          | 1,308        |    | 1.86      |    | (558)       | -74%      |
| Misc                                   | 113          | 104          |    | 0.15      |    | 9           | 8%        |
|  | 27,056       | 30,660       |    | 43.62     |    | (3,604)     | -13%      |
| Net Annual Budget Cost to Participants | \$<br>8,506  | \$<br>3,290  | \$ | 4.68      | \$ | 5,215       | 61%       |
|  |              |              |    |           |    |             |           |
| Net GenerationMWh @ Meter              | 738,552      | 702,850      |    |           |    |             |           |
| \$/MWh (A)                             | \$<br>4.81   | \$<br>(1.77) |    |           |    |             |           |

|  |              |               | Hy | droelectric | ;  |            |           |
|--|--------------|---------------|----|-------------|----|------------|-----------|
|  |              |               |    | \$/MWh      | U  | nder(Over) | YTD %     |
|  | Budget       | Actual        |    | Actual      |    | Budget     | Remaining |
| Routine O & M                          | \$<br>9,570  | \$<br>7,142   | \$ | 37.67       | \$ | 2,427      | 25%       |
| Capital Assets/Spare Parts Inventories | 365          | 4,267         |    | 22.51       |    | (3,902)    | -1070%    |
| Other Costs                            | 8,323        | 2,968         |    | 15.66       |    | 5,354      | 64%       |
| CA ISO Charges                         | 2,615        | 2,815         |    | 14.85       |    | (199)      | -8%       |
| Debt Service                           | 33,388       | 30,606        |    | 161.43      |    | 2,782      | 8%        |
| Annual Budget                          | 54,260       | 47,798        |    | 252.11      |    | 6,462      | 12%       |
| Less: Third Party Revenue              |              |               |    |             |    |            |           |
| Interest Income                        | 670          | 170           |    | 0.90        |    | 500        | 75%       |
| ISO Energy Sales                       | 22,147       | 16,706        |    | 88.12       |    | 5,441      | 25%       |
| Ancillary Services Sales               | 2,276        | 4,356         |    | 22.98       |    | (2,080)    | -91%      |
| Misc                                   | -            | -             |    | -           |    | -          |           |
|  | 25,094       | 21,232        |    | 111.99      |    | 3,861      | 15%       |
| Net Annual Budget Cost to Participants | \$<br>29,167 | \$<br>26,566  | \$ | 140.12      | \$ | 2,601      |           |
|  |              |               |    |             |    |            |           |
| Net GenerationMWh @ Meter              | 508,507      | 189,592       |    |             |    |            |           |
| \$/MWh (A)                             | \$<br>(8.30) | \$<br>(21.31) | 1  |             |    |            |           |

#### Footnotes:

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

#### MWhs Generated



Hydro In MWh 1,000,000 FY 94-95 900,000 800,000 700,000 600,000 500,000 400,000 300,000 FY 91-92 200,000 100,000 Aua Sep Nov Dec Jan Feb Mar Apr May Jun FY 21 Planned 45,745 91,101 134,051 159,711 183,961 215,139 246,049 285,372 339,382 401,192 466,771 508,507 Wet 12,676 28,667 44,047 58,599 69,461 91,796 176,896 259,973 398,950 551,071 721,320 885,279 105,353 130,546 179,718 185,948 193,288 Dry 18,574 41,592 66,527 78,750 84,000 87,598 91,693 FY 21 Actual 23,012 55,223 89,446 100,488 107,834 115,478 126,062 141,089 173,773 189,592 71,826

#### Annual Budget NCPA Generation Detail Analysis By Plant As of May 31, 2021

#### **Generation Cost Analysis**

|  | Lodi Energy Center |           |    |           |    |        |    |            |           |  |  |
|--|--------------------|-----------|----|-----------|----|--------|----|------------|-----------|--|--|
|  |                    |           |    |           |    | \$/MWh | U  | nder(Over) | YTD %     |  |  |
|  |                    | Budget    |    | Actual    |    | Actual |    | Budget     | Remaining |  |  |
| Routine O & M                          | \$                 | 14,463    | \$ | 9,201     | \$ | 8.80   | \$ | 5,262      | 36%       |  |  |
| Fuel                                   |                    | 32,956    |    | 29,902    |    | 28.60  |    | 3,054      | 9%        |  |  |
| CA ISO Charges and Energy Purchases    |                    | 3,831     |    | 804       |    | 0.77   |    | 3,026      | 79%       |  |  |
| Capital Assets/Spare Parts Inventories |                    | 2,906     |    | 3,710     |    | 3.55   |    | (804)      | -28%      |  |  |
| Other Costs                            |                    | 12,372    |    | 8,718     |    | 8.34   |    | 3,654      | 30%       |  |  |
| Debt Service                           |                    | 26,024    |    | 23,855    |    | 22.81  |    | 2,169      | 8%        |  |  |
| Annual Budget                          |                    | 92,551    |    | 76,190    |    | 72.86  |    | 16,361     | 18%       |  |  |
| Less: Third Party Revenue              |                    |           |    |           |    |        |    |            |           |  |  |
| Interest Income                        |                    | 386       |    | 229       |    | 0.22   |    | 157        | 41%       |  |  |
| ISO Energy Sales                       |                    | 55,590    |    | 54,977    |    | 52.58  |    | 613        | 1%        |  |  |
| Ancillary Services Sales               |                    | 1,712     |    | 3,249     |    | 3.11   |    | (1,537)    | -90%      |  |  |
| Transfer Gas Credit                    |                    | -         |    | -         |    | -      |    | -          | 0%        |  |  |
| GHG Allowance Credits                  |                    | 8,463     |    | -         |    | -      |    | 8,463      | 100%      |  |  |
| Misc                                   |                    | -         |    | 84        |    | 0.08   |    | (84)       | 0%        |  |  |
|  |                    | 66,151    |    | 58,539    |    | 55.98  |    | 7,612      | 12%       |  |  |
| Net Annual Budget Cost to Participants | \$                 | 26,400    | \$ | 17,650    | \$ | 16.88  | \$ | 8,749      | 33%       |  |  |
| Net GenerationMWh @ Meter              |                    | 1,316,988 |    | 1,045,688 |    |        |    |            |           |  |  |
| \$/MWh (A)                             | \$                 | 0.29      | \$ | (5.93)    |    |        |    |            |           |  |  |

|   | Combustion Turbine No. 2 (STIG) |                                     |    |                                |    |                        |    |                            |   |  |
|---|---------------------------------|-------------------------------------|----|--------------------------------|----|------------------------|----|----------------------------|---|--|
|   |                                 |                                     |    |                                |    | \$/MWh                 | υ  | Inder(Over)                | YTD %                                   |  |
|   |                                 | Budget                              |    | Actual                         |    | Actual                 |    | Budget                     | Remaining                               |  |
| Routine O & M   | \$                              | 1,584                               | \$ | 1,563                          | \$ | 38.68                  | \$ | 21                         | 1%                                      |  |
| Fuel and Pipeline Transport Charges   |                                 | 910                                 |    | 1,996                          |    | 49.41                  |    | (1,086)                    | -119%                                   |  |
| Capital Assets/Spare Parts Inventories  |                                 | 37                                  |    | 4                              |    | 0.09                   |    | 33                         | 90%                                     |  |
| Other Costs   |                                 | 593                                 |    | 961                            |    | 23.78                  |    | (368)                      | -62%                                    |  |
| CA ISO Charges  |                                 | 40                                  |    | 372                            |    | 9.22                   |    | (332)                      | -822%                                   |  |
| Debt Service  |                                 | 4,826                               |    | 4,022                          |    | 99.55                  |    | 804                        | 17%                                     |  |
| Annual Budget   |                                 | 7,989                               |    | 8,917                          |    | 220.72                 |    | (928)                      | -12%                                    |  |
| Less: Third Party Revenue<br>Interest Income<br>ISO Energy Sales<br>Ancillary Service Sales<br>Fuel and Pipeline Transport Credits<br>GHG Allowance Credits<br>Misc |                                 | 109<br>399<br>-<br>1,821<br>43<br>- |    | 38<br>3,926<br>-<br>1,099<br>- |    | 0.95<br>97.18<br>27.20 |    | 70<br>(3,527)<br>722<br>43 | 65%<br>-885%<br>0%<br>40%<br>100%<br>0% |  |
|   |                                 | 2,371                               |    | 5,063                          |    | 125.55                 |    | (2,092)                    | -11470                                  |  |
| Net Annual Budget Cost to Participants  | \$                              | 5,618                               | \$ | 3,854                          | \$ | 95.40                  | \$ | 1,764                      | 31%                                     |  |
| Net GenerationMWh @ Meter   |                                 | 4,987                               |    | 40,400                         |    |                        |    |                            |   |  |
| \$/MWh (A)  | \$                              | 158.75                              | \$ | (4.15)                         |    |                        |    |                            |   |  |

#### Footnotes:

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

#### MWhs Generated

In MWh



CT - 2 50,000 45,000 40,000 35,000 30,000 25,000 20,000 15,000 10,000 5,000 0 Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul FY 21 Planned 1,485 2,870 4,308 4,308 4,308 4,308 4,308 4,308 4,308 4,987 4,987 4,987 FY 20 Actual 859 3,372 4,818 7,019 9,031 9,031 9,031 9,031 9,031 9,031 9,031 10,855 FY 21 Actual 2,289 12,590 20,096 27,647 29,406 30,692 30,692 35,338 35,827 35,827 40,400

#### Annual Budget NCPA Generation Detail Analysis By Plant As of May 31, 2021

#### **Generation Cost Analysis**

|  |              | Combu        | usti | ion Turbin       | e No. 1               |                    |
|--|--------------|--------------|------|------------------|-----------------------|--------------------|
|  | Budget       | Actual       |      | \$/MWh<br>Actual | Under(Over)<br>Budget | YTD %<br>Remaining |
| Routine O & M                          | \$<br>2,320  | \$<br>2,181  | \$   | 201.98           | \$ 139                | 6%                 |
| Fuel and Pipeline Transport Charges    | 937          | 915          |      | 84.76            | 22                    | 2%                 |
| Capital Assets/Spare Parts Inventories | 3,667        | 1,262        |      | 116.88           | 2,405                 | 66%                |
| Other Costs                            | 866          | 655          |      | 60.67            | 211                   | 24%                |
| CA ISO Charges                         | 94           | 531          |      | 49.21            | (437                  | -465%              |
| Debt Service                           | -            | -            |      |                  | -                     |                    |
| Annual Budget                          | 7,884        | 5,544        |      | 513.50           | 2,339                 | 30%                |
| Less: Third Party Revenue              |              | 10           |      |                  | (10                   |                    |
| Interest Income                        |              | 49           |      |                  | (49                   |                    |
| ISO Energy Sales                       | 1,311        | 3,489        |      | 323.18           | (2,178                | -166%              |
| Anciliary Services Sales               | -            | -            |      | -                | -                     | 0%                 |
| WISC                                   | <br>-        | 16           |      | 1.50             | (16                   | 0%                 |
|  | 1,311        | 3,554        |      | 324.68           | (2,243                | -171%              |
| Net Annual Budget Cost to Participants | \$<br>6,572  | \$<br>1,990  | \$   | 184.32           | \$ 4,582              | 70%                |
|  |              |              |      |                  |                       | _                  |
| Net GenerationMWh @ Meter              | 15,641       | 10,797       |      |                  |                       |                    |
| \$/MWh (A)                             | \$<br>420.19 | \$<br>184.32 | 1    |                  |                       |                    |



#### Footnotes:

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