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September 29, 2005

The Honorable Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

REDACTED VERSION FOR PUBLIC RELEASE

PRIVILEGED INFORMATION CONTAINED IN SEPARATE VOLUME

Re: California Independent System Operator Corporation
Docket No. ER05-____-000

Dear Secretary Salas:

Pursuant to Section 205 of the Federal Power Act ("FPA"), 16 U.S.C. § 824d, the California Independent System Operator Corporation ("ISO")[1] submits for Commission filing and acceptance Amendment No. 3 ("Amendment No. 3") to the Interconnected Control Area Operating Agreement ("ICAOA") between the ISO and the Sacramento Municipal Utility District ("SMUD"). The ISO requests that this filing be made effective September 30, 2005, one day after it was submitted.

The original ICAOA was filed with the Commission on April 26, 2002, in Docket No. ER02-1641-000 and was designated as ISO Rate Schedule FERC No. 42. The Commission accepted that filing by letter order issued on June 24, 2002. The ISO submitted Amendment No. 1 to the ICAOA on August 1, 2003, in Docket No.

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[1] Capitalized terms not otherwise defined herein have the meanings set forth in the Master Definitions Supplement, Appendix A to the ISO Tariff, and in the ICAOA, as amended.

ER03-1155-000, and it was accepted by Commission letter order issued Sept. 26, 2003. The ISO submitted Amendment No. 2 to the ICAOA on November 1, 2004, in Docket No. ER05-149-000, and it was accepted, subject to modification, in *California Independent System Operator Corporation*, 109 FERC ¶ 61,391, at Ordering Paragraphs (B) and (C) (2004), *reh'g denied*, 111 FERC ¶ 61,363 (2005), effective January 1, 2005. The ISO submitted the required modification on January 31, 2005, in Docket No. ER05-149-002, and the Commission accepted it by letter order issued April 8, 2005.

I. Amendment No. 3

A. Purpose of the Amendment

The ICAOA is designed to assist the ISO and SMUD in coordinating the operation and maintenance of their interconnected Control Areas, in a manner consistent with North American Electric Reliability Council Criteria, Western Electricity Coordinating Council Minimum Operating Reliability Criteria, and Good Utility Practice.

The purposes of Amendment No. 3 are to modify the specification of the points of interconnection of the respective ISO and SMUD Control Areas to state that the "Herdlyn 69 Interconnection" is not a point of scheduling; to provide for imports of regulation service from the Expanded SMUD Control Area to the ISO Control Area; to provide for a pilot program that authorizes a Pseudo Tie[2] of a resource currently in the ISO Control Area to the Expanded SMUD Control Area; and to clarify, correct, and update descriptions of technical matters in the Service Schedules to the ICAOA.

B. Differences between the Currently Effective ICAOA and this Amendment No. 3

Amendment No. 3 contains the following revisions and additions to the ICAOA:

- ICAA 2.2 has been revised to add the defined term Pseudo Tie.
- ICAA 5.4 has been added to permit the import of regulation service from the Expanded SMUD Control Area to the ISO Control Area in accordance with the provisions of Service Schedule 16 to the ICAOA.
- ICAA 5.5 has been added to provide for the ISO to develop a pilot program that authorizes a Pseudo Tie of an entire single resource currently in the ISO Control

[2] This Amendment No. 3 proposes to add the following definition of a Pseudo Tie to ICAA 2.2: "A telemetered reading or value that is updated in real time and used as a 'virtual' tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes."

Area to the Expanded SMUD Control Area, subject to pre-existing contract rights for transmission between the ISO Control Area and the Expanded SMUD Control Area. If the pilot program is successful, the ISO will, subject to the approval of the ISO Governing Board, file for Commission approval a permanent program for the establishment of Pseudo Ties, and will implement the permanent program when it is approved.

- Service Schedules 1, 3, 4, 6, 7, and 17 to the ICAOA have been revised to clarify the references therein to the "Herdlyn 69 Interconnection" and make other minor clarifications.

- Service Schedule 16 to the ICAOA has been added to set forth the requirements and processes that must be satisfied by an entity requesting the ability to schedule and deliver regulation service into the ISO Control Area and that must be coordinated through SMUD and the ISO. The requirements encompass technical, interchange scheduling, telemetry, and control aspects of interconnected Control Area operations.

C. Request for Privileged Treatment

Included in a separate volume along with this Amendment No. 3, pursuant to Commission Order Nos. 630 and 630-A,[3] is a sealed copy of the non-public portions of Amendment No. 3, specifically, Service Schedule 3. The ISO is seeking privileged treatment for Service Schedule 3 under 18 C.F.R. § 388.112, because it contains confidential telephone numbers of ISO and SMUD operating personnel. Because public disclosure of the telephone numbers would unnecessarily reveal sensitive information, the ISO submits that these numbers should be exempt from public exposure and should be granted privileged treatment.

II. Request for Waiver

The ISO respectfully requests a waiver of the Commission's 60-day prior notice requirement, pursuant to Section 35.11 of the Commission's regulations, 18 C.F.R. § 35.11, to allow the enclosed materials to become effective September 30, 2005, one day after they were submitted. The ISO and SMUD desire to implement the import of regulation service and make the other changes and clarifications contained in Amendment No. 3 as soon as possible. Granting the waiver will particularly permit the ISO and SMUD to implement the regulation import functionality expeditiously, which will increase the availability of Regulation to the ISO Control Area. Granting the requested waiver, therefore, is appropriate.

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[3] *Critical Energy Infrastructure Information*, Order No. 630, FERC Stats. & Regs. ¶ 31,140, *order on reh'g*, Order No. 630-A, FERC Stats. & Regs. ¶ 31,147 (2003).

III. Expenses

No expense or cost associated with this filing has been alleged or judged in any judicial or administrative proceeding to be illegal, duplicative, unnecessary, or demonstratively the product of discriminatory employment practices.

IV. Service

Copies of this filing have been served on SMUD, the California Public Utilities Commission, the California Electricity Oversight Board, and all entities that are on the official service lists for Docket Nos. ER02-1641, ER03-1155, and ER05-149. In addition, the filing has been posted on the ISO's website.

Enclosed for filing are six copies of each of the following:

(1) this letter of transmittal;

(2) the public version of executed Amendment No. 3 (Attachment A);

(3) the public version of the rate schedule sheets in the ICAOA that are revised by Amendment No. 3 (Attachment B); and

(4) a black-lined document showing the changes to the currently effective public version of the ICAOA contained in Amendment No. 3 (Attachment C).

The filing also includes a separate volume that contains the non-public portions of Amendment No. 3 described above.

In addition, enclosed are two additional copies of this filing to be date-stamped and returned to our messenger.

V. Correspondence

The ISO requests that all correspondence, pleadings and other communications concerning this filing be served upon the following:

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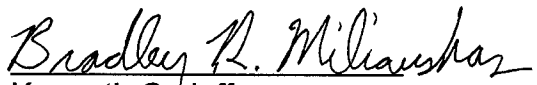
Respectfully submitted,



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Attorneys for the California Independent
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ATTACHMENT A

CALIFORNIA INDEPENDENT SYSTEM OPERATOR AND SACRAMENTO MUNICIPAL UTILITY DISTRICT

AMENDMENT NO. 3 TO THE INTERCONNECTED CONTROL AREA OPERATING AGREEMENT

THIS AMENDMENT NO. 3 is dated this 28th day of September, 2005 and is entered into, by and between:

(1) **Sacramento Municipal Utility District** ("SMUD"), having its registered and principal executive office at 6201 S Street, Sacramento, California 95817;

and

(2) **California Independent System Operator Corporation** ("ISO"), a California nonprofit public benefit Corporation having a principal executive office located at such place in the State of California as the ISO Governing Board may from time to time designate, initially 151 Blue Ravine Road, Folsom, California 95630.

SMUD and the ISO are hereinafter referred to as the "Parties."

Whereas:

A. The Parties are signatories to an Interconnected Control Area Operating Agreement dated April 24, 2002 (the "Operating Agreement"), which Operating Agreement FERC accepted for filing effective June 13, 2002, the date SMUD was certified as a control area operator.

B. The Parties are signatories to Amendment No. 1 of the Operating Agreement dated July 7, 2003 ("Amendment No. 1"), which FERC accepted for filing September 26, 2003.

C. The Parties are signatories to Amendment No. 2 of the Operating Agreement dated October 30, 2004 ("Amendment No. 2"), which was filed with FERC on November 1, 2004 and which FERC accepted for filing by an order issued on December 30, 2004, effective as of January 1, 2005, as revised by a compliance filing filed by the ISO with FERC on January 31, 2005 ("the Compliance Filing").

D. The Parties desire to further amend the Operating Agreement to modify the specification of the points of interconnection of their respective Control Areas to specify that the "Herdlyn 69 Interconnection" is not a point of scheduling; to provide for imports of regulation service from the Expanded SMUD Control Area to the ISO Control Area; to provide for a pilot Pseudo Tie from the ISO Control Area to the Expanded SMUD Control Area; and to clarify, correct, and update descriptions of technical matters in the Service Schedules of the Operating Agreement.

E. In all other respects, the Parties intend that the Operating Agreement, incorporating Amendments No. 1 and No. 2, as revised by the Compliance Filing, remain in full force and effect in accordance with its terms.

NOW THEREFORE, **THE PARTIES AGREE** as follows:

1. **Effective Date.** This Amendment No. 3 shall be effective on the date made effective by FERC.

2. **Termination.** This Amendment No. 3 shall remain in full force and effect until the termination of the Operating Agreement.

3. **Amendment to the Operating Agreement.** The Operating Agreement shall be amended as follows:

3.1 The following definitions are added in alphabetical order and Section ICAA 2.2 is renumbered accordingly:

Pseudo Tie: A telemetered reading or value that is updated in real time and used as a "virtual" tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes.

3.2 Section ICAA 5.4 is added as follows to facilitate the addition of Service Schedule 16:

ICAA 5.4 Import of Regulation Service by ISO

The ISO and SMUD shall allow for the import of regulation service from the Expanded SMUD Control Area to the ISO Control Area in accordance with the provisions of Service Schedule 16. SMUD shall be under no obligation to supplement the import of regulation service contracted by third parties to be delivered to the ISO Control Area from resources in the Expanded SMUD Control Area and shall have the right to terminate Service Schedule 16 without prior ISO approval, upon thirty (30) days advance written notice to the ISO.

3.3 Section ICAA 5.5 is added as follows:

ICAA 5.5 Pilot Program for Pseudo Tie to Expanded SMUD Control Area

The ISO shall develop provisions for a pilot program authorizing a Pseudo Tie of an entire single resource in the ISO Control Area to the Expanded SMUD Control Area, subject to pre-existing contract rights for transmission between the ISO Control Area and the Expanded SMUD Control Area, to be implemented within eight (8) months after SMUD identifies a specific resource in the ISO Control Area that it intends to establish as a pilot Pseudo Tie, provided that the ISO shall not be obligated to implement such a pilot program prior to July 1, 2006 or between October 1, 2006 and sixty (60) days after the implementation of "Release 1" of the ISO's Market Redesign and Technology Upgrade project. The ISO will use reasonable efforts to undertake implementation of such a pilot program during other periods if practical, if requested by SMUD. If the pilot program is successful, the ISO shall, subject to approval of the ISO Governing Board, file at FERC for approval a permanent program for the establishment of Pseudo Ties, and shall implement it when approved.

3.4 Service Schedule 1 specifying the "Interconnection" is deleted in its entirety and the Service Schedule 1 attached to this Amendment No. 3 is substituted in its place.

3.5 Service Schedule 3 specifying the Parties' "Points of Contact" is deleted in its entirety and the Service Schedule 3 attached to this Amendment No. 3 is substituted in its place.

3.6 Service Schedule 4 specifying the "Respective Jurisdiction for Operational Control of Interconnection" is deleted in its entirety and the Service Schedule 4 attached to this Amendment No. 3 is substituted in its place.

3.7 Service Schedule 6 specifying the "Real-Time Operating Limits" is deleted in its entirety and the Service Schedule 6 attached to this Amendment No. 3 is substituted in its place.

3.8 Service Schedule 7 specifying the "Voltage Control" is deleted in its entirety and the Service Schedule 7 attached to this Amendment No. 3 is substituted in its place.

3.9 Service Schedule 16 specifying "Inter-Control Area Requirements for Scheduling and Delivering Regulation Service to the ISO" attached to this Amendment No. 3 is added to the Operating Agreement.

3.10 Section 5.2 of Service Schedule 17 is deleted in its entirety and the following provision is substituted in its place:

5.2 E-Tagging. The Host Control Area and the ISO Control Area must support associated e-tagging as described in the ISO Tariff Dynamic Scheduling Protocol and deemed to be consistent with NERC and/or WECC requirements.

4. This Amendment No. 3 constitutes the complete and final agreement of the Parties with respect to the purpose of this Amendment No. 3 as described in the Recitals hereto and supersedes all prior understandings, whether written or oral, with respect to such subject matter.

5. Except as expressly modified in this Amendment No.3, the Operating Agreement, as previously amended, shall remain in full force and effect in accordance with its terms, and the unmodified provisions of the Operating Agreement shall apply to any new rights and/or obligations established by this Amendment No. 3.

6. This Amendment No. 3 may be executed in one or more counterparts at different times, each of which shall be regarded as an original and all of which, taken together, shall constitute one and the same agreement.

IN WITNESS WHEREOF, the Parties have caused this Amendment No. 3 to be duly executed by and through their respective authorized representatives as of the date hereinabove written.

California Independent System Operator Corporation

By: _____

Name: JAMES W DETMERS

Title: VP, OPERATIONS

Date: 9/22/05

Sacramento Municipal Utility District

By: _____

Name: _____

Title: _____

Date: 9/27/05

SERVICE SCHEDULE 1

INTERCONNECTION

[Section 2.2.3]

The Interconnection between the ISO and Expanded SMUD Control Areas consists of the following Interconnection points. All Interconnection points are normally operated closed and are capable of transferring power in both directions.

- **Rancho Seco Interconnection**
  (Rancho Seco – Bellota #1 and #2 230 kV Lines)

  This Interconnection point is comprised of a 27-mile double circuit 230 kV transmission line strung on a 500 kV tower. The transmission lines connect SMUD's Rancho Seco Substation in southern Sacramento to PG&E's Bellota Substation in the eastern Stockton area. The physical point of interconnection is disconnect switches 357 and 317 at Rancho Seco Substation.

- **Lake Interconnection**
  (Lake – Gold Hill 230 kV Line)

  This Interconnection point is comprised of a single very short (<0.25 mile) 230 kV transmission line connecting SMUD's Lake Substation to PG&E's Gold Hill Substation. The two substations are adjacent and located in Folsom, California. This Interconnection point utilizes a 55-ohm series reactor to provide additional electrical distance. The physical point of interconnection is PG&E's 230 kV line termination structure at Gold Hill Substation.

- **Olinda Interconnection**
  (KT1A 525/230/34.5 kV Bus Tie)

  This Interconnection point is on the 230 kV side of the 500/230 kV transformer bank at Olinda Substation. The physical point of interconnection is switch 487 at Western's Olinda Substation.

- **Cottonwood Interconnection**
  ("G" 230 kV Bus Tie)

  This Interconnection point is comprised of two 230 kV breakers connecting Western's bus with PG&E's bus. Cottonwood Substation is located in Cottonwood, California. The physical point of interconnection is disconnect switch 471 on the "G" 230 kV bus 1 and disconnect switch 481 on the "G" 230 kV bus 2 bus at Cottonwood Substation.

- **LLNL Interconnection**
  (LLNL 115 kV Bus Tie)

  Western is interconnected to the ISO system through line disconnect switch 455 at Western's Lawrence Livermore National Laboratory ("LLNL") U-424 Substation. One PG&E 115 kV line enters and one Western 115 kV line leaves the LLNL U-424 Substation. LLNL U-424 Substation is located southeast of Sacramento in Livermore, California. The physical point of interconnection is line disconnect switch 455 at LLNL U-424 Substation.

- **Round Mountain Interconnection**
  (Round Mountain - Cottonwood 230 kV Bus Tie)

  Western is interconnected to the ISO system through breaker 242 at PG&E's Round Mountain Substation. One Western and one PG&E 500 kV line enters and two PG&E 500 kV and one Western 230 kV lines leave the Round Mountain Substation. Round Mountain Substation is located in Round Mountain, California. The physical point of interconnection is disconnect switches 243 and 245 at the Round Mountain Substation.

- **Tracy 230 Interconnection**
  (Tracy 230 kV Bus Tie to Tracy 230/500 kV Transformers)

  Western is interconnected to the ISO system through breakers 482 and 1782 at Western's Tracy Substation. The physical point of interconnection is disconnect switches 481, 485, 1781, and 1785 at Tracy Substation.

- **Tracy-Westley Interconnection**
  (Tracy-Westley 230 kV Bus Tie)

  Western is interconnected to the ISO system through breakers 2354 and 2351 at MID/TID Westley Substation. The physical point of interconnection is disconnect switches 2377 and 2371 at the Westley Substation.

- **Tracy-Tesla Interconnection**
  (Tracy-Tesla 230 kV Lines)

  This Interconnection point is comprised of two 230 kV lines connecting Tracy Substation to Tesla Substation. Western is interconnected to the ISO system through breakers 382 and 582 at Western's Tracy Substation. The physical point of interconnection is disconnect switches 381, 385, 581, and 585 at the Tracy Substation.

- **Herdlyn 69 Interconnection (Herdlyn 69 kV Bus Tie)**

  The Expanded SMUD Control Area is connected to the ISO Control Area at the disconnect switch on the Tracy-Herdlyn 69 kV line that is located within the Tracy Substation and is owned and operated by Western. Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at the disconnect switch on the Tracy-Herdlyn line, the Parties agree it will not be considered a scheduling point.

A set of single-line diagrams showing each of the points of Interconnection is attached to this Service Schedule 1.

REVENUE METERING AND TELEMETRY AT INTERCONNECTION POINTS

SMUD has in service revenue quality metering at all Interconnections points. This metering shall meet the standards as mutually agreed upon by SMUD and the ISO. Meters are inspected and tested per existing agreements between SMUD and the respective Transmission Owner. The ISO shall be entitled to witness annual testing of the Interconnection metering. Any change or modification to such metering equipment by SMUD or any other entity shall be coordinated with the ISO. SMUD shall program the Interconnection revenue metering to record data at five minute intervals and shall provide for ISO polling of that metering.

SMUD and the ISO shall maintain arrangements that ensure that both Parties shall have access to real-time data from all of the points of Control Area Interconnection. SMUD understands that the ISO wants to directly poll MW and MVAR data from interconnection metering and/or data recorders, which may include RTUs, at all points of Control Area Interconnection, including SMUD and Western substations. SMUD agrees to allow the ISO to directly poll real-time data from SMUD substations and will work with the ISO and Western to facilitate ISO direct polling of real-time data from Western substations in a timely manner. In the event that a second communication port of the RTU is not available for direct polling by the ISO's EMS, the ISO shall have the option to provide an RTU to the substation owner for the purpose of establishing a communication port available for direct polling by the ISO EMS.

- **LAKE INTERCONNECTION**

An Interconnection point to PG&E is metered at Lake Substation. The substation has primary and backup metering arrangements. The primary meter is a Transdata model 30EMS7460M2 and the backup meter is a Scientific Columbus JEM-1 meter model 603P-11. This is a bi-directional meter with the accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located at the line side. All P.T.s and C.T.s are rated for 0.3% accuracy class with CT ratio of 800:5 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the EMS RTU. The MWh and

MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **RANCHO SECO INTERCONNECTION**

The primary and backup revenue metering equipment is installed at the Rancho Seco end of the Rancho Seco-Bellota 230 kV lines #1 and #2. The primary meter is a Scientific Columbus JEM-1 model 603P-E and the backup meter is a Scientific Columbus JEM-1 model 603-J-MM ; both are bi-directional meters with an accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located on the line side. All P.T.s and C.T.s are rated at 0.3% accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **OLINDA INTERCONNECTION**

The Interconnection point with the Western system is metered on the 230 kV bus at Olinda Substation. The meter is currently a Quad-4 meter that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 800:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **COTTONWOOD INTERCONNECTION**

The Interconnection point with the Western system is metered on the 230 kV G Section at Cottonwood Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 320:1 and PT ratio 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **LLNL INTERCONNECTION**

The Interconnection point with the Western system is metered on PG&E's Tesla-LLNL 115 kV line at LLNL U-424 Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 115 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 115 kV switchyard at the Interconnection point of the 115 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 60:1 and PT ratio of 600:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **ROUND MOUNTAIN INTERCONNECTION**

The Interconnection point with the Western system is metered on the Round Mountain Cottonwood 230 kV line at Round Mountain Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the Cottonwood 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 120:1 and PT ratio 160:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **TRACY 230 INTERCONNECTION**

The Interconnection point with the Western system is metered on the 525/230/34.5 kV transformers KT1A and KT2A at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **TRACY-WESTLEY INTERCONNECTION**

The Interconnection point with the Western system is metered on 230 kV at Tracy Substation. The meter shall be compensated to reflect the difference between the ISO Control Area boundary and the Westley end of the line by incorporating the losses associated with the actual flows across the transmission line. In addition, the telemetered MW and MVar values should be compensated. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

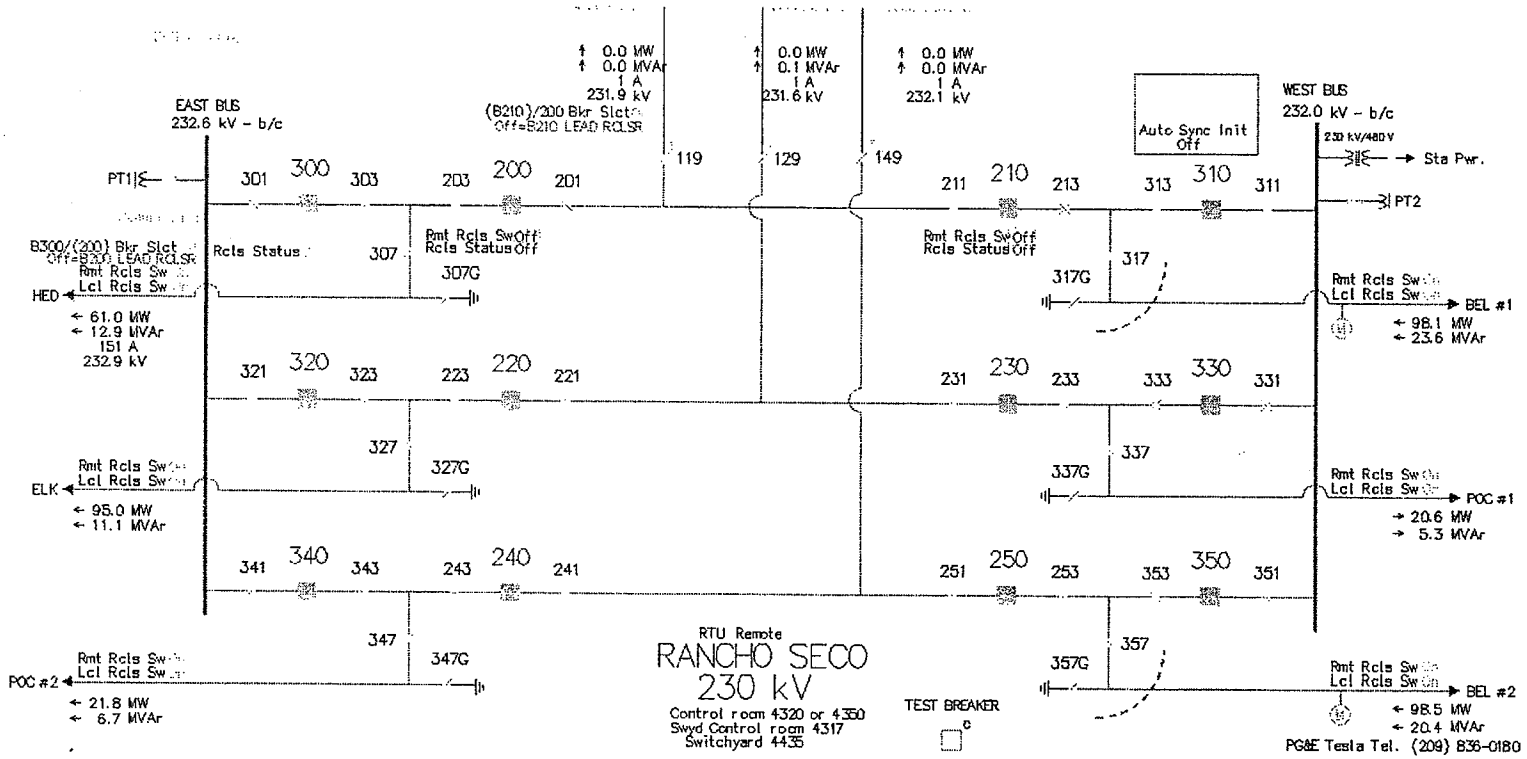
- **TRACY-TESLA INTERCONNECTION**

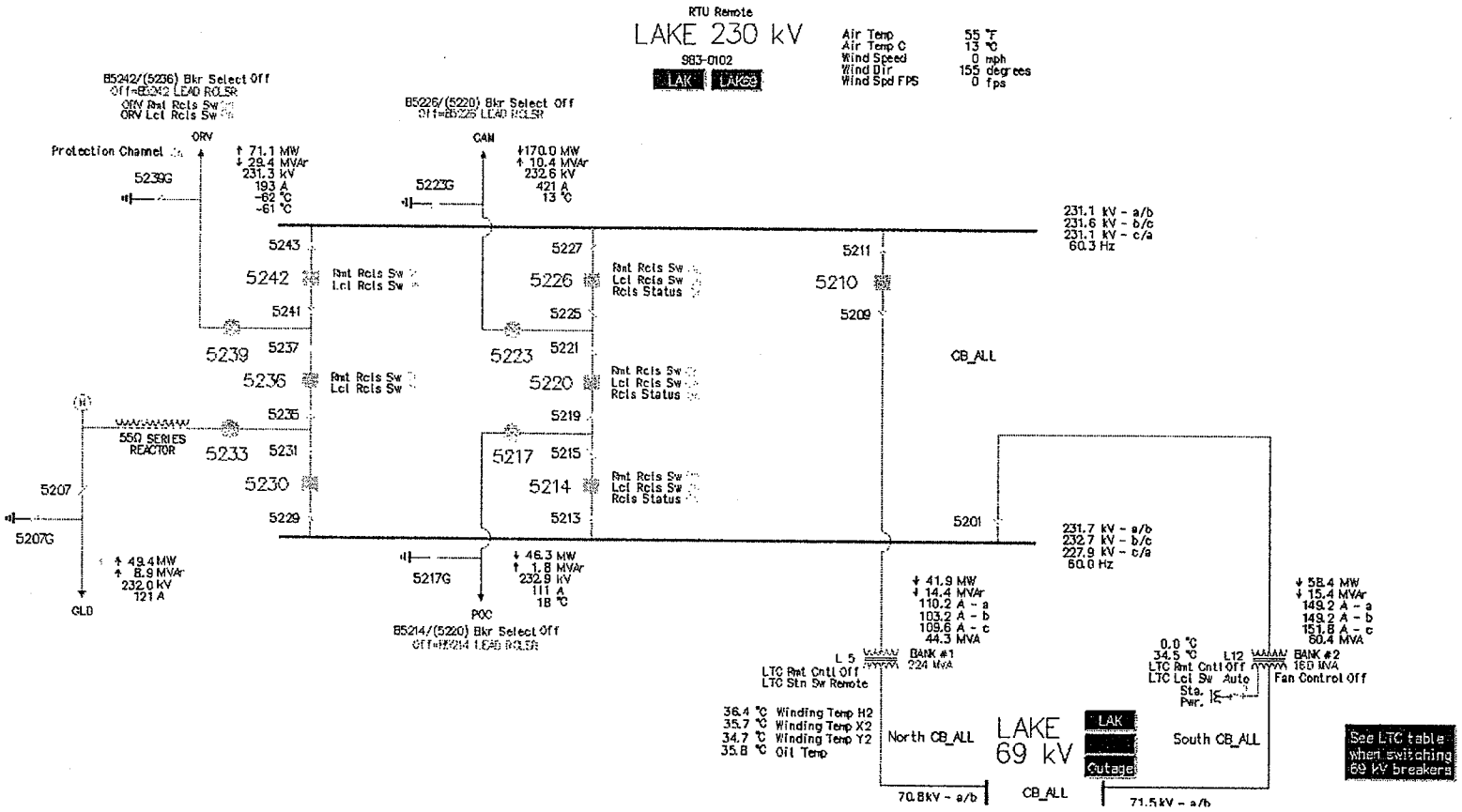
The Interconnection point with the Western system is metered on 230 kV at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **HERDLYN 69 INTERCONNECTION**

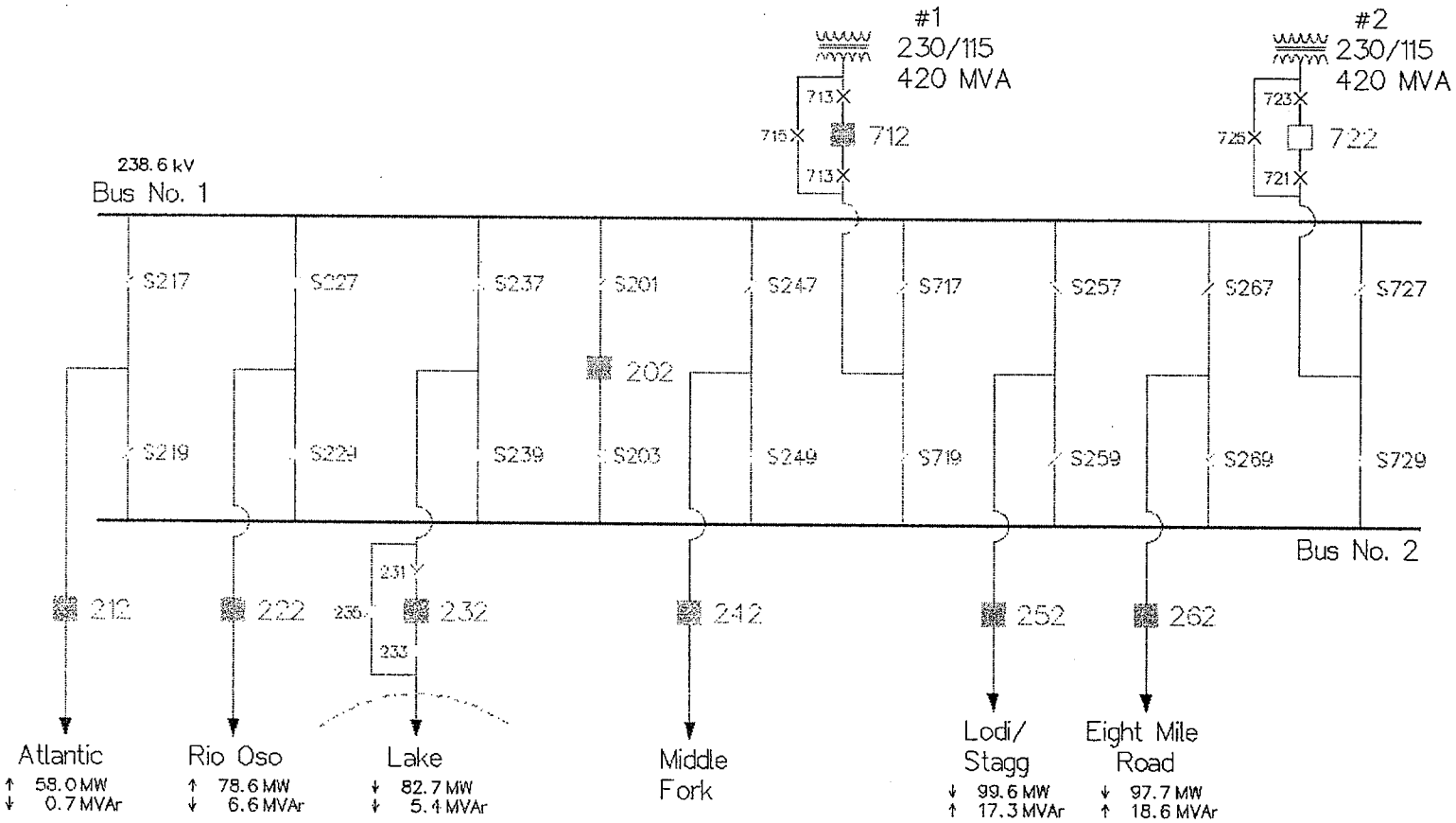
The Interconnection point with the Western system is metered on the Herdlyn-Tracy 69 kV line at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 69 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 69 kV switchyard at the Interconnection point of the 69 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 240:1 and PT ratio of 320:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at Herdlyn, the Parties agree it will not be considered a scheduling point.

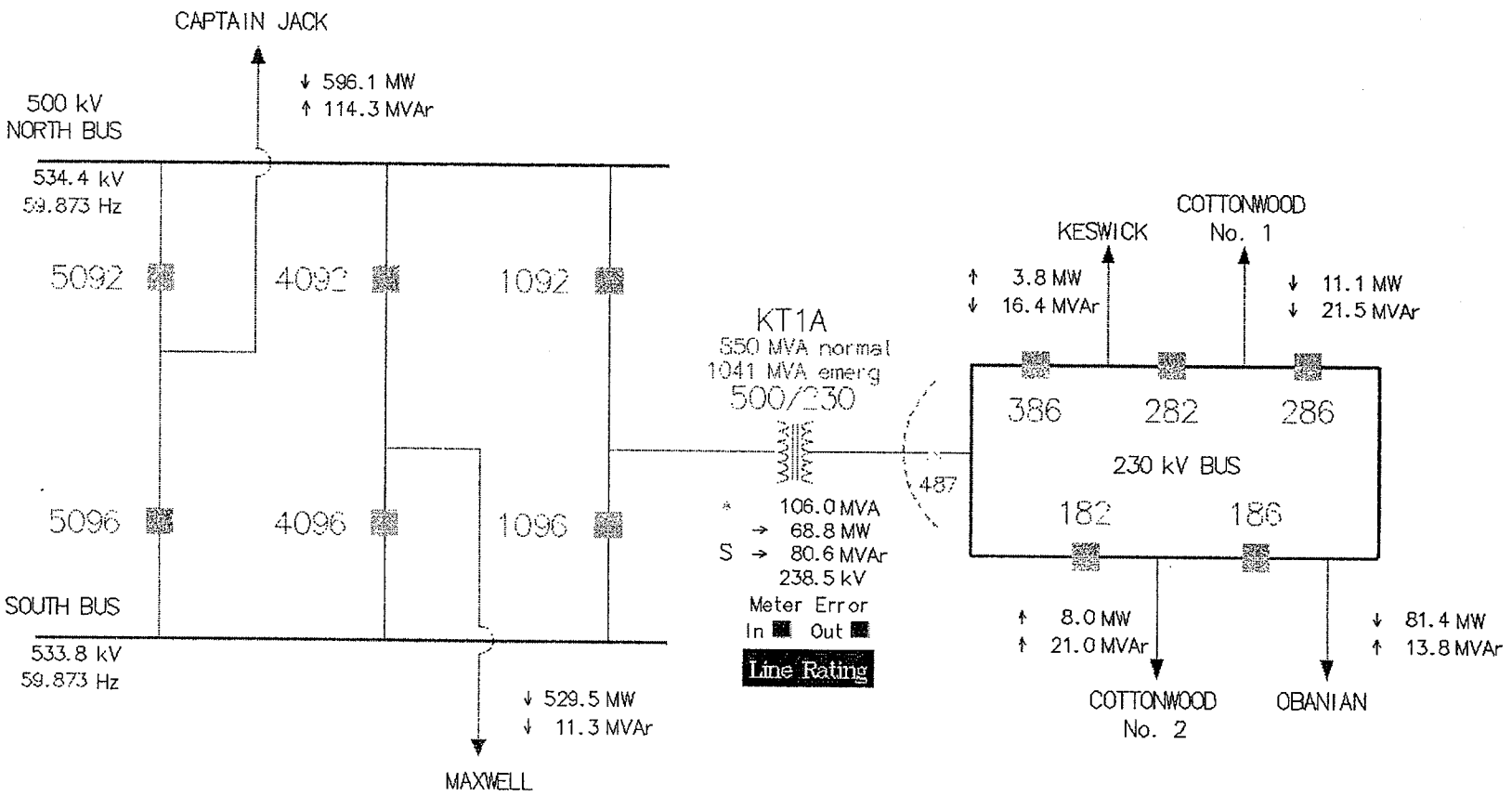

EAST BUS
232.6 kV - b/c
0.0 MW
0.0 MVAr
1 A
231.9 kV
(B210)/200 Bkr Slct
Off=B210 LEAD RCLSR
0.0 MW
0.1 MVAr
1 A
231.6 kV
0.0 MW
0.0 MVAr
1 A
232.1 kV
Auto Sync Init
Off
WEST BUS
232.0 kV - b/c
230 kV/480 V
Sta Pwr.
PT2
PT1
301
300
303
203
200
201
119
129
149
211
210
213
313
310
311
B300/(200) Bkr Slct
Off=B210 LEAD RCLSR
Rmt Rcls Sw
Lcl Rcls Sw
Rcls Status
307
Rmt Rcls SwOff
Rcls StatusOff
307G
Rmt Rcls SwOff
Rcls StatusOff
317G
317
Rmt Rcls Sw
Lcl Rcls Sw
BEL #1
98.1 MW
23.6 MVAr
HED
61.0 MW
12.9 MVAr
151 A
232.9 kV
321
320
323
223
220
221
231
230
233
333
330
331
327
327G
337
337G
Rmt Rcls Sw
Lcl Rcls Sw
POC #1
20.6 MW
5.3 MVAr
ELK
95.0 MW
11.1 MVAr
341
340
343
243
240
241
251
250
253
353
350
351
347
347G
357
357G
Rmt Rcls Sw
Lcl Rcls Sw
BEL #2
98.5 MW
20.4 MVAr
POC #2
21.8 MW
6.7 MVAr
RTU Remote
RANCHO SECO
230 kV
Control room 4320 or 4350
Swyd Control room 4317
Switchyard 4435
TEST BREAKER
PG&E Tesla Tel. (209) 836-0180


RTU Remote
LAKE 230 kV
983-0102
LAK
Lakea
Air Temp 55 °F
Air Temp C 13 °C
Wind Speed 0 mph
Wind Dir 155 degrees
Wind Spd FPS 0 fps
B5242/(5236) Bkr Select Off
Off=B5242 LEAD RCLSR
ORV Rmt Rcls Sw
ORV Lcl Rcls Sw
B5226/(5220) Bkr Select Off
Off=B5226 LEAD RCLSR
ORV
CAN
Protection Channel
5239G
5223G
↑ 71.1 MW
↓ 29.4 MVAr
231.3 kV
193 A
-62 °C
-61 °C
↓170.0 MW
↑ 10.4 MVAr
232.6 kV
421 A
13 °C
231.1 kV - a/b
231.6 kV - b/c
231.1 kV - c/a
60.3 Hz
5243
5242
5241
5239
5237
5236
5235
5233
5231
5230
5229
5227
5226
5225
5223
5221
5220
5219
5217
5215
5214
5213
5211
5210
5209
5201
Rmt Rcls Sw
Lcl Rcls Sw
Rcls Status
CB_ALL
550 SERIES REACTOR
5207
5207G
GLD
↑ 49.4 MW
↑ 8.9 MVAr
232.0 kV
121 A
5217G
↓ 46.3 MW
↑ 1.8 MVAr
232.9 kV
111 A
18 °C
POC
B5214/(5220) Bkr Select Off
Off=B5214 LEAD RCLSR
231.7 kV - a/b
232.7 kV - b/c
227.9 kV - c/a
60.0 Hz
↓ 41.9 MW
↓ 14.4 MVAr
110.2 A - a
103.2 A - b
109.6 A - c
44.3 MVA
L 5
BANK #1
224 MVA
LTC Rmt Cntl Off
LTC Stn Sw Remote
36.4 °C Winding Temp H2
35.7 °C Winding Temp X2
34.7 °C Winding Temp Y2
35.8 °C Oil Temp
North CB_ALL
LAKE
69 kV
LAK
Outage
South CB_ALL
70.8kV - a/b
CB_ALL
71.5kV - a/b
↓ 58.4 MW
↓ 15.4 MVAr
149.2 A - a
149.2 A - b
151.8 A - c
60.4 MVA
0.0 °C
34.5 °C
L12
BANK #2
160 MVA
LTC Rmt Cntl Off
LTC Lcl Sw Auto
Sta. Pwr.
Fan Control Off
See LTC table when switching 69 kV breakers

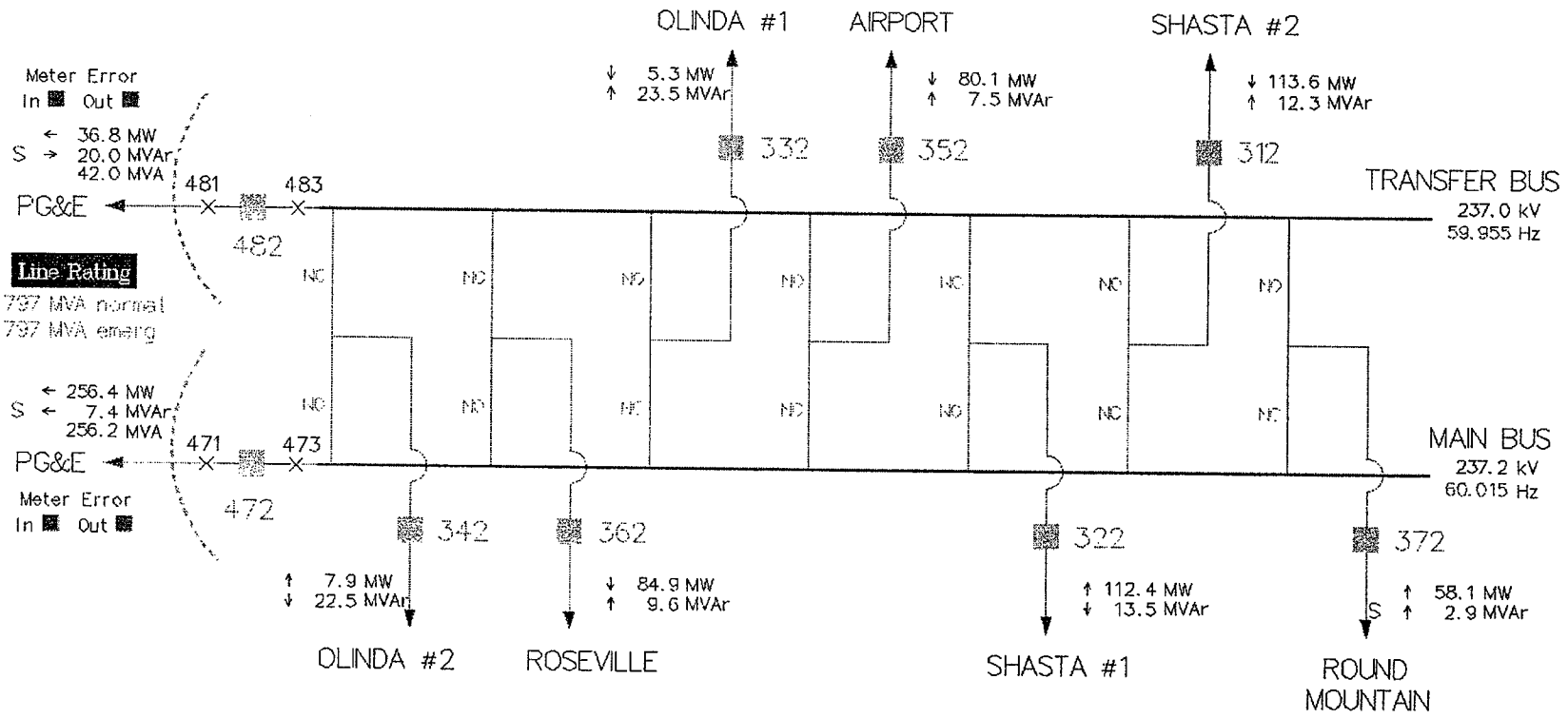
Gold Hill 230 kV Substation



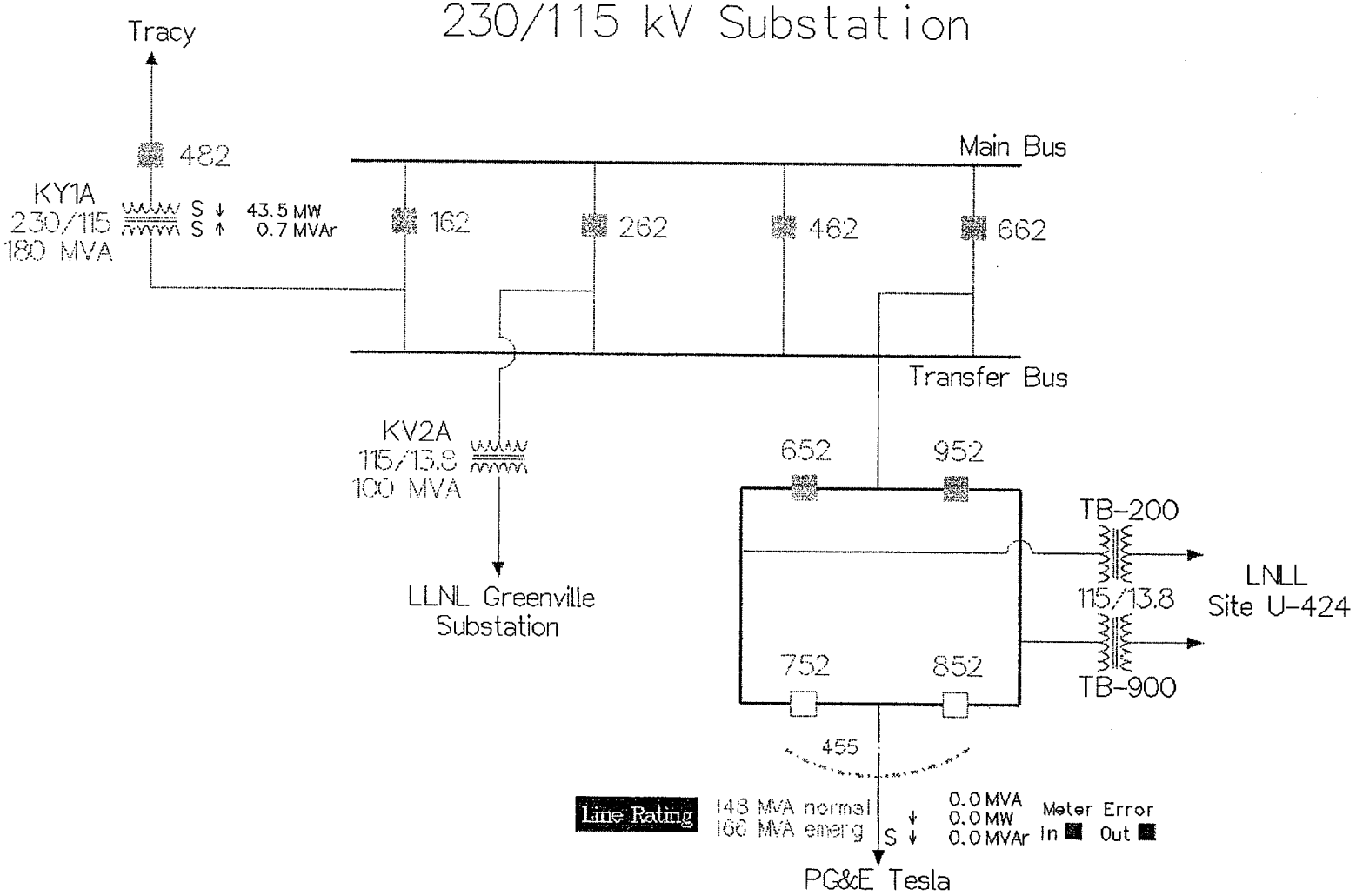
OLINDA

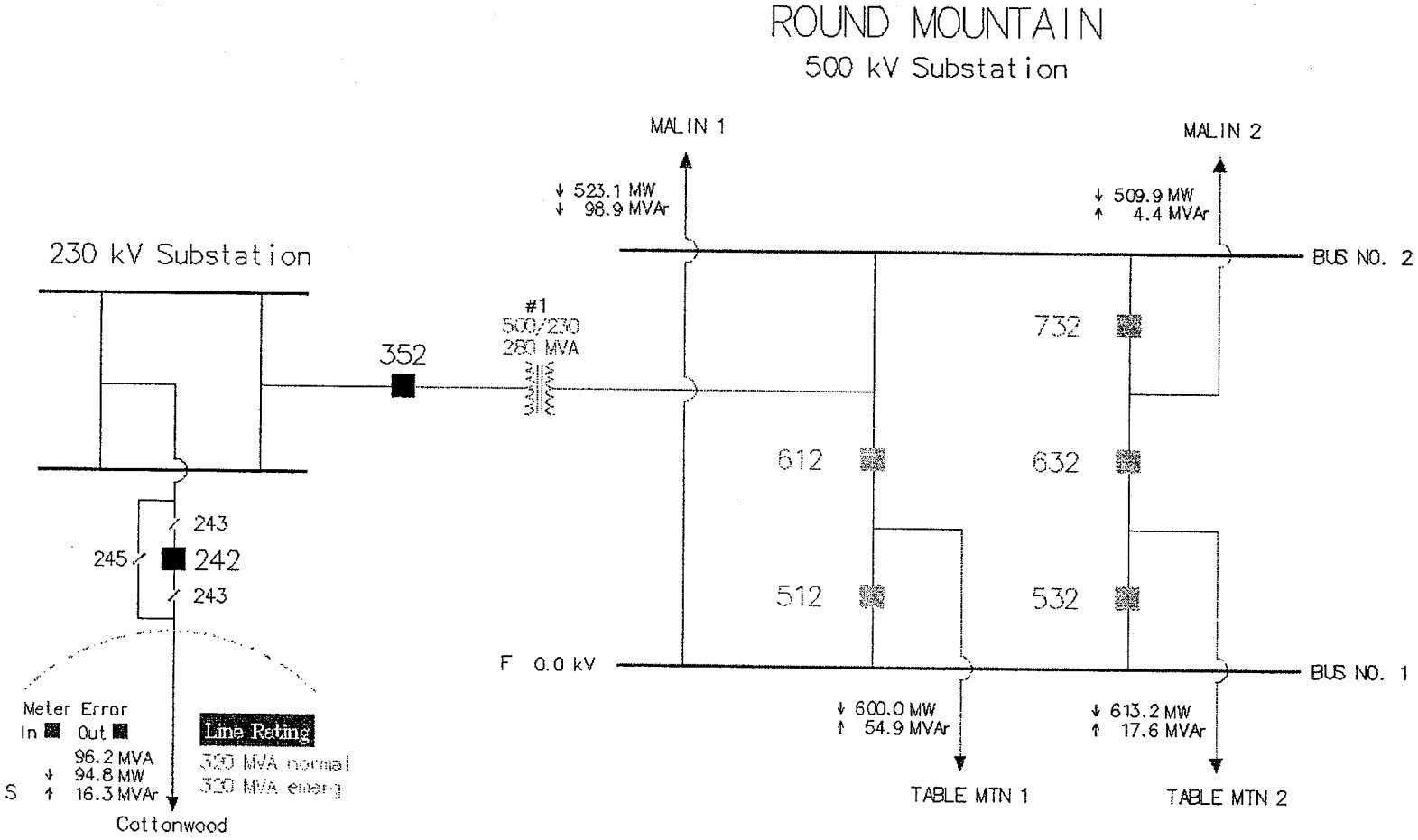

CAPTAIN JACK
↓ 596.1 MW
↑ 114.3 MVAr
500 kV
NORTH BUS
534.4 kV
59.873 Hz
5092
4092
1092
5096
4096
1096
SOUTH BUS
533.8 kV
59.873 Hz
↓ 529.5 MW
↓ 11.3 MVAr
MAXWELL
KT1A
550 MVA normal
1041 MVA emerg
500/230
* 106.0 MVA
→ 68.8 MW
S → 80.6 MVAr
238.5 kV
Meter Error
In ■ Out ■
Line Rating
487
KESWICK
COTTONWOOD
No. 1
↑ 3.8 MW
↓ 16.4 MVAr
↓ 11.1 MW
↓ 21.5 MVAr
386
282
286
230 kV BUS
182
186
↑ 8.0 MW
↑ 21.0 MVAr
↓ 81.4 MW
↑ 13.8 MVAr
COTTONWOOD
No. 2
OBANIAN

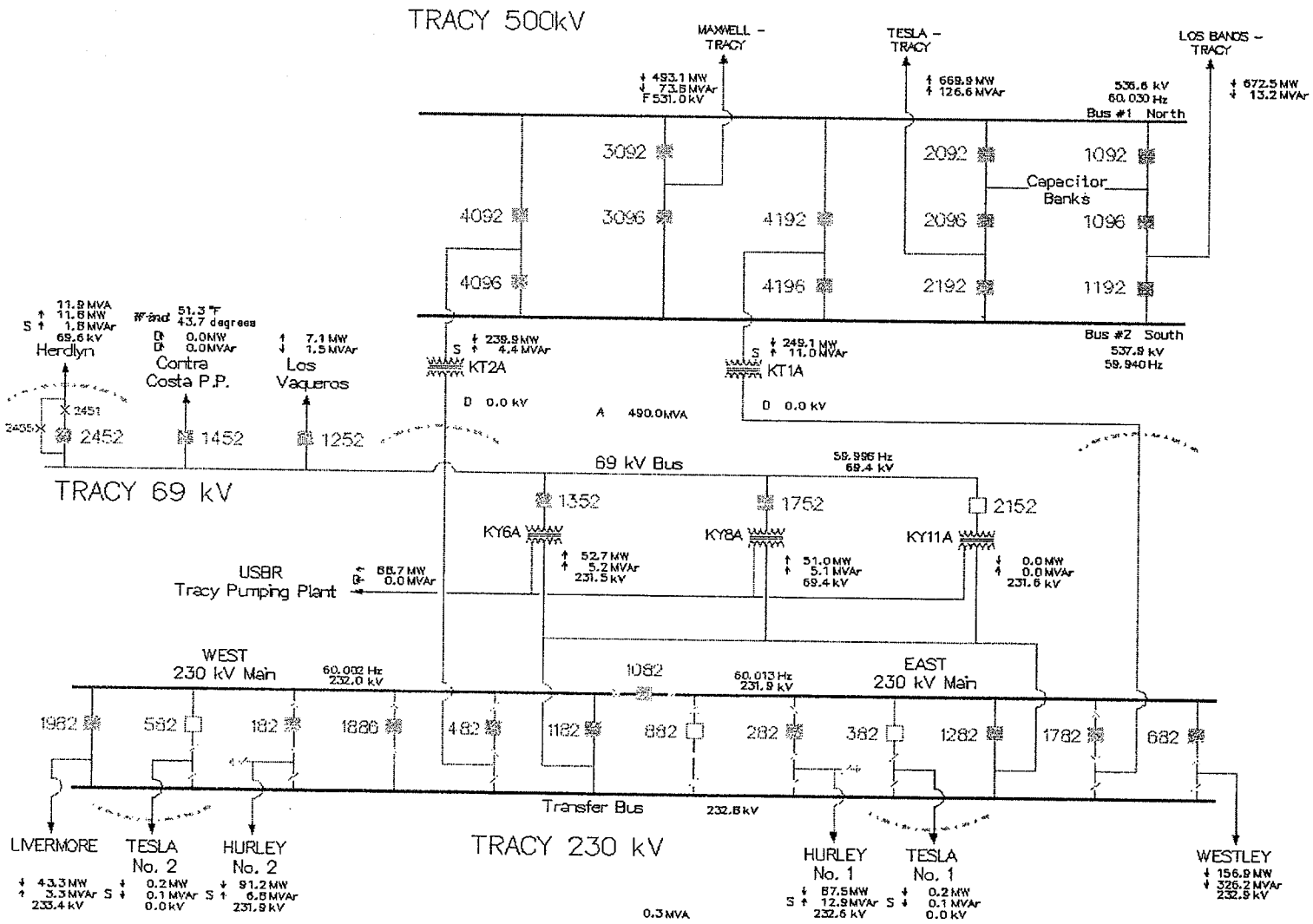
Cottonwood 230 kV Substation

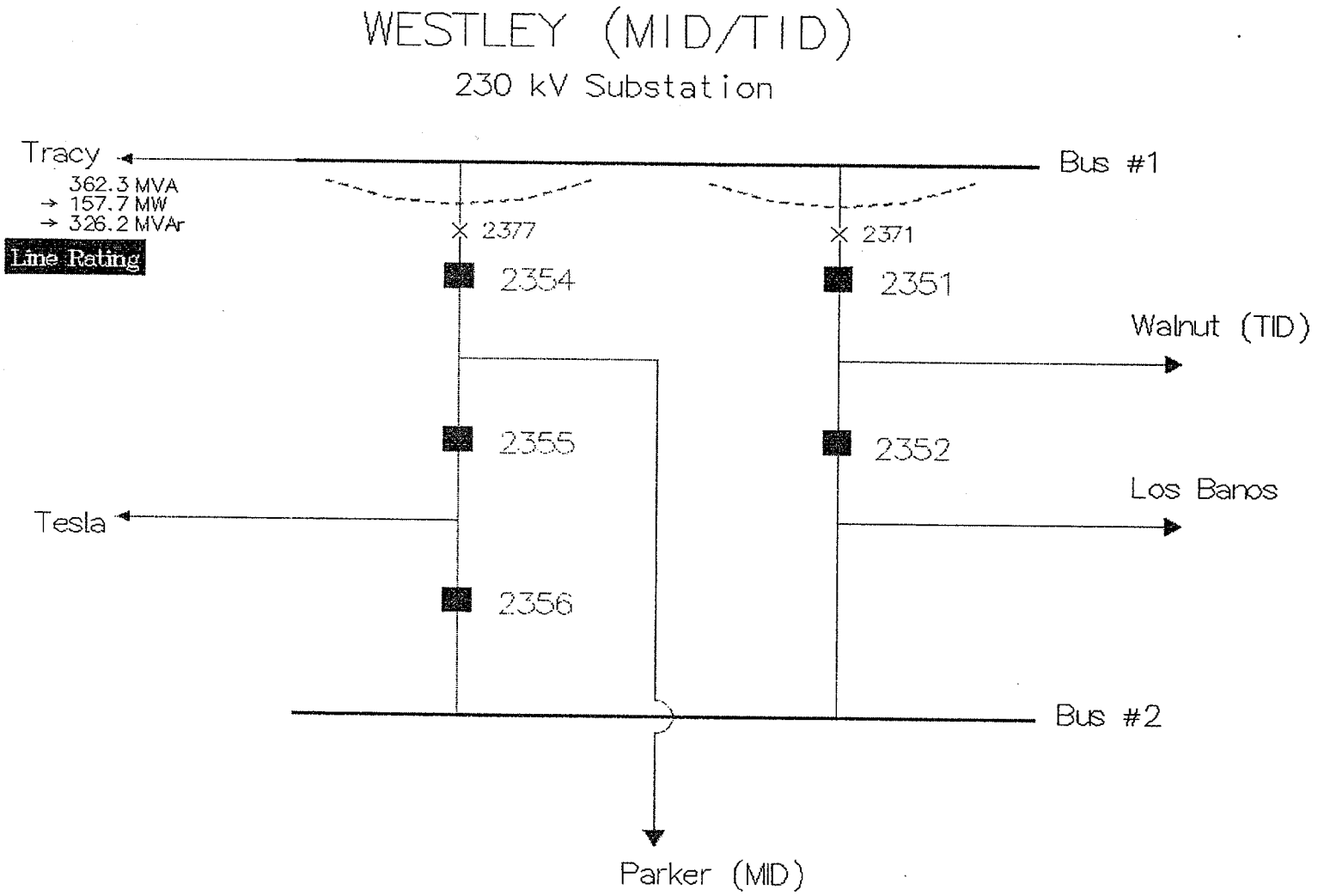


Lawrence Livermore
230/115 kV Substation




ROUND MOUNTAIN
500 kV Substation
MALIN 1
MALIN 2
↓ 523.1 MW
↓ 98.9 MVAr
↓ 509.9 MW
↑ 4.4 MVAr
230 kV Substation
BUS NO. 2
#1
500/230
280 MVA
352
732
612
632
243
245
242
243
512
532
F 0.0 kV
BUS NO. 1
↓ 600.0 MW
↑ 54.9 MVAr
↓ 613.2 MW
↑ 17.6 MVAr
Meter Error
In
Out
Line Rating
96.2 MVA
↓ 94.8 MW
S ↑ 16.3 MVAr
320 MVA normal
330 MVA emerg
Cottonwood
TABLE MTN 1
TABLE MTN 2


TRACY 500kV
MAXWELL – TRACY
TESLA – TRACY
LOS BANOS – TRACY
↓ 493.1 MW ↓ 73.5 MVAr F 531.0 kV
↑ 669.9 MW ↑ 126.6 MVAr
536.6 kV 60.030 Hz Bus #1 North
↓ 672.5 MW ↓ 13.2 MVAr
3092
2092
1092
Capacitor Banks
4092
3096
4192
2096
1096
4096
4196
2192
1192
Bus #2 South 537.9 kV 59.940 Hz
11.8 MVA ↑ 11.8 MW S ↑ 1.8 MVAr 69.6 kV
Herdlyn
51.3 °F 43.7 degrees
0.0MW 0.0MVAr
Contra Costa P.P.
↑ 7.1 MW ↓ 1.5 MVAr
Los Vaqueros
S ↑ 238.8 MW ↑ 4.4 MVAr
KT2A
S ↑ 249.1 MW ↑ 11.0 MVAr
KT1A
D 0.0 kV
A 490.0MVA
D 0.0 kV
2451
2455
2452
1452
1252
69 kV Bus
59.956 Hz 69.4 kV
TRACY 69 kV
1352
1752
2152
KY6A
KY8A
KY11A
USBR Tracy Pumping Plant
↑ 55.7 MW ↑ 0.0 MVAr
↑ 52.7 MW ↑ 5.2 MVAr 231.5 kV
↑ 51.0 MW ↑ 5.1 MVAr 69.4 kV
↓ 0.0 MW ↓ 0.0 MVAr 231.6 kV
WEST 230 kV Main
60.002 Hz 232.0 kV
1082
60.013 Hz 231.9 kV
EAST 230 kV Main
1982
582
182
1886
482
1182
882
282
382
1282
1782
682
Transfer Bus
232.8 kV
LIVERMORE
↓ 43.3 MW ↑ 3.3 MVAr 233.4 kV
TESLA No. 2
↓ 0.2 MW ↓ 0.1 MVAr 0.0 kV
HURLEY No. 2
↓ 91.2 MW ↑ 6.8 MVAr 231.9 kV
TRACY 230 kV
0.3 MVA
HURLEY No. 1
↓ 87.5 MW ↑ 12.9 MVAr 232.6 kV
TESLA No. 1
↓ 0.2 MW ↓ 0.1 MVAr 0.0 kV
WESTLEY
↓ 156.9 MW ↓ 326.2 MVAr 232.9 kV


WESTLEY (MID/TID)
230 kV Substation
Tracy
362.3 MVA
→ 157.7 MW
→ 326.2 MVAr
Line Rating
Bus #1
2377
2371
2354
2351
Walnut (TID)
2355
2352
Los Banos
Tesla
2356
Bus #2
Parker (MID)

SERVICE SCHEDULE 3

[PRIVILEGED MATERIAL REDACTED PURSUANT TO 18 C.F.R. § 388.112]

SERVICE SCHEDULE 4

RESPECTIVE JURISDICTION FOR OPERATIONAL CONTROL OF INTERCONNECTION

[Section 3.2.1]

- **Rancho Seco Interconnection**
  (Rancho Seco – Bellota #1 and #2-230 kV Lines)

  PG&E has ownership and maintenance, switching and clearance jurisdiction of both lines and all its associated facilities from Bellota Substation up to but not including disconnect switches 357 and 317 at Rancho Seco Substation. The ISO has operational control of Bellota Substation and the lines up to but not including switches 357 and 317, and will be involved in coordination of switching.

  SMUD has operational control, ownership and maintenance, switching and clearance jurisdiction of all facilities at Rancho Seco Substation up to and including disconnect switches 357 and 317.

  Common point of Tie Line Control Metering: Rancho Seco Substation.

- **Lake Interconnection**
  (Lake – Gold Hill 230 kV Line)

  SMUD has operational control, ownership and maintenance, switching and clearance jurisdiction of the line and all its associated facilities from Lake Substation to Gold Hill Substation up to but not including the termination structure at Gold Hill Substation.

  PG&E has ownership and maintenance, switching and clearance jurisdiction of all facilities at Gold Hill Substation beginning at the termination structure. The ISO has the operational control of Gold Hill Substation, including disconnect switches 233 and 235 and will be involved in coordination of switching.

  Common point of Tie Line Control Metering: Lake Substation.

- **Olinda Interconnection**
  (KT1A 525/230/34.5 kV Bus Tie)

Western and TANC systems interconnect at the 500/230 kV transformers of the Olinda substation.

Western has operational control, ownership, maintenance, switching and clearance jurisdiction of all facilities, both 500 and 230 kV including disconnect switch 487 on the 230 kV bus. SMUD will provide operational direction from the 230 kV side up to and including disconnect switch 487. The ISO will provide operational direction from the 500 kV side down to, but not including, switch 487.

Common point of Tie Line Control Metering: Olinda Substation

- **Cottonwood Interconnection**
  ("G" 230 kV Bus Tie)

  PG&E owns the 230 kV busses, which use common meters that are switched with the energized bus.

  Western has operational control, and PG&E has ownership, maintenance, switching and clearance jurisdiction of both "G" Section busses and all of its associated facilities including disconnect switches 471 and 473 (PCB 472) on the 230 kV bus #1 and disconnect switches 481 and 483 (PCB 482) on the 230 kV bus #2 which control shall be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  PG&E has ownership, maintenance, switching and clearance jurisdiction of its lines and all its associated facilities at the Cottonwood Substation. The ISO has the operational control of the PG&E lines at this facility and will be involved in coordination of switching, except to the extent that operational control has been delegated to Western in the Transmission Exchange Agreement.

  Common point of Tie Line Control Metering: Cottonwood Substation

- **LLNL U-424 Interconnection**
  (LLNL 115 kV Bus Tie)
  Western and PG&E share 115 kV busses at adjacent substations, which use common meters that are switched with the energized bus. LLNL has operational control, ownership, maintenance, switching and clearance jurisdiction of the busses and all its associated facilities up to and including disconnect switch 455, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  Common point of Tie Line Control Metering: LLNL U-424 Substation

- **Round Mountain Interconnection**
  (Round Mountain – Cottonwood 230 kV Bus Tie)

  PG&E operates 230 kV and 500 kV busses at the Round Mountain Substation.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Cottonwood-Round Mountain 230 kV line and all of its associated facilities up to but not including disconnect switches 243 and 245 (PCB 242), which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  PG&E has ownership and maintenance, switching and clearance jurisdiction of its lines and all its associated facilities at Round Mountain Substation. The ISO has the operational control of this facility and will be involved in coordination of switching.

  Common point of Tie Line Control Metering: Round Mountain Substation

- **Tracy 230 to Tracy 500 kV Interconnection**
  (Tracy 230 kV Bus Tie to Tracy 230/500 kV Transformers)

  Western owns and operates the 230 kV bus at the Tracy substation, which use common meters that are switched with the energized bus.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities including disconnect switches 481 and 485 (PCB 482) and 1781 and 1785 (PCB 1782) on the 230 kV bus, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  Common point of Tie Line Control Metering: Tracy Substation

- **Tracy-Tesla Interconnection**
  (Tracy-Tesla 230 kV Lines)
  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities including disconnect switches 381 and 385 (PCB 382) and 581 and 585 (PCB 582), which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

PG&E has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities at Tesla Substation. The ISO has the operational control of this facility and will be involved in coordination of switching, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

Common point of Tie Line Control Metering: Tracy Substation

- **Tracy-Westley Interconnection (Tracy-Westley 230 kV Bus Tie)**

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities up to and including disconnect switches 681 and 685 (PCB 682, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  MID/TID has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities at Westley Substation. MID/TID has the operational control of the line and associated disconnect switches 2377 and 2371 (PCB #2351 and #2354) at Westley and will be involved in coordination of switching, which control will be exercised consistent with directions when issued by the ISO as Control Area operator and in coordination with SMUD as the immediately adjacent Control Area operator as necessary and appropriate.

  Common point of Tie Line Control Metering: Westley Substation

- **Herdlyn 69 Interconnection**

  Western and ISO share 69 kV busses at adjacent substations, which use common meters that are switched with the energized bus.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 69 kV bus and all its associated facilities including disconnect switches 2451 and 2453 (PCB 2452) and 2455 on the Tracy 69 kV bus, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  PG&E has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities, including disconnect switch 79, at

Herdlyn Substation. The ISO has the operational control of this facility and will be involved in coordination of switching. SMUD will have operational control of this facility and will be involved in coordination of switching.

Common point of Tie Line Control Metering: Tracy Substation

Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at Herdlyn, the Parties agree it will not be considered a scheduling point.

Special Operating Condition: Because ISO Control Area load exists on the 69 kV Herdlyn line that extends from the Western side of the Tracy Substation into the ISO Control Area that is served by PG&E, and the connection between the 69 kV Herdlyn line and Tracy Substation is not being operated as a Control Area scheduling point, the Parties have agreed that Tracy meter values will be adjusted to remove the Herdlyn line load from the Expanded SMUD Control Area and add it to the ISO Control Area. The Parties shall amend this Agreement to the extent that the Herdlyn line load becomes subject to any policy and provisions for pseudo ties to the ISO Control Area, provided that such policy and provisions shall be consistent with WECC and NERC business practices and criteria.

SERVICE SCHEDULE 6
REAL – TIME OPERATING LIMITS

[Section 3.2.3.1]

SMUD -WAPA Control Area

Points of Interconnection/Control Area Tie Points/Branch Groups

Rating

		Summer					Winter						
		NORMAL		*EMERGENCY*			*NORMAL*		*EMERGENCY*			SMUD CA Ties	
		MVA	Amps	MVA	Amps		MVA	Amps	MVA	Amps			
Olinda													
KT1A 525/230/34.5	PCB 182 & 386	850		1041		4h	850		1041		4h	1	
Cottonwood													
230kV "G" Bus 1	PCB 472	797	2000	797	2000	n/a	797	2000	797	2000	n/a	2	
230kV "G" Bus 2	PCB 482	797	2000	797	2000	n/a	797	2000	797	2000	n/a		
Lawrence Livermore													
115 kV Tesla Line 1	PCB 752 & PCB 852	164	825	194	975		256	1262	274	1350		3	
Round Mountain													
230kV Cottonwood Line	PCB 242	320	800	320	800	n/a	370	930	370	930	n/a	4	
Tracy													
KT1A 525/230/34.5	PCB 1782	850		1041		4 h	850		1041		4 h	5	
KT2A 525/230/34.5	PCB 482	850		1041		4 h	850		1041		4 h		
230kV Tesla Line 1	PCB 382	683	1715	683	1715	n/a	746	1873	746	1873	n/a	6	
230kV Tesla Line 2	PCB 582	683	1715	683	1715	n/a	746	1873	746	1873	n/a		
69kV Herdlyn Line	PCB 2452	95	800	95	800	n/a	95	800	95	800	n/a	7	
Westley													
230kV Tracy Line	PCB 2351 & PCB 2354	650	1632	747	1878	30 m	650	1632	747	1878	30 m	8	
Rancho Seco													
230kV Bellota Line 1	PCB 210 & PCB 310	494	1239	590	1482	100 h	789	1981	847	2127	100 h	9	
230kV Bellota Line 2	PCB 250 & PCB 350	494	1239	590	1482	lifetime	789	1981	847	2127	lifetime		
Lake													
230kV Gold Hill Line	PCB 5230 & PCB 5236	303	760	351	880	30 m	426	1070	474	1190	30 m	10	

NOTES:
Summer and Winter Periods Defined by WECC OTC Policy Committee
All limits shown are the maximum based on the most limiting element at the identified location.
Transfer limits may be less than the amounts shown at the tie-points above based on an established path rating.
or due to power flows exceeding limit on another system element.
Rancho Seco & Lake total scheduling limited by contract to 1,271 MW, otherwise individually thermally limited
Herdlyn - Tracy meter values will be adjusted to remove Herdlyn line load from the SMUD CA and add it to the ISO CA. Herdlyn loads will not be scheduled.
Update 5/31/05

The Parties shall each maintain and have in service and operational at all times an automatic under frequency load shedding program and associated equipment designed and implemented in accordance with WECC Coordinated Off-Nominal Frequency Load Shedding and Restoration Plan (Final Report, November 25,1997, revised December 5, 2003). In addition, during a system emergency, the ISO and SMUD shall take actions appropriate for the prevalent condition or situation, upon which the Parties shall mutually agree and in accordance with Good Utility Practice as defined in ICAA 2.2.7, such that neither Party will cause an operational burden on the other Party. Such actions shall be as identified in operating procedures and/or agreements that shall be mutually agreed upon by the Parties prior to the implementation of the Expanded SMUD Control Area.

Nomograms for simultaneous import limits into the Expanded SMUD Control Area will continue to be established by the SVSG and updated on an annual, or as required, basis. SMUD and all other SVSG members have committed to continue participation in the SVSG after SMUD forms a Control Area as before. SVSG Nomograms shall establish simultaneous import limits into the Expanded SMUD Control Area under specific transmission contingencies as well as with all lines at the Interconnection in service. SMUD shall at all times make such simultaneous import limits, as calculated in real time from the pertinent SVSG Nomogram, electronically available to the ISO. SMUD shall comply with import limits in all circumstances by managing SMUD loads and resources to maintain total imports at or below the simultaneous limit by limiting flows at each Interconnection point to the lower of the contract or thermal limit at that Interconnection point. Operating instructions will be prepared for the ISO and Expanded SMUD Control Areas to implement the SVSG Nomograms in their respective coordinated operating procedures.

SERVICE SCHEDULE 7

VOLTAGE CONTROL

[Section 3.2.5]

SMUD and ISO operator actions are necessary to ensure system voltages are maintained within operating limits. The normal operating range for the SMUD 230 kV system is 230-236 kV. The normal operating range for the Western 500 kV system is 525 - 538 kV; Western's 230 kV system is 230 - 236 kV; and Western's 115 kV system is 115 - 118 kV. The specific operator actions related to voltage control are detailed in joint operating procedures developed by SMUD, the ISO and other impacted entities, as described in Service Schedule 10, which may be changed from time to time by mutual agreement of the Parties and other affected entities. The Parties will use best efforts to maintain the voltage schedules at the interconnection points, subject to the joint operating procedures.

The goal for net MVAR exchange between Control Areas is zero. SMUD and the ISO will monitor the net MVAR exchange and request system voltage adjustments as necessary to minimize the MVAR interchange while maintaining normal voltage ranges.

The transmission system voltage profile has a higher priority than net MVAR interchange. When either a high or low voltage limit is approaching, the respective system operator shall take sufficient corrective measures, disregarding the MVAR interchange, to bring the voltage within limits.

SERVICE SCHEDULE 16

INTER-CONTROL AREA REQUIREMENTS

FOR SCHEDULING AND DELIVERING REGULATION SERVICE

TO THE ISO

1. General

1.1 Purpose. This Service Schedule 16 sets forth the requirements and processes that must be satisfied by an entity requesting the ability to schedule and deliver regulation service into the ISO Control Area ("requesting entity") and that must be coordinated through SMUD (referred to herein as the "Host Control Area") and the ISO should the requesting entity request the certification, scheduling and delivery of regulation service into the ISO Control Area. The ISO requires the requesting entity to be represented by a Scheduling Coordinator in any associated ISO processes. The requirements encompass technical (energy management system ("EMS")/AGC and communications), interchange scheduling, telemetry and control aspects of interconnected Control Area operations.

1.2 NERC/WECC Operating Standards Observed. Nothing in this Service Schedule 16 is intended to change, supercede, or alter either Party's obligations to abide by NERC standards and WECC criteria.

1.3 Applicable Standards. This Service Schedule incorporates by reference the ISO's *"Standards for Imports of Regulation"* ("Standards"), except that Section 6.2.4, Section 6.3.1, and Section 6.4.3 of the Standards shall be revised as set forth in Section 3.1 and Section 3.2 of this Service Schedule 16. The Standards document is available for viewing and can be also downloaded from the ISO internet home page: "http://www.caiso.com". SMUD and the ISO have also jointly developed certain specific implementation procedures to facilitate dynamic scheduling and to ensure that NERC and WECC policies and criteria are satisfied, including the WECC RMS.

1.4 Meaning of "System Resource". "System Resource" is defined in the ISO Tariff and, in the context of this Service Schedule 16, may include combinations of resources as described in the Standards.

2. Telecommunications Requirements

The ISO and Host Control Area shall establish and maintain real time, redundant, diversely routed, bi-directional, communications links between the ISO EMS and the Host Control Area EMS, utilizing standard inter-control center communications protocol ("ICCP"). Further details regarding telecommunications requirements may be found the Standards.

3. Telemetry and Control

3.1 Telemetry. For each operating hour for which a System Resource is scheduled to deliver regulation service to the ISO Control Area, the Host Control Area shall provide, via the ICCP communication links to the ISO EMS, the data for each System Resource set forth in the Standards.

3.1.1 Host Control Area responsibility under Section 6.2.4 of the Standards shall be limited to polling the ISO EMS and transmitting data to the System Resource on a two second basis, and receiving System Resource data and transmitting to the ISO EMS on a two second basis. The Host Control Area will not be responsible for the time it takes the System Resource to process and respond to data. The ISO and SMUD will work together to meet each other's requirements for telemetry.

3.1.2 Host Control Area responsibility under Section 6.4.3.1 of the Standards shall be limited to passing on the "On/Off Line Status" as received from the System Resource.

3.1.3 Host Control Area responsibility under Section 6.4.3.2 of the Standards shall be limited to passing on the "On/Off AGC/Control Status" as received from the System Resource.

3.1.4 Host Control Area responsibility under Section 6.4.3.4 of the Standards shall be limited to passing on the "Operating Low Limit Status" as received from the System Resource.

3.1.5 Host Control Area responsibility under Section 6.4.3.4 of the Standards shall be limited to passing on the "Operating High Limit Status" as received from the System Resource.

3.2 Control. Host Control Area obligation under Sections 6.3.1 and 6.4.3.3 of the Standards shall be limited to receiving control signals, in real time, from the ISO EMS, via the ICCP communications links, and passing through those signals to the System Resource operator, thereby facilitating the System Resource to vary its energy production when issued a new set-point signal by the ISO. Further detailed information regarding control requirements may be found in the Standards. Should there be a need for alternative arrangements for telemetry, the ISO and SMUD will work together to establish such alternative arrangements in a manner that does not contravene applicable NERC and WECC requirements and practices, provided that SMUD is not obligated to incur additional costs not paid for by the owner of the System Resource.

4. Interchange Scheduling Requirements

4.1 Dynamic Scheduling. The Host Control Area may, after review and if it determines in its sole discretion that it is willing to proceed, support a requesting entity's application to arrange dynamic interchange schedules for the delivery of regulation service to the ISO Control Area, reflecting the System Resource's instantaneous energy production or allocation level as caused by real time control signals issued by the ISO EMS/AGC and taking into account available transmission capacity. All schedules need to be e-tagged in accordance with NERC and WECC requirements and practices.

4.2 Treatment of Area Control Error. The Host Control Area shall instantaneously compensate its AGC for the System Resource's variable energy output level such that the System Resource actual energy production, caused by the ISO EMS/AGC control signals, has no effect on the Host Control Area's Area Control Error ("ACE").

4.3 Integration of Dynamic Scheduling. For each operating hour during which regulation service was dynamically scheduled for delivery to the ISO Control Area, the Host Control Area shall compute an integrated amount of interchange based on the System Resource's integrated energy production, by integrating the instantaneous System Resource production levels. Such integrated MWH value shall be agreed to hourly by the real time schedulers.

4.4 Access to Information. The Parties agree to exchange information related to control signals issued and telemetry received with respect to the delivery of regulation service (1) at the request of the other Party for purposes of after-the-fact interchange accounting or (2) on demand for any other purpose.

5. Other

5.1 Losses. A requesting entity shall be responsible for transmission losses caused by transmitting regulation service within or across the SMUD and ISO systems in accordance with the applicable ISO and SMUD requirements.

5.2 Certification. Only a requesting entity meeting ISO-certified System Resource/Host Control Area arrangements and separate applicable Expanded SMUD Control Area requirements will be allowed to bid or self provide regulation service in the ISO's ancillary services market through an ISO-certified Scheduling Coordinator.

5.3 Performance Assessment. The ISO will monitor and measure imported regulation service, whether bid or self-provided, against the performance benchmarks described in the Standards.

ATTACHMENT B

CALIFORNIA INDEPENDENT SYSTEM OPERATOR

AND

SACRAMENTO MUNICIPAL UTILITY DISTRICT

INTERCONNECTED CONTROL AREA OPERATING AGREEMENT

Incorporating Amendment No. 3

Issued by: Charles F. Robinson, Vice President and General Counsel
Issued on: September 29, 2005
Effective: September 30, 2005

ICAA 2.2.18 **Power Flow Reduction Measures:** Actions taken to promptly and rapidly reduce power flow, including but not limited to: the circulation of power on the PDCI, the increase of generation within the control area through changes initiated by a Control Area Operator that create counter flow, and Curtailments that result in immediate responses from the parties to scheduled transactions to change the amount of generation or load accordingly.

ICAA 2.2.19 **Pseudo Tie:** A telemetered reading or value that is updated in real time and used as a "virtual" tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes.

ICAA 2.2.20 **Real Time Operating Limits:** The rated transfer capability less reductions during any hour caused by, but not limited to, physical limitations beyond the control of the control area operators, and operational limitations resulting from transmission line Outages, equipment Outages, stability limits and loop flow.

ICAA 2.2.21 **Scheduling Coordinator:** An entity certified by the ISO for the purposes of undertaking the functions of: submitting schedules for energy, generation, transmission losses, and ancillary services; coordinating generation; tracking, billing, and settling trades with other Scheduling Coordinators; submitting forecast information; paying the ISO's charges; and ensuring compliance with ISO protocols.

ICAA 2.2.22 **SMUD Control Area:** The electric system owned and operated by SMUD for which SMUD has operational control and reliability responsibility pursuant to WECC and NERC guidelines and requirements.

ICAA 2.2.23 **Transmission Owner:** An entity owning transmission facilities or having firm contractual rights to use transmission facilities at the Interconnection.

ICAA 2.2.24 **WECC Reliability Coordinator:** One of the area control centers assigned by the WECC to proactively anticipate and mitigate potential problems, facilitate notification, and coordinate restoration following a disturbance.

ICAA 2.2.25 **WECC RMS:** The WECC established reliability program for WECC members that are governed by the WECC Reliability Management System Agreement and the WECC Reliability Criteria Agreement that provides sanctions to its members.

ICAA 5.4 Import of Regulation Service by ISO

The ISO and SMUD shall allow for the import of regulation service from the Expanded SMUD Control Area to the ISO Control Area in accordance with the provisions of Service Schedule 16. SMUD shall be under no obligation to supplement the import of regulation service contracted by third parties to be delivered to the ISO Control Area from resources in the Expanded SMUD Control Area and shall have the right to terminate Service Schedule 16 without prior ISO approval, upon thirty (30) days advance written notice to the ISO.

ICAA 5.5 Pilot Program for Pseudo Tie to Expanded SMUD Control Area

The ISO shall develop provisions for a pilot program authorizing a Pseudo Tie of an entire single resource in the ISO Control Area to the Expanded SMUD Control Area, subject to pre-existing contract rights for transmission between the ISO Control Area and the Expanded SMUD Control Area, to be implemented within eight (8) months after SMUD identifies a specific resource in the ISO Control Area that it intends to establish as a pilot Pseudo Tie, provided that the ISO shall not be obligated to implement such a pilot program prior to July 1, 2006 or between October 1, 2006 and sixty (60) days after the implementation of "Release 1" of the ISO's Market Redesign and Technology Upgrade project. The ISO will use reasonable efforts to undertake implementation of such a pilot program during other periods if practical, if requested by SMUD. If the pilot program is successful, the ISO shall, subject to approval of the ISO Governing Board, file at FERC for approval a permanent program for the establishment of Pseudo Ties, and shall implement it when approved.

SERVICE SCHEDULE 1

INTERCONNECTION

[Section 2.2.3]

The Interconnection between the ISO and Expanded SMUD Control Areas consists of the following Interconnection points. All Interconnection points are normally operated closed and are capable of transferring power in both directions.

- **Rancho Seco Interconnection**
  (Rancho Seco – Bellota #1 and #2 230 kV Lines)

  This Interconnection point is comprised of a 27-mile double circuit 230 kV transmission line strung on a 500 kV tower. The transmission lines connect SMUD's Rancho Seco Substation in southern Sacramento to PG&E's Bellota Substation in the eastern Stockton area. The physical point of interconnection is disconnect switches 357 and 317 at Rancho Seco Substation.

- **Lake Interconnection**
  (Lake – Gold Hill 230 kV Line)

  This Interconnection point is comprised of a single very short (<0.25 mile) 230 kV transmission line connecting SMUD's Lake Substation to PG&E's Gold Hill Substation. The two substations are adjacent and located in Folsom, California. This Interconnection point utilizes a 55-ohm series reactor to provide additional electrical distance. The physical point of interconnection is PG&E's 230 kV line termination structure at Gold Hill Substation.

- **Olinda Interconnection**
  (KT1A 525/230/34.5 kV Bus Tie)

  This Interconnection point is on the 230 kV side of the 500/230 kV transformer bank at Olinda Substation. The physical point of interconnection is switch 487 at Western's Olinda Substation.

- **Cottonwood Interconnection**
  ("G" 230 kV Bus Tie)

  This Interconnection point is comprised of two 230 kV breakers connecting Western's bus with PG&E's bus. Cottonwood Substation is located in Cottonwood, California. The physical point of interconnection is disconnect switch 471 on the "G" 230 kV bus 1 and disconnect switch 481 on the "G" 230 kV bus 2 bus at Cottonwood Substation.

- **LLNL Interconnection**
  (LLNL 115 kV Bus Tie)

  Western is interconnected to the ISO system through line disconnect switch 455 at Western's Lawrence Livermore National Laboratory ("LLNL") U-424 Substation. One PG&E 115 kV lines enters and one Western 115 kV lines leaves the LLNL U-424 Substation. LLNL U-424 Substation is located southeast of Sacramento in Livermore, California. The physical point of interconnection is line disconnect switch 455 at LLNL U-424 Substation.

- **Round Mountain Interconnection**
  (Round Mountain - Cottonwood 230 kV Bus Tie)

  Western is interconnected to the ISO system through breaker 242 at PG&E's Round Mountain Substation. One Western and one PG&E 500 kV line enters and two PG&E 500 kV and one Western 230 kV lines leave the Round Mountain Substation. Round Mountain Substation is located in Round Mountain, California. The physical point of interconnection is disconnect switches 243 and 245 at the Round Mountain Substation.

- **Tracy 230 Interconnection**
  (Tracy 230 kV Bus Tie to Tracy 230/500 kV Transformers)

  Western is interconnected to the ISO system through breakers 482 and 1782 at Western's Tracy Substation. The physical point of interconnection is disconnect switches 481, 485, 1781, and 1785 at Tracy Substation.

- **Tracy-Westley Interconnection**
  (Tracy-Westley 230 kV Bus Tie)

  Western is interconnected to the ISO system through breakers 2354 and 2351 at MID/TID Westley Substation. The physical point of interconnection is disconnect switches 2377 and 2371 at the Westley Substation.

- **Tracy-Tesla Interconnection**
  (Tracy-Tesla 230 kV Bus Tie)

  This Interconnection point is comprised of two 230 kV lines connecting Tracy Substation to Tesla Substation. Western is interconnected to the ISO system through breakers 382 and 582 at Western's Tracy Substation. The physical point of interconnection is disconnect switches 381, 385, 581, and 585 at the Tracy Substation.

- **Herdlyn 69 Interconnection (Herdlyn 69 kV Bus Tie)**

  The Expanded SMUD Control Area is connected to the ISO Control Area at the disconnect switch on the Tracy-Herdlyn 69 kV line that is located within the Tracy Substation and is owned and operated by Western. Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at the disconnect switch on the Tracy-Herdlyn line, the Parties agree it will not be considered a scheduling point.

A set of single-line diagrams showing each of the points of Interconnection is attached to this Service Schedule 1.

REVENUE METERING AND TELEMETRY AT INTERCONNECTION POINTS

SMUD has in service revenue quality metering at all Interconnections points. This metering shall meet the standards as mutually agreed upon by SMUD and the ISO. Meters are inspected and tested per existing agreements between SMUD and the respective Transmission Owner. The ISO shall be entitled to witness annual testing of the Interconnection metering. Any change or modification to such metering equipment by SMUD or any other entity shall be coordinated with the ISO. SMUD shall program the Interconnection revenue metering to record data at five minute intervals and shall provide for ISO polling of that metering.

SMUD and the ISO shall maintain arrangements that ensure that both Parties shall have access to real-time data from all of the points of Control Area Interconnection. SMUD understands that the ISO wants to directly poll MW and MVAR data from interconnection metering and/or data recorders, which may include RTUs, at all points of Control Area Interconnection, including SMUD and Western substations. SMUD agrees to allow the ISO to directly poll real-time data from SMUD substations and will work with the ISO and Western to facilitate ISO direct polling of real-time data from Western substations in a timely manner. In the event that a second communication port of the RTU is not available for direct polling by the ISO's EMS, the ISO shall have the option to provide an RTU to the substation owner for the purpose of establishing a communication port available for direct polling by the ISO EMS.

- **LAKE INTERCONNECTION**

An Interconnection point to PG&E is metered at Lake Substation. The substation has primary and backup metering arrangements. The primary meter is a Transdata model 30EMS7460M2 and the backup meter is a Scientific Columbus JEM-1 meter model 603P-11. This is a bi-directional meter with the accuracy rating of 0.3%. The

instrument transformers (C.T.s and P.T.s) for revenue meters are located at the line side. All P.T.s and C.T.s are rated for 0.3% accuracy class with CT ratio of 800:5 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **RANCHO SECO INTERCONNECTION**

The primary and backup revenue metering equipment is installed at the Rancho Seco end of the Rancho Seco-Bellota 230 kV lines #1 and #2. The primary meter is a Scientific Columbus JEM-1 model 603P-E and the backup meter is a Scientific Columbus JEM-1 model 603-J-MM ; both are bi-directional meters with an accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located on the line side. All P.T.s and C.T.s are rated at 0.3% accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **OLINDA INTERCONNECTION**

The Interconnection point with the Western system is metered on the 230 kV bus at Olinda Substation. The meter is currently a Quad-4 meter that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 800:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **COTTONWOOD INTERCONNECTION**

The Interconnection point with the Western system is metered on the 230 kV G Section at Cottonwood Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 320:1 and PT ratio 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **LLNL INTERCONNECTION**

The Interconnection point with the Western system is metered on PG&E's Tesla-LLNL 115 kV line at LLNL U-424 Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 115 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 115 kV switchyard at the Interconnection point of the 115 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 60:1 and PT ratio of 600:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **ROUND MOUNTAIN INTERCONNECTION**

The Interconnection point with the Western system is metered on the Round Mountain Cottonwood 230 kV line at Round Mountain Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the Cottonwood 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 120:1 and PT ratio 160:1. The

meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **TRACY 230 INTERCONNECTION**

The Interconnection point with the Western system is metered on the 525/230/34.5 kV transformers KT1A and KT2A at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **TRACY-WESTLEY INTERCONNECTION**

The Interconnection point with the Western system is metered on 230 kV at Tracy Substation. The meter shall be compensated to reflect the difference between the ISO Control Area boundary and the Westley end of the line by incorporating the losses associated with the actual flows across the transmission line. In addition, the telemetered MW and MVar values should be compensated. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

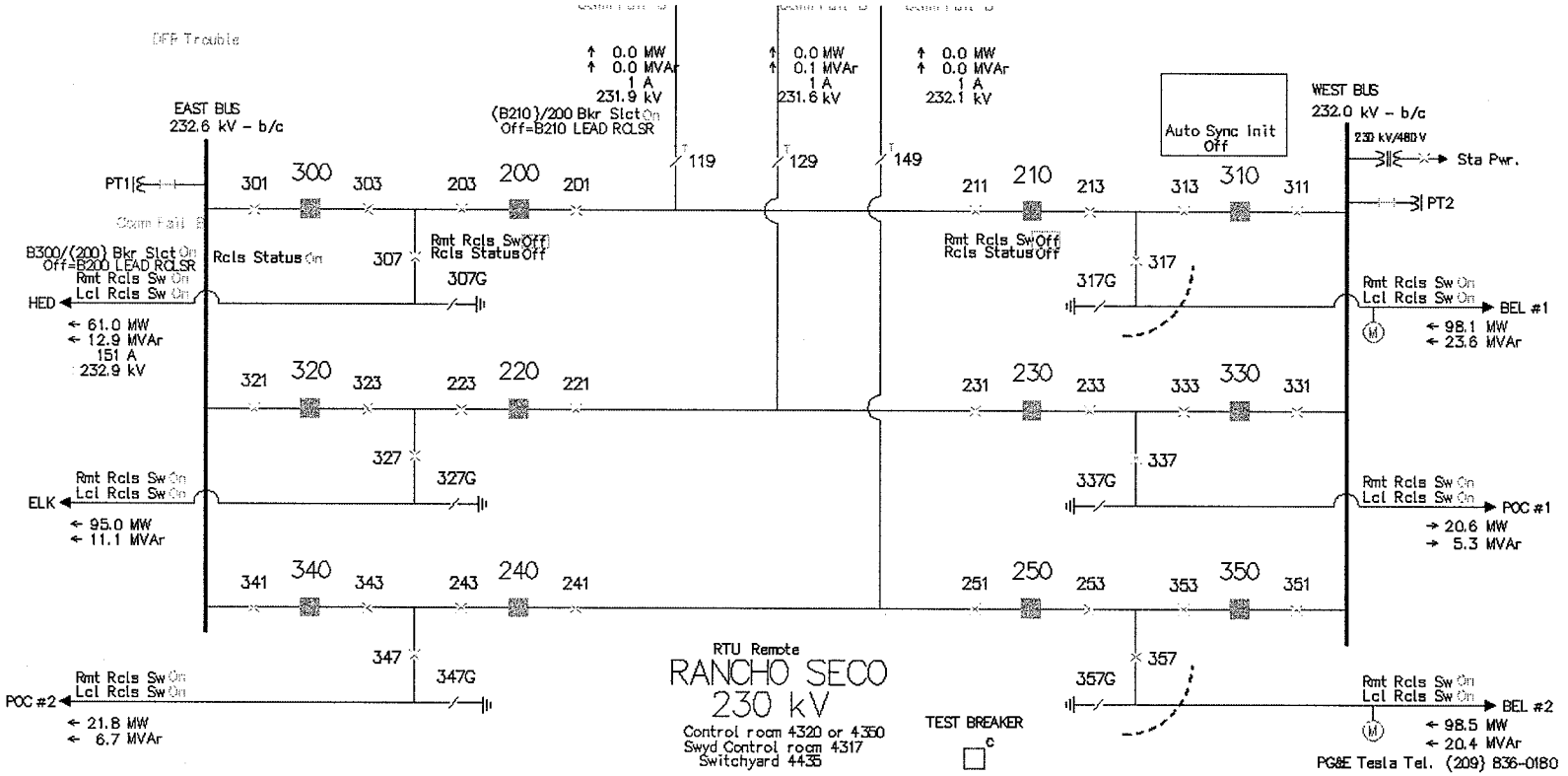
- **TRACY-TESLA INTERCONNECTION**

The Interconnection point with the Western system is metered on 230 kV at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

- **HERDLYN 69 INTERCONNECTION**

The Interconnection point with the Western system is metered on the Herdlyn-Tracy 69 kV line at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 69 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 69 kV switchyard at the Interconnection point of the 69 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 240:1 and PT ratio of 320:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis.

Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at Herdlyn, the Parties agree it will not be considered a scheduling point.



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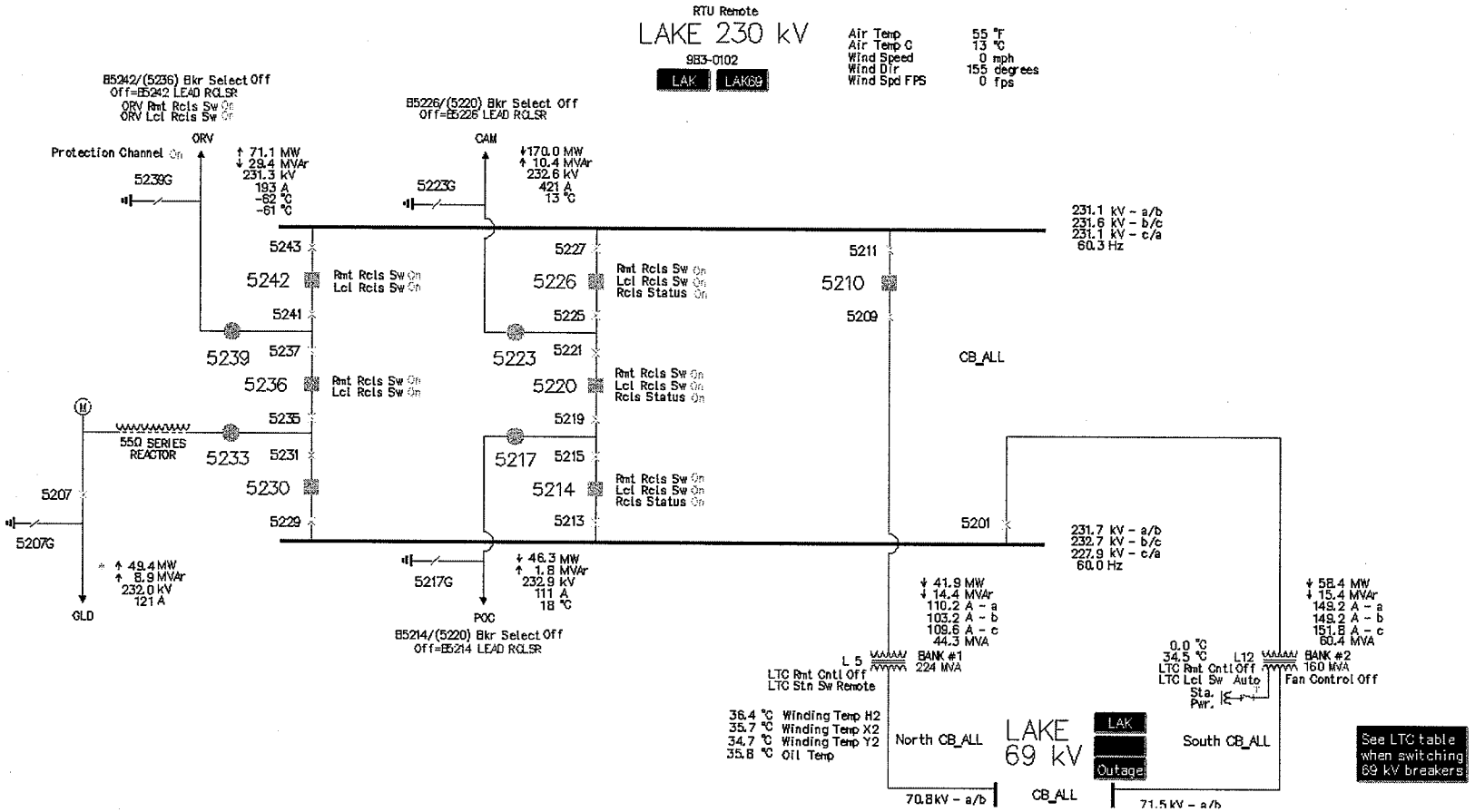

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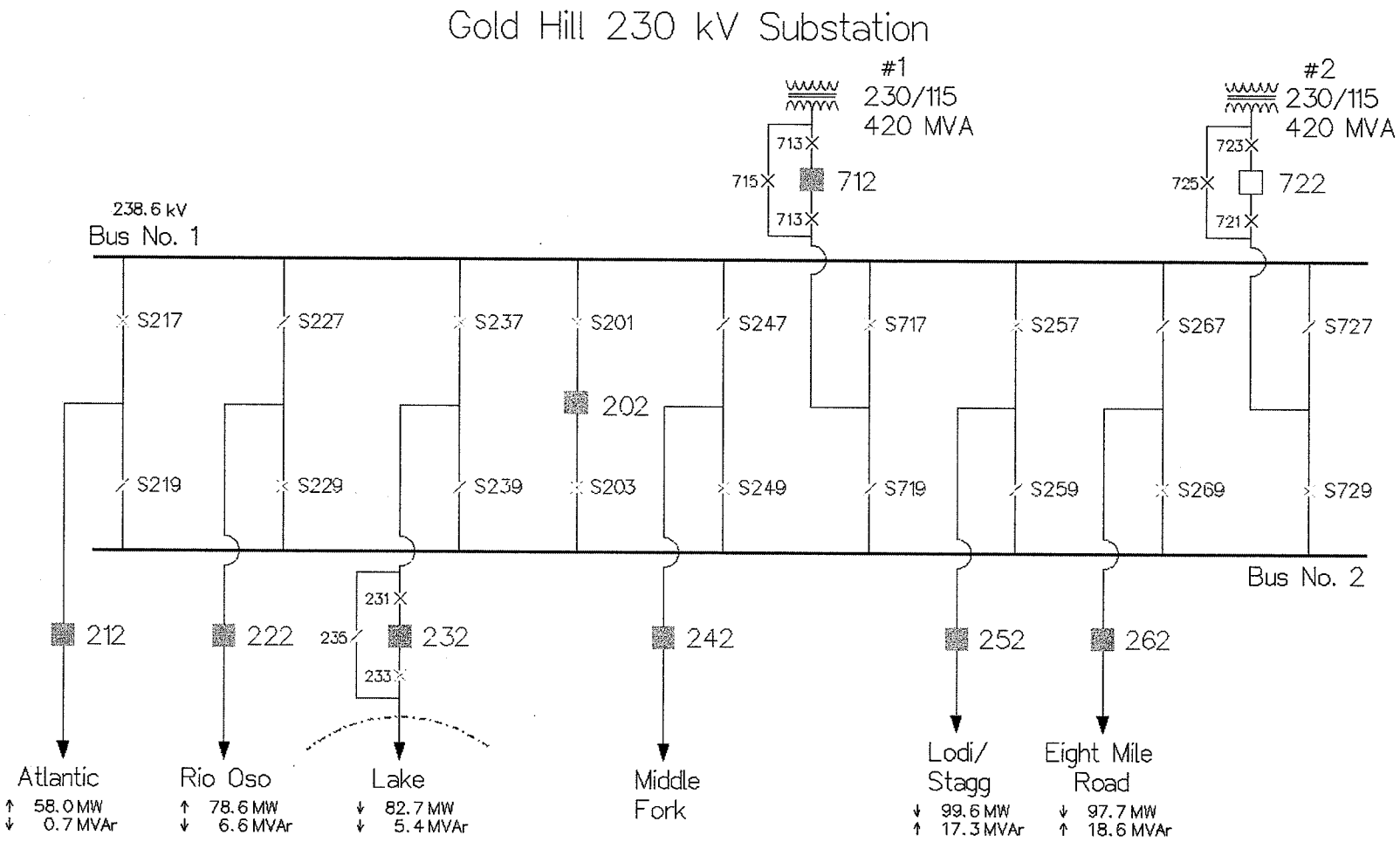

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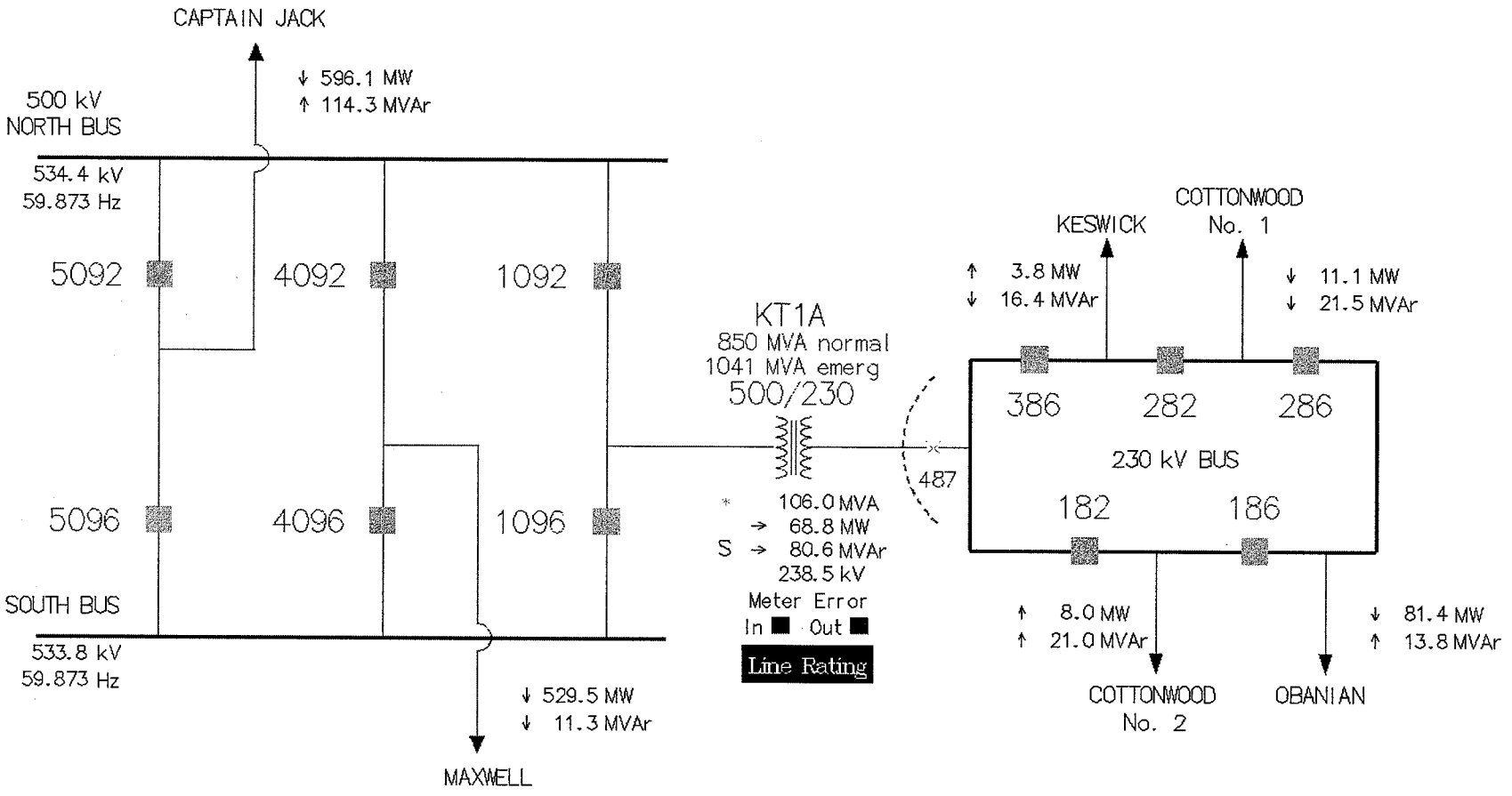
OLINDA



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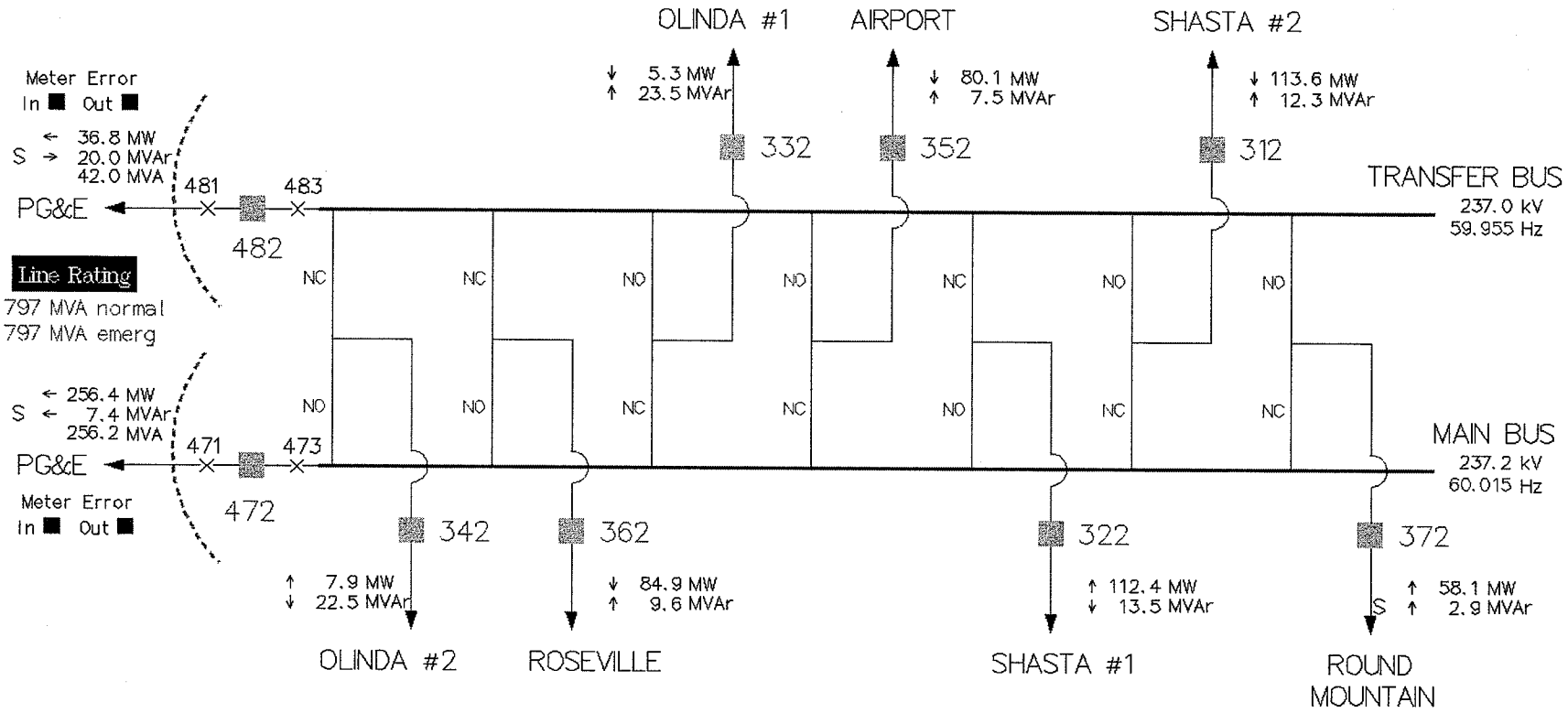
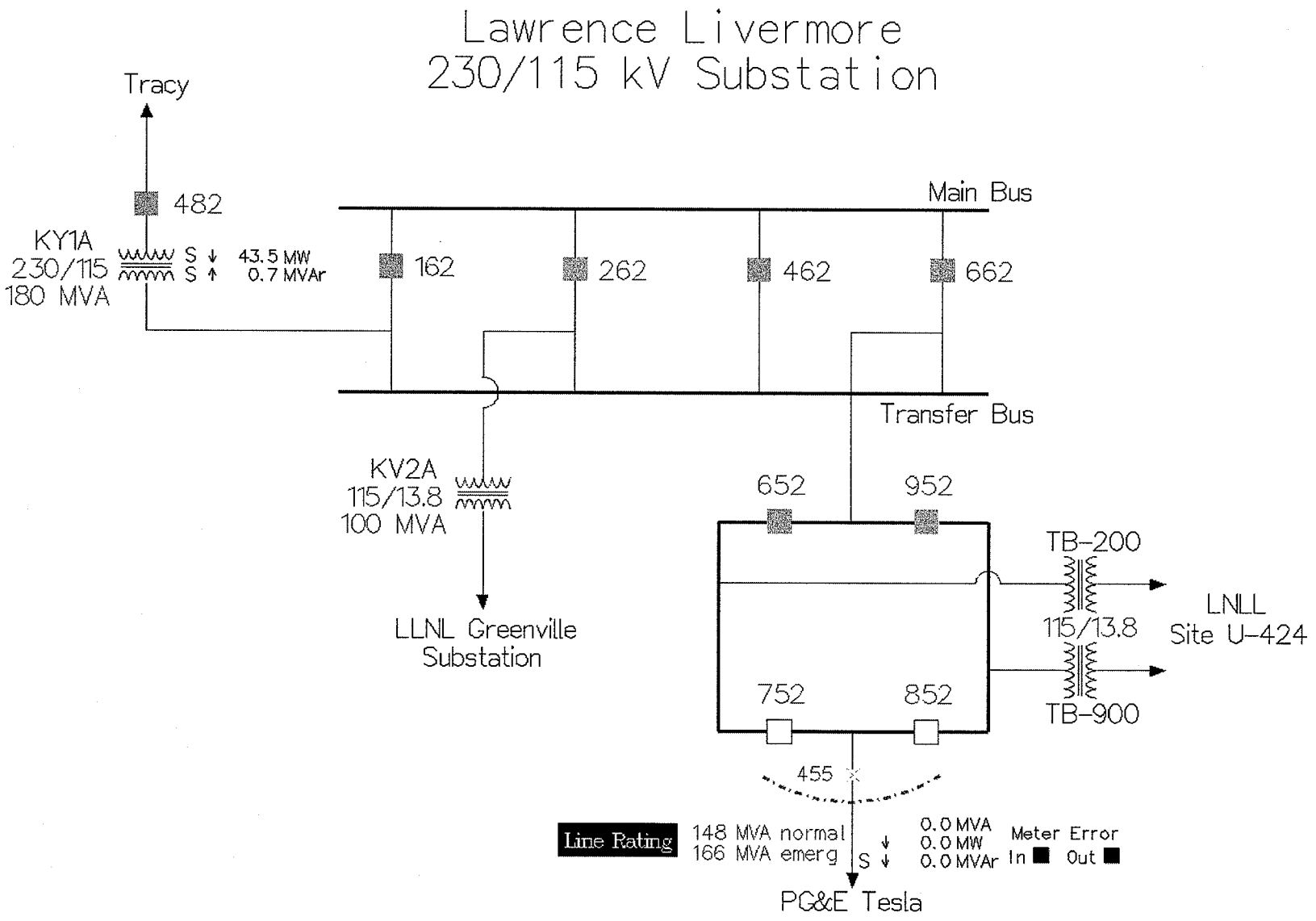
Cottonwood 230 kV Substation





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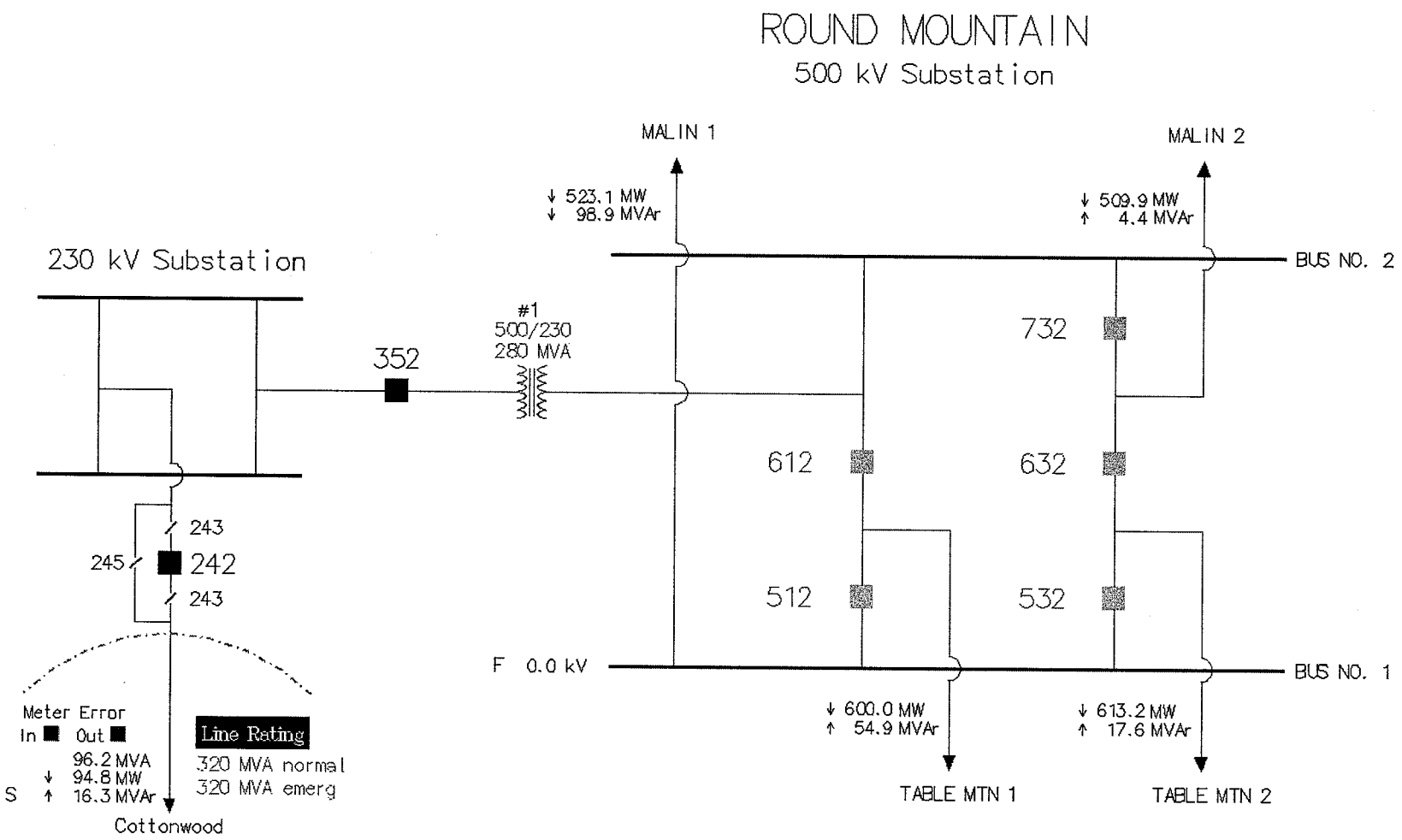

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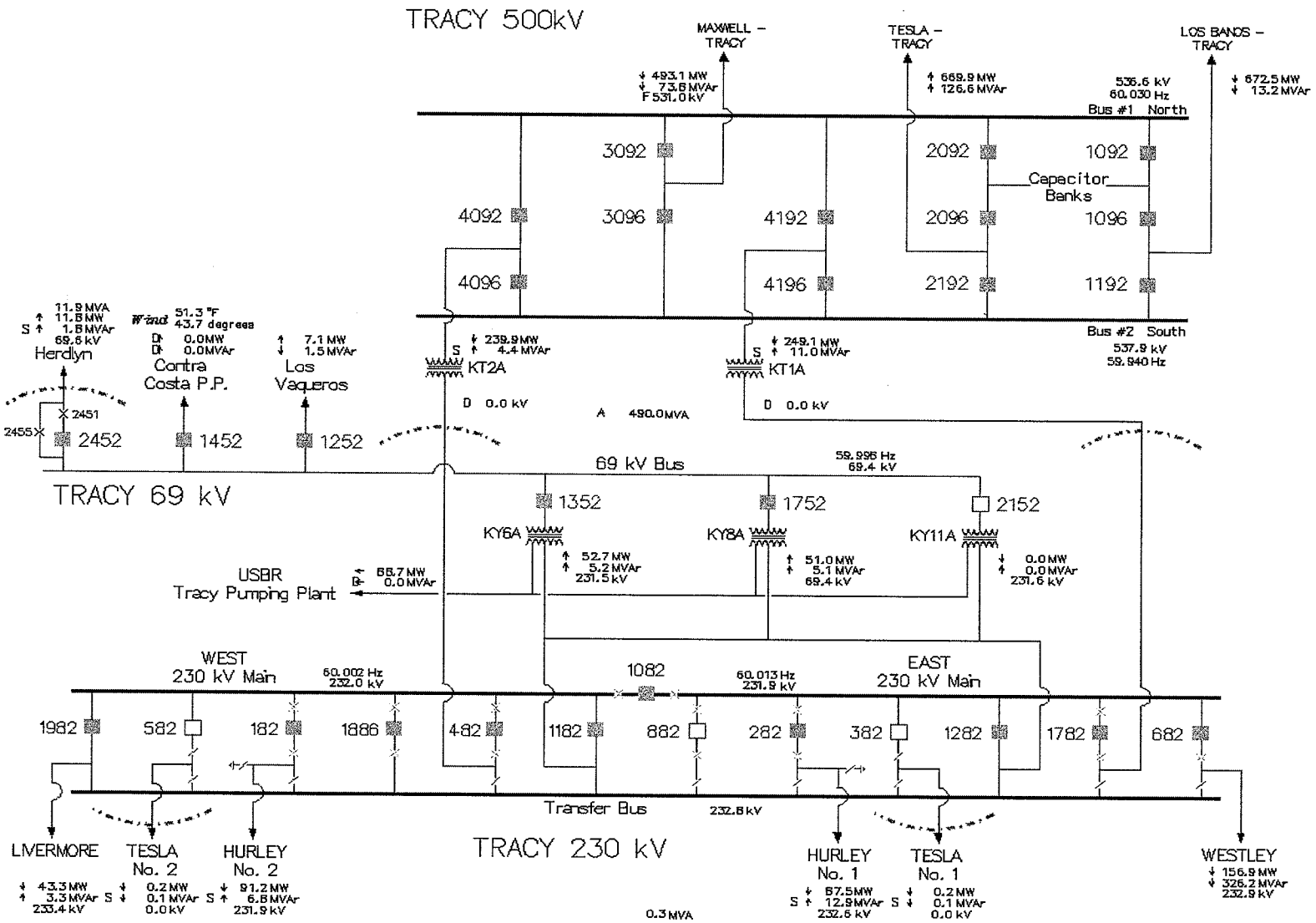

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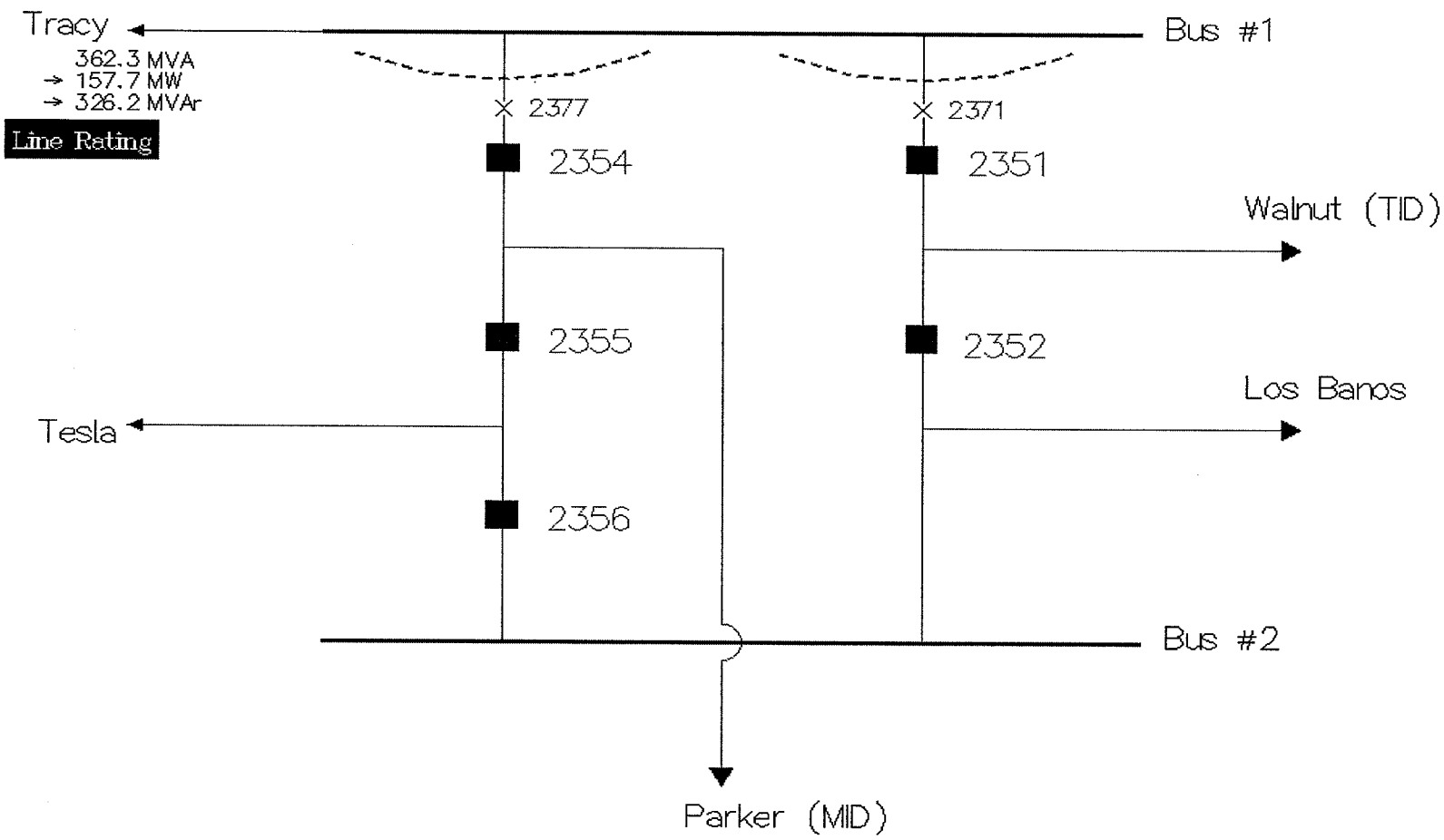
WESTLEY (MID/TID)

230 kV Substation



SERVICE SCHEDULE 4

RESPECTIVE JURISDICTION FOR OPERATIONAL CONTROL OF INTERCONNECTION

[Section 3.2.1]

- **Rancho Seco Interconnection**
  (Rancho Seco – Bellota #1 and #2-230 kV Lines)

  PG&E has ownership and maintenance, switching and clearance jurisdiction of both lines and all its associated facilities from Bellota Substation up to but not including disconnect switches 357 and 317 at Rancho Seco Substation. The ISO has the operational control of Bellota Substation and the lines up to but not including switches 357 and 317, and will be involved in coordination of switching.

  SMUD has operational control, ownership and maintenance, switching and clearance jurisdiction of all facilities at Rancho Seco Substation up to and including disconnect switches 357 and 317.

  Common point of Tie Line Control Metering: Rancho Seco Substation.

- **Lake Interconnection**
  (Lake – Gold Hill 230 kV Line)

  SMUD has operational control, ownership and maintenance, switching and clearance jurisdiction of the line and all its associated facilities from Lake Substation to Gold Hill Substation up to but not including the termination structure at Gold Hill Substation.

  PG&E has ownership and maintenance, switching and clearance jurisdiction of all facilities at Gold Hill Substation beginning at the termination structure. The ISO has the operational control of Gold Hill Substation, including disconnect switches 233 and 235 and will be involved in coordination of switching.

  Common point of Tie Line Control Metering: Lake Substation.

- **Olinda Interconnection**
  (KT1A 525/230/34.5 kV Bus Tie)

  Western and TANC systems interconnect at the 500/230 kV transformers of the Olinda substation.

Western has operational control, ownership, maintenance, switching and clearance jurisdiction of all facilities, both 500 and 230 kV including disconnect switch 487 on the 230 kV bus. SMUD will provide operational direction from the 230 kV side up to and including disconnect switch 487. The ISO will provide operational direction from the 500 kV side down to, but not including, switch 487.

Common point of Tie Line Control Metering: Olinda Substation

- **Cottonwood Interconnection ("G" 230 kV Bus Tie)**

PG&E owns the 230 kV busses, which use common meters that are switched with the energized bus.

Western has operational control, and PG&E has ownership, maintenance, switching and clearance jurisdiction of both "G" Section busses and all of its associated facilities including disconnect switches 471 and 473 (PCB 472) on the 230 kV bus #1 and disconnect switches 481 and 483 (PCB 482) on the 230 kV bus #2 which control shall be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

PG&E has ownership, maintenance, switching and clearance jurisdiction of its lines and all its associated facilities at the Cottonwood Substation. The ISO has the Operational Control of the PG&E lines at this facility and will be involved in coordination of switching, except to the extent that operational control has been delegated to Western in the Transmission Exchange Agreement.

Common point of Tie Line Control Metering: Cottonwood Substation

- **LLNL U-424 Interconnection (LLNL 115 kV Bus Tie)**

Western and PG&E share 115 kV busses at adjacent substations, which use common meters that are switched with the energized bus. LLNL has operational control, ownership, maintenance, switching and clearance jurisdiction of the busses and all its associated facilities up to and including disconnect switch 455, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

Common point of Tie Line Control Metering: LLNL U-424 Substation

- **Round Mountain Interconnection**
  (Round Mountain – Cottonwood 230 kV Bus Tie)

  PG&E operates 230 kV and 500 kV busses at the Round Mountain Substation.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Cottonwood-Round Mountain 230 kV line and all of its associated facilities up to but not including disconnect switches 243 and 245 (PCB 242), which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  PG&E has ownership and maintenance, switching and clearance jurisdiction of its lines and all its associated facilities at Round Mountain Substation. The ISO has the operational control of this facility and will be involved in coordination of switching.

  Common point of Tie Line Control Metering: Round Mountain Substation

- **Tracy 230 to Tracy 500 kV Interconnection**
  (Tracy 230 kV Bus Tie to Tracy 230/500 kV Transformers)

  Western owns and operates the 230 kV bus at the Tracy substation, which use common meters that are switched with the energized bus.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities including disconnect switches 481 and 485 (PCB 482) and 1781 and 1785 (PCB 1782) on the 230 kV bus, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

  Common point of Tie Line Control Metering: Tracy Substation

- **Tracy-Tesla Interconnection**
  (Tracy-Tesla 230 kV Lines)

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities including disconnect switches 381 and 385 (PCB 382) and 581 and 585 (PCB 582), which control will be exercised consistent with directions when issued

by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

PG&E has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities at Tesla Substation. The ISO has the operational control of this facility and will be involved in coordination of switching, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

Common point of Tie Line Control Metering: Tracy Substation

- **Tracy-Westley Interconnection (Tracy-Westley 230 kV Bus Tie**

Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities up to and including disconnect switches 681 and 685 (PCB 682), which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

MID/TID has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities at Westley Substation. MID/TID has the operational control of the line and associated disconnect switches 2377 and 2371 (PCB #2351 and #2354) at Westley and will be involved in coordination of switching, which control will be exercised consistent with directions when issued by the ISO as Control Area operator and in coordination with SMUD as the immediately adjacent Control Area operator as necessary and appropriate.

Common point of Tie Line Control Metering: Westley Substation

- **Herdlyn 69 Interconnection**

Western and ISO share 69 kV busses at adjacent substations, which use common meters that are switched with the energized bus.

Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 69 kV bus and all its associated facilities including disconnect switches 2451 and 2453 (PCB 2452) and 2455 on the Tracy 69 kV bus, which control will be exercised consistent with directions when issued by SMUD as Control Area operator and in coordination with the ISO as the immediately adjacent Control Area operator as necessary and appropriate.

PG&E has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities, including disconnect switch 79, at Herdlyn Substation. The ISO has the operational control of this facility and will be involved in coordination of switching. SMUD will have operational control of this facility and will be involved in coordination of switching.

Common point of Tie Line Control Metering: Herdlyn Substation

Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at Herdlyn, the Parties agree it will not be considered a scheduling point.

Special Operating Condition: Because ISO Control Area load exists on the 69 kV Herdlyn line that extends from the Western side of the Tracy Substation into the ISO Control Area that is served by PG&E, and the connection between the 69 kV Herdlyn line and Tracy Substation is not being operated as a Control Area scheduling point, the Parties have agreed that Tracy meter values will be adjusted to remove the Herdlyn line load from the Expanded SMUD Control Area and add it to the ISO Control Area. The Parties shall amend this Agreement to the extent that the Herdlyn line load becomes subject to any policy and provisions for pseudo ties to the ISO Control Area, provided that such policy and provisions shall be consistent with WECC and NERC business practices and criteria.

SERVICE SCHEDULE 6

REAL – TIME OPERATING LIMITS

[Section 3.2.3.1]

SMUD -WAPA Control Area

Points of Interconnection/Control Area Tie Points/Branch Groups

Rating

		Summer					Winter						
		NORMAL		*EMERGENCY*			*NORMAL*		*EMERGENCY*			SMUD CA Ties	
		MVA	Amps	MVA	Amps		MVA	Amps	MVA	Amps			
Olinda													
KT1A 525/230/34.5	PCB 182 & 386	850		1041		4h	850		1041		4h	1	
Cottonwood													
230kV "G" Bus 1	PCB 472	797	2000	797	2000	n/a	797	2000	797	2000	n/a	2	
230kV "G" Bus 2	PCB 482	797	2000	797	2000	n/a	797	2000	797	2000	n/a		
Lawrence Livermore													
115 kV Tesla Line 1	PCB 752 & PCB 852	164	825	194	975		256	1262	274	1350		3	
Round Mountain													
230kV Cottonwood Line	PCB 242	320	800	320	800	n/a	370	930	370	930	n/a	4	
Tracy													
KT1A 525/230/34.5	PCB 1782	850		1041		4 h	850		1041		4 h	5	
KT2A 525/230/34.5	PCB 482	850		1041		4 h	850		1041		4 h		
230kV Tesla Line 1	PCB 382	683	1715	683	1715	n/a	746	1873	746	1873	n/a	6	
230kV Tesla Line 2	PCB 582	683	1715	683	1715	n/a	746	1873	746	1873	n/a		
69kV Herdlyn Line	PCB 2452	95	800	95	800	n/a	95	800	95	800	n/a	7	
Westley													
230kV Tracy Line	PCB 2351 & PCB 2354	650	1632	747	1878	30 m	650	1632	747	1878	30 m	8	
Rancho Seco													
230kV Bellota Line 1	PCB 210 & PCB 310	494	1239	590	1482	100 h	789	1981	847	2127	100 h	9	
230kV Bellota Line 2	PCB 250 & PCB 350	494	1239	590	1482	lifetime	789	1981	847	2127	lifetime		
Lake													
230kV Gold Hill Line	PCB 5230 & PCB 5236	303	760	351	880	30 m	426	1070	474	1190	30 m	10	

NOTES:
Summer and Winter Periods Defined by WECC OTC Policy Committee
All limits shown are the maximum based on the most limiting element at the identified location.
Transfer limits may be less than the amounts shown at the tie-points above based on an established path rating,
or due to power flows exceeding limit on another system element.
Rancho Seco & Lake total scheduling limited by contract to 1,271 MW, otherwise individually thermally limited
Herdlyn - Tracy meter values will be adjusted to remove Herdlyn line load from the SMUD CA and add it to the ISO CA. Herdlyn loads will not be scheduled.
Update 5/31/05

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procedures and/or agreements that shall be mutually agreed upon by the Parties prior to the implementation of the Expanded SMUD Control Area.

Nomograms for simultaneous import limits into the Expanded SMUD Control Area will continue to be established by the SVSG and updated on an annual, or as required, basis. SMUD and all other SVSG members have committed to continue participation in the SVSG after SMUD forms a Control Area as before. SVSG Nomograms shall establish simultaneous import limits into the Expanded SMUD Control Area under specific transmission contingencies as well as with all lines at the Interconnection in service. SMUD shall at all times make such simultaneous import limits, as calculated in real time from the pertinent SVSG Nomogram, electronically available to the ISO. SMUD shall comply with import limits in all circumstances by managing SMUD loads and resources to maintain total imports at or below the simultaneous limit by limiting flows at each Interconnection point to the lower of the contract or thermal limit at that Interconnection point. Operating instructions will be prepared for the ISO and Expanded SMUD Control Areas to implement the SVSG Nomograms in their respective coordinated operating procedures.

SERVICE SCHEDULE 7

VOLTAGE CONTROL

[Section 3.2.5]

SMUD and ISO operator actions are necessary to ensure system voltages are maintained within operating limits. The normal operating range for the SMUD 230 kV system is 230-236 kV. The normal operating range for the Western 500 kV system is 525 - 538 kV; Western's 230 kV system is 230 - 236 kV; Western's 115 kV system is 115 - 118 kV. The specific operator actions related to voltage control are detailed in joint operating procedures developed by SMUD, the ISO and other impacted entities, as described in Service Schedule 10, which may be changed from time to time by mutual agreement of the Parties and other affected entities. The Parties will use best efforts to maintain the voltage schedules at the interconnection points, subject to the joint operating procedures.

The goal for net MVAR exchange between Control Areas is zero. SMUD and the ISO will monitor the net MVAR exchange and request system voltage adjustments as necessary to minimize the MVAR interchange while maintaining normal voltage ranges.

The transmission system voltage profile has a higher priority than net MVAR interchange. When either a high or low voltage limit is approaching, the respective system operator shall take sufficient corrective measures, disregarding the MVAR interchange, to bring the voltage within limits.

SERVICE SCHEDULE 16

INTER-CONTROL AREA REQUIREMENTS FOR SCHEDULING AND DELIVERING REGULATION SERVICE TO THE ISO

1. General

1.1 Purpose. This Service Schedule 16 sets forth the requirements and processes that must be satisfied by an entity requesting the ability to schedule and deliver regulation service into the ISO Control Area ("requesting entity") and that must be coordinated through SMUD (referred to herein as the "Host Control Area") and the ISO should the requesting entity request the certification, scheduling and delivery of regulation service into the ISO Control Area. The ISO requires the requesting entity to be represented by a Scheduling Coordinator in any associated ISO processes. The requirements encompass technical (energy management system ("EMS")/AGC and communications), interchange scheduling, telemetry and control aspects of interconnected Control Area operations.

1.2 NERC/WECC Operating Standards Observed. Nothing in this Service Schedule 16 is intended to change, supercede, or alter either Party's obligations to abide by NERC standards and WECC criteria.

1.3 Applicable Standards. This Service Schedule incorporates by reference the ISO's *"Standards for Imports of Regulation"* ("Standards"), except that Section 6.2.4, Section 6.3.1, and Section 6.4.3 of the Standards shall be revised as set forth in Section 3.1 and Section 3.2 of this Service Schedule 16. The Standards document is available for viewing and can be also downloaded from the ISO internet home page: "http://www.caiso.com". SMUD and the ISO have also jointly developed certain specific implementation procedures to facilitate dynamic scheduling and to ensure that NERC and WECC policies and criteria are satisfied, including the WECC RMS.

1.4 Meaning of "System Resource". "System Resource" is defined in the ISO Tariff and, in the context of this Service Schedule 16, may include combinations of resources as described in the Standards.

2. Telecommunications Requirements

The ISO and Host Control Area shall establish and maintain real time, redundant, diversely routed, bi-directional, communications links between the ISO EMS and the Host Control Area EMS, utilizing standard inter-control center communications protocol ("ICCP"). Further details regarding telecommunications requirements may be found the Standards.

3. Telemetry and Control

3.1 Telemetry. For each operating hour for which a System Resource is scheduled to deliver regulation service to the ISO Control Area, the Host Control Area shall provide, via the ICCP communication links to the ISO EMS, the data for each System Resource set forth in the Standards.

3.1.1 Host Control Area responsibility under Section 6.2.4 of the Standards shall be limited to polling the ISO EMS and transmitting data to the System Resource on a two second basis, and receiving System Resource data and transmitting to the ISO EMS on a two second basis. The Host Control Area will not be responsible for the time it takes the System Resource to process and respond to data. The ISO and SMUD will work together to meet each other's requirements for telemetry.

3.1.2 Host Control Area responsibility under Section 6.4.3.1 of the Standards shall be limited to passing on the "On/Off Line Status" as received from the System Resource.

3.1.3 Host Control Area responsibility under Section 6.4.3.2 of the Standards shall be limited to passing on the "On/Off AGC/Control Status" as received from the System Resource.

3.1.4 Host Control Area responsibility under Section 6.4.3.4 of the Standards shall be limited to passing on the "Operating Low Limit Status" as received from the System Resource.

3.1.5 Host Control Area responsibility under Section 6.4.3.4 of the Standards shall be limited to passing on the "Operating High Limit Status" as received from the System Resource.

3.2 Control. Host Control Area obligation under Sections 6.3.1 and 6.4.3.3 of the Standards shall be limited to receiving control signals, in real time, from the ISO EMS, via the ICCP communications links, and passing through those signals to the System Resource operator, thereby facilitating the System Resource to vary its energy production when issued a new set-point signal by the ISO. Further detailed information regarding control requirements may be found in the Standards. Should there be a need for alternative arrangements for telemetry, the ISO and SMUD will work together to establish such alternative arrangements in a manner that does not contravene applicable NERC and WECC requirements and practices, provided that SMUD is not obligated to incur additional costs not paid for by the owner of the System Resource.

4. Interchange Scheduling Requirements

4.1 Dynamic Scheduling. The Host Control Area may, after review and if it determines in its sole discretion that it is willing to proceed, support a requesting entity's application to arrange dynamic interchange schedules for the delivery of regulation service to the ISO Control Area, reflecting the System Resource's instantaneous energy production or allocation level as caused by real time control signals issued by the ISO EMS/AGC and taking into account available transmission capacity. All schedules need to be e-tagged in accordance with NERC and WECC requirements and practices.

4.2 Treatment of Area Control Error. The Host Control Area shall instantaneously compensate its AGC for the System Resource's variable energy output level such that the System Resource actual energy production, caused by the ISO EMS/AGC control signals, has no effect on the Host Control Area's Area Control Error ("ACE").

4.3 Integration of Dynamic Scheduling. For each operating hour during which regulation service was dynamically scheduled for delivery to the ISO Control Area, the Host Control Area shall compute an integrated amount of interchange based on the System Resource's integrated energy production, by integrating the instantaneous System Resource production levels. Such integrated MWH value shall be agreed to hourly by the real time schedulers.

4.4 Access to Information. The Parties agree to exchange information related to control signals issued and telemetry received with respect to the delivery of regulation service (1) at the request of the other Party for purposes of after-the-fact interchange accounting or (2) on demand for any other purpose.

5. Other

5.1 Losses. A requesting entity shall be responsible for transmission losses caused by transmitting regulation service within or across the SMUD and ISO systems in accordance with the applicable ISO and SMUD requirements.

5.2 Certification. Only a requesting entity meeting ISO-certified System Resource/Host Control Area arrangements and separate applicable Expanded SMUD Control Area requirements will be allowed to bid or self provide regulation service in the ISO's ancillary services market through an ISO-certified Scheduling Coordinator.

5.3 Performance Assessment. The ISO will monitor and measure imported regulation service, whether bid or self-provided, against the performance benchmarks described in the Standards.

4.3 Integration of Dynamic Scheduling. For each operating hour during which energy was dynamically scheduled for delivery to the ISO Control Area, the Host Control Area shall compute an integrated amount of interchange based on the System Resource's integrated energy production, by integrating the instantaneous System Resource production levels. Such integrated MWH value shall be agreed to hourly by the real time schedulers.

4.4 Delivery of Megawatts ("MW"). The Host Control Area shall not be obligated to make up any difference between the dynamic energy schedule and the MW being generated or allocated by the System Resource.

4.5 Access to Information. The Parties agree to exchange information related to telemetry sent and received with respect to the delivery of energy (i) at the request of the other Party for purposes of after-the-fact interchange accounting or (ii) on demand for any other purpose.

5. Other Host Control Area Responsibilities

5.1 Operational Jurisdiction. The Host Control Area will have, at a minimum, the level of operational jurisdiction over the System Resource and the associated dynamic schedule that NERC and WECC vest in Host Control Areas.

5.2 E-Tagging. The Host Control Area and the ISO Control Area must support associated e-tagging as described in the ISO Tariff Dynamic Scheduling Protocol and deemed to be consistent with NERC and/or WECC requirements.

5.3 Real-Time Adjustments. The Host Control Area must have a means to manually override and/or otherwise adjust the dynamic signal in real time, if needed.

5.4 Coordination with Other Control Areas. The Host Control Area must provide in real time the instantaneous value of each dynamic schedule to every intermediary Control Area through whose systems such dynamic schedule may be implemented to the ISO.

ATTACHMENT C

CALIFORNIA INDEPENDENT SYSTEM OPERATOR

AND

SACRAMENTO MUNICIPAL UTILITY DISTRICT

INTERCONNECTED CONTROL AREA OPERATING AGREEMENT

Incorporating Amendment No. ~~2~~3

INTERCONNECTED CONTROL AREA

OPERATING AGREEMENT

ICAA 1 STANDARD OPERATING AGREEMENT

* * *

ICAA 2 DEFINITIONS

ICAA 2.1 WECC Definitions

Except as defined below, terms and expressions used in this Operating Agreement shall have the same meanings as those contained in the WECC MORC Definitions.

ICAA 2.2 Specific Definitions

ICAA 2.2.1 **California-Oregon Intertie ("COI"):** The two 500-kV transmission lines between Malin Substation and Round Mountain Substation and the one 500-kV transmission line between Captain Jack Substation and Olinda Substation.

ICAA 2.2.2 **California-Oregon Intertie Path Operator Agreement:** The agreement among Southern California Edison Company, San Diego Gas & Electric Company, PG&E, the COTP Participants, Western and the ISO that, together with the Owner's Coordinated Operating Agreement, governs the COI path operation.

ICAA 2.2.3 **California-Oregon Transmission Project ("COTP"):** A 500-kV transmission line and associated facilities between Captain Jack Substation near the California-Oregon border and the eastern boundary of the existing right-of-way of the Tesla-Tracy 500 kV transmission line.

ICAA 2.2.4 **COTP Participants:** Western, Transmission Agency of Northern California, California Department of Water Resources, Shasta Dam Area Public Utility District, Carmichael Water District, the City of Vernon, California, PG&E, San Juan Suburban Water District, and their successors and assigns.

ICAA 2.2.5 **Expanded SMUD Control Area:** The area for which SMUD has reliability responsibility pursuant to WECC and NERC guidelines and requirements.

ICAA 2.2.6 **Forced Outage:** An Outage for which sufficient notice cannot be given to allow the Outage to be factored into the preschedule processes and the established Outage coordination principles of the Parties.

ICAA 2.2.7 **Good Utility Practice:** Any of the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry in the WECC region during the relevant time period, or any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be any one of a number of the optimum practices, methods, or acts to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

ICAA 2.2.8 **Interconnection:** Transmission facilities that connect one control area to another control area. The Interconnection for this Operating Agreement is described in Service Schedule 1.

ICAA 2.2.9 **ISO:** The California Independent System Operator Corporation, a state chartered, nonprofit corporation that controls the transmission facilities of all Participating Transmission Owners, dispatches certain generating units and loads, and is a control area operator.

ICAA 2.2.10 **ISO Control Area:** The electric power system for which the ISO has reliability responsibility pursuant to NERC and WECC requirements.

ICAA 2.2.11 **ISO Controlled Grid:** The system of transmission lines and associated facilities of the Participating Transmission Owners that have been placed under the ISO's operational control.

ICAA 2.2.12 **ISO Tariff:** ISO Operating Agreement, Protocols, and Tariff as amended from time to time, together with any appendices or attachments thereto.

ICAA 2.2.13 **Nomogram:** A set of operating or scheduling rules which are used to ensure that simultaneous operating limits are respected, in order to meet NERC and WECC operating criteria.

ICAA 2.2.14 **Outage:** Disconnection or separation, planned or forced, of one or more elements of an electric system.

ICAA 2.2.15 **Participating Transmission Owner:** An owner of transmission that has executed the Transmission Control Agreement and placed its transmission assets and entitlements under the ISO's operational control.

ICAA 2.2.16 **Planned Outage:** An Outage for which sufficient notice has been given to allow the Outage to be factored into the processes and the established Outage coordination principles of the Parties.

ICAA 2.2.17 **Points of Contact:** 1) Operations Contact: A person or entity having the authority to receive and act upon scheduling or dispatch communications from the other control area operator and available through a communications device mutually agreed upon on a 24-hour, 7-day basis; 2) Contact for Notices: A person(s) designated by the Parties for the receipt of official notices.

ICAA 2.2.18 **Power Flow Reduction Measures:** Actions taken to promptly and rapidly reduce power flow, including but not limited to: the circulation of power on the PDCI, the increase of generation within the control area through changes initiated by a Control Area Operator that create counter flow, and Curtailments that result in immediate responses from the parties to scheduled transactions to change the amount of generation or load accordingly.

ICAA 2.2.19 **Pseudo Tie:** A telemetered reading or value that is updated in real time and used as a "virtual" tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes.

~~**ICAA 2.2.19**~~**ICAA 2.2.20** **Real Time Operating Limits:** The rated transfer capability less reductions during any hour caused by, but not limited to, physical limitations beyond the control of the control area operators, and operational limitations resulting from transmission line Outages, equipment Outages, stability limits and loop flow.

~~**ICAA 2.2.20**~~**ICAA 2.2.21** **Scheduling Coordinator:** An entity certified by the ISO for the purposes of undertaking the functions of: submitting schedules for energy, generation, transmission losses, and ancillary services; coordinating generation; tracking, billing, and settling trades with other Scheduling Coordinators; submitting forecast information; paying the ISO's charges; and ensuring compliance with ISO protocols.

~~**ICAA 2.2.21**~~**ICAA 2.2.22** **SMUD Control Area:** The electric system owned and operated by SMUD for which SMUD has operational control and reliability responsibility pursuant to WECC and NERC guidelines and requirements.

~~ICAA 2.2.22~~ICAA 2.2.23 **Transmission Owner:** An entity owning transmission facilities or having firm contractual rights to use transmission facilities at the Interconnection.

~~ICAA 2.2.23~~ICAA 2.2.24 **WECC Reliability Coordinator:** One of the area control centers assigned by the WECC to proactively anticipate and mitigate potential problems, facilitate notification, and coordinate restoration following a disturbance.

~~ICAA 2.2.24~~ICAA 2.2.25 **WECC RMS:** The WECC established reliability program for WECC members that are governed by the WECC Reliability Management System Agreement and the WECC Reliability Criteria Agreement that provides sanctions to its members.

ICAA 3 OPERATIONAL RESPONSIBILITIES

* * *

ICAA 4 RELIABILITY COORDINATION

* * *

ICAA 5 SCHEDULING AND DISPATCH

ICAA 5.1 Coordination and Exchange of Information

The ISO and SMUD shall coordinate and exchange information on schedules and control area checkouts at the Interconnection. All schedules at the Interconnection shall match. In accordance with WECC MORC, the ISO and SMUD shall verify, at mutually acceptable times, the actual and scheduled interchange numbers for past hours as well as scheduled interchange numbers for current and future hours. Except as provided elsewhere in this agreement, all energy and/or capacity schedules, as well as any transmission reservation(s) to or from the ISO Control Area, over any facilities within the ISO Control Area shall be submitted via the ISO scheduling system as described in the ISO Tariff. The ISO and SMUD shall jointly develop control area to control area methods and details for coordinating scheduling procedures, information exchange, and notifications in normal, emergency, and curtailment conditions. These methods and details are included in Service Schedule 11.

ICAA 5.2 Notifications

The ISO and SMUD shall jointly develop methods for coordinating the notification of all affected scheduling entities within their respective control areas regarding schedule changes in emergency or curtailment conditions.

ICAA 5.3 Dynamically Scheduled Energy and Non-Regulation Ancillary Services

The ISO and SMUD shall allow for the import of dynamically scheduled energy and non-regulation ancillary services from the Expanded SMUD Control Area to the ISO Control Area in accordance with the provisions of Service Schedule 17. The Parties further agree that the ISO will initiate a pilot program as expeditiously as possible to allow for the import of dynamically scheduled energy and non-regulation ancillary services from the ISO Control Area to the Expanded SMUD Control Area.

ICAA 5.4 Import of Regulation Service by ISO

The ISO and SMUD shall allow for the import of regulation service from the Expanded SMUD Control Area to the ISO Control Area in accordance with the provisions of Service Schedule 16. SMUD shall be under no obligation to supplement the import of regulation service contracted by third parties to be delivered to the ISO Control Area from resources in the Expanded SMUD Control Area and shall have the right to terminate Service Schedule 16 without prior ISO approval, upon thirty (30) days advance written notice to the ISO.

ICAA 5.5 Pilot Program for Pseudo Tie to Expanded SMUD Control Area

The ISO shall develop provisions for a pilot program authorizing a Pseudo Tie of an entire single resource in the ISO Control Area to the Expanded SMUD Control Area, subject to pre-existing contract rights for transmission between the ISO Control Area and the Expanded SMUD Control Area, to be implemented within eight (8) months after SMUD identifies a specific resource in the ISO Control Area that it intends to establish as a pilot Pseudo Tie, provided that the ISO shall not be obligated to implement such a pilot program prior to July 1, 2006 or between October 1, 2006 and sixty (60) days after the implementation of "Release 1" of the ISO's Market Redesign and Technology Upgrade project. The ISO will use reasonable efforts to undertake implementation of such a pilot program during other periods

if practical, if requested by SMUD. If the pilot program is successful, the ISO shall, subject to approval of the ISO Governing Board, file at FERC for approval a permanent program for the establishment of Pseudo Ties, and shall implement it when approved.

ICAA 6 OUTAGE COORDINATION

* * *

ICAA 7 EMERGENCY OPERATION

* * *

ICAA 8 LIABILITY

* * *

ICAA 9 SERVICE SCHEDULES

* * *

ICAA 10 MISCELLANEOUS

* * *

SERVICE SCHEDULE 1

INTERCONNECTION

[Section 2.2.3]

The Interconnection between the ISO and Expanded SMUD Control Areas consists of the following Interconnection points. All Interconnection points are normally operated closed and are capable of transferring power in both directions.

- **Rancho Seco Interconnection**
  (Rancho Seco – Bellota #1 and #2 230 kV Lines)

  This Interconnection point is comprised of a 27-mile double circuit 230 kV transmission line strung on a 500 kV tower. The transmission lines connect SMUD's Rancho Seco Substation in southern Sacramento to PG&E's Bellota Substation in the eastern Stockton area. The physical point of interconnection is disconnect switches 357 and 317 at Rancho Seco Substation.

- **Lake Interconnection**
  (Lake – Gold Hill 230 kV Line)

  This Interconnection point is comprised of a single very short (<0.25 mile) 230 kV transmission line connecting SMUD's Lake Substation to PG&E's Gold Hill Substation. The two substations are adjacent and located in Folsom, California. This Interconnection point utilizes a 55-ohm series reactor to provide additional electrical distance. The physical point of interconnection is PG&E's 230 kV line termination structure at Gold Hill Substation.

- **Olinda Interconnection**
  (KT1A 525/230/34.5 kV Bus Tie)

  ~~Western Area Power Administration (Western) is interconnected to the ISO system through bus-tie breaker 182 and 386~~This Interconnection point is on the 230 kV side of the 500/230 kV transformer bank at Olinda Substation. The physical point of interconnection is switch 487 at Western's Olinda Substation.

- **Cottonwood Interconnection**
  ("G" 230 kV Bus Tie)

  ~~Western is interconnected to the ISO system through bus-tie breaker 472 and 482 at Western's / PG&E's Cottonwood Substation. Three Western 230 kV lines~~

~~enter and four Western 230 kV lines leave the Cottonwood Substation.~~This Interconnection point is comprised of two 230 kV breakers connecting Western's bus with PG&E's bus. Cottonwood Substation is located in Cottonwood, California. The physical point of interconnection is disconnect switch ~~475~~471 on the "G" 230 kV bus 1 and disconnect switch ~~485~~481 on the "G" 230 kV bus 2 bus at Cottonwood Substation.

- **LLNL Interconnection**
  (LLNL 115 kV Bus Tie)

  Western is interconnected to the ISO system through ~~bus-tie breaker 752 and 852~~line disconnect switch 455 at Western's Lawrence Livermore National Laboratory ("LLNL") U-424 Substation. One PG&E 115 kV lines enters and one Western 115 kV lines leaves the LLNL U-424 Substation. LLNL U-424 Substation is located southeast of Sacramento in Livermore, California. The physical point of interconnection is line disconnect switch 455 at LLNL U-424 Substation.

- **Round Mountain Interconnection**
  (Round Mountain - Cottonwood 230 kV Bus Tie)

  Western is interconnected to the ISO system through ~~bus-tie~~ breaker 242 at PG&E's Round Mountain Substation. One Western and one PG&E 500 kV line enters and two PG&E 500 kV and one Western 230 kV lines leave the Round Mountain Substation. Round Mountain Substation is located in Round Mountain, California. The physical point of interconnection is disconnect switches 243 and 245 at the Round Mountain Substation.

~~**Tracy Substation**~~

~~Western is interconnected to the ISO system at Western's Tracy Substation. One Western 500 kV, three 230 kV lines and one 69 kV line enters and two PG&E 230 kV lines leave the Tracy Substation. One MID/TID 230 kV line leaves the Tracy Substation. Tracy Substation is located south of Sacramento in Tracy, California. The Substation will have four interconnections to the ISO Control Area as follows.~~

- **Tracy 230 Interconnection**
  (Tracy 230 kV Bus Tie to Tracy 230/500 kV Transformers)

  Western is interconnected to the ISO system through ~~bus-tie~~ breakers 482 and 1782 at Western's Tracy Substation. The physical point of interconnection is disconnect switches 481, 485, 1781, and 1785 ~~on the 230 kV bus~~ at Tracy Substation.

- **Tracy-Westley Interconnection**
  (Tracy-Westley 230 kV Bus Tie)

  Western is interconnected to the ISO system through ~~bus-tie~~ breakers 2354 and 2351 at MID/TID Westley Substation. The physical point of interconnection is disconnect switches 2377 and 2371 ~~on the 230 kV bus~~ at the Westley Substation.

- **Tracy-Tesla Interconnection**
  (Tracy-Tesla 230 kV Bus Tie)

  This Interconnection point is comprised of two 230 kV lines connecting Tracy Substation to Tesla Substation. Western is interconnected to the ISO system through ~~bus-tie~~ breakers 382 and 582 at Western's Tracy Substation. The physical point of interconnection is disconnect switches 381, 385, 581, and 585 ~~on the 230 kV bus~~ at the Tracy Substation.

- **Herdlyn 69 Interconnection**
  (Herdlyn 69 kV Bus Tie)

  The Expanded SMUD Control Area is connected to the ISO Control Area at the disconnect switch on the Tracy-Herdlyn 69 kV line that is located within the Tracy Substation and is owned and operated by Western. Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at the disconnect switch on the Tracy-Herdlyn line, the Parties agree it will not be considered a scheduling point.~~Western is interconnected to the ISO system through disconnect switches at PG&E's Belfour and Vasco Substation. The physical point of interconnection is disconnect switch 37 on the Herdlyn-Balfour 60 kV line at the Balfour Substation and disconnect switch 39 on the Vasco-Herdlyn 60 kV line at the Vasco Substation.~~

A set of single-line diagrams showing each of the points of Interconnection is attached to this Service Schedule 1.

REVENUE METERING AND TELEMETRY AT INTERCONNECTION POINTS

SMUD has in service revenue quality metering at all Interconnections points. This metering shall meet the standards as mutually agreed upon by SMUD and the ISO. Meters are inspected and tested per existing agreements between SMUD and the respective Transmission Owner. The ISO shall be entitled to witness annual testing of the Interconnection metering. Any change or modification to such metering equipment by SMUD or any other entity shall be coordinated with the ISO. SMUD shall program the Interconnection revenue metering to record data at five minute intervals and shall provide for ISO polling of that metering.

SMUD and the ISO shall maintain arrangements that ensure that both Parties shall have access to real-time data from all of the points of Control Area Interconnection. SMUD understands that the ISO wants to directly poll MW and MVAR data from

interconnection metering and/or data recorders, which may include RTUs, at all points of Control Area Interconnection, including SMUD and Western substations. SMUD agrees to allow the ISO to directly poll real-time data from SMUD substations and will work with the ISO and Western to facilitate ISO direct polling of real-time data from Western substations in a timely manner. In the event that a second communication port of the RTU is not available for direct polling by the ISO's EMS, the ISO shall have the option to provide an RTU to the substation owner for the purpose of establishing a communication port available for direct polling by the ISO EMS.

- **LAKE INTERCONNECTION**

An Interconnection point to PG&E is metered at Lake Substation. The substation has primary and backup metering arrangements. The primary meter is a Transdata model 30EMS7460M2 and the backup meter is a Scientific Columbus JEM-1 meter model 603P-11. This is a bi-directional meter with the accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located at the line side. All P.T.s and C.T.s are rated for 0.3% accuracy class with CT ratio of 800:5 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **RANCHO SECO INTERCONNECTION**

The primary and backup revenue metering equipment is installed at the Rancho Seco end of the Rancho Seco ~~for~~ Bellota 230 kV lines #1 and #2. The primary meter is a Scientific Columbus JEM-1 model 603P-E and the backup meter is a Scientific Columbus JEM-1 model 603-J-MM ; both are bi-directional meters with an accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located on the line side. All P.T.s and C.T.s are rated at 0.3% accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **OLINDA INTERCONNECTION**

The Interconnection point with the Western system is metered on the 230 kV bus at Olinda Substation. The meter is currently a Quad-4 meter that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is

a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 800:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **COTTONWOOD INTERCONNECTION**

The Interconnection point with the Western system is metered on the 230 kV G Section at Cottonwood Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 320:1 and PT ratio 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **LLNL INTERCONNECTION**

The Interconnection point with the Western system is metered on PG&E's Tesla-LLNL 115 kV line at LLNL U-424 Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 115 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 115 kV switchyard at the Interconnection point of the 115 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 60:1 and PT ratio of 600:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **ROUND MOUNTAIN INTERCONNECTION**

The Interconnection point with the Western system is metered on the Round Mountain Cottonwood 230 kV line at Round Mountain Substation. The meter is currently a Quad-

4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the Cottonwood 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 120:1 and PT ratio 160:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **TRACY 230 INTERCONNECTION**

The Interconnection point with the Western system is metered on the 525/230/34.5 kV transformers KT1A and KT2A at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **TRACY-WESTLEY INTERCONNECTION**

The Interconnection point with the Western system is metered on 230 kV at Tracy Substation. The meter shall be compensated to reflect the difference between the ISO Control Area boundary and the Westley end of the line by incorporating the losses associated with the actual flows across the transmission line. In addition, the telemetered MW and MVar values should be compensated. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio of 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and~~

~~MVar analog value can be read using the available second communication port of the RTU.~~

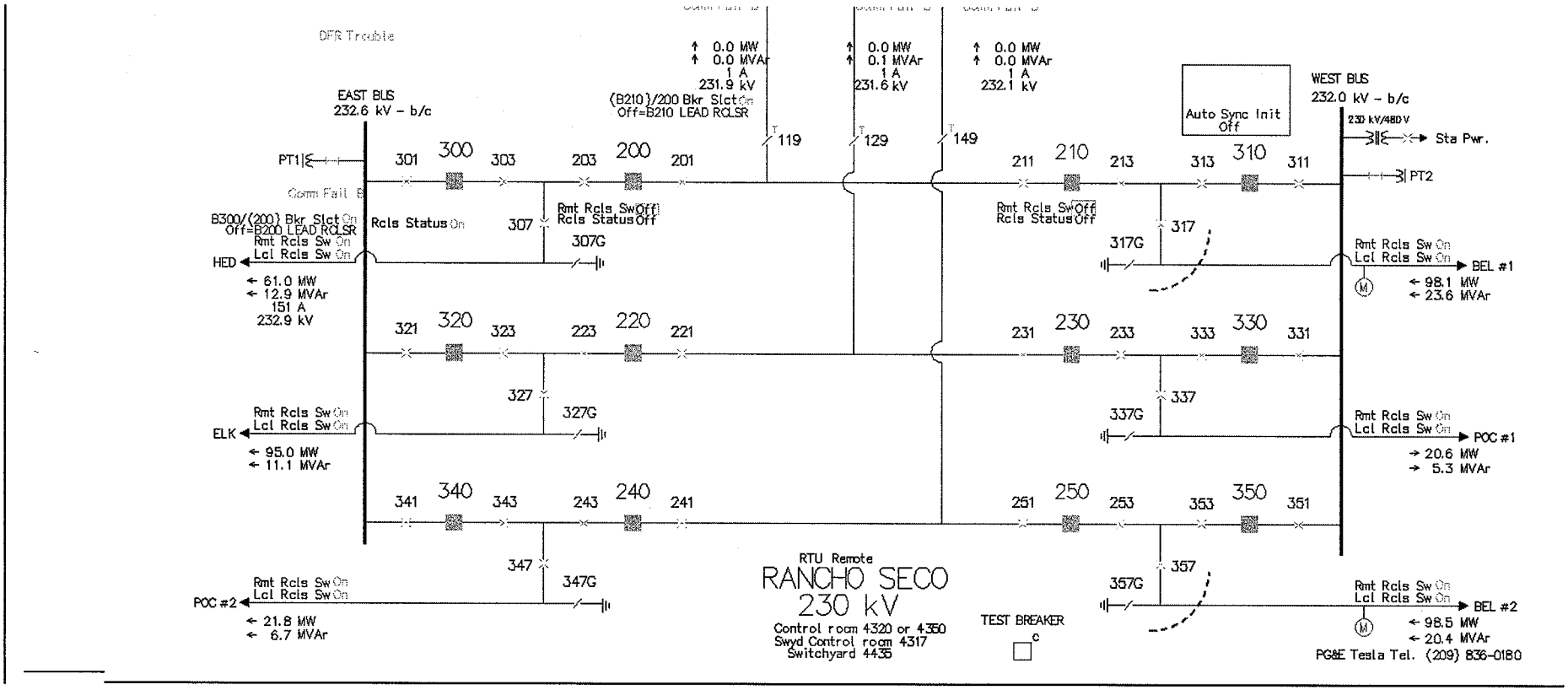
- **TRACY-TESLA INTERCONNECTION**

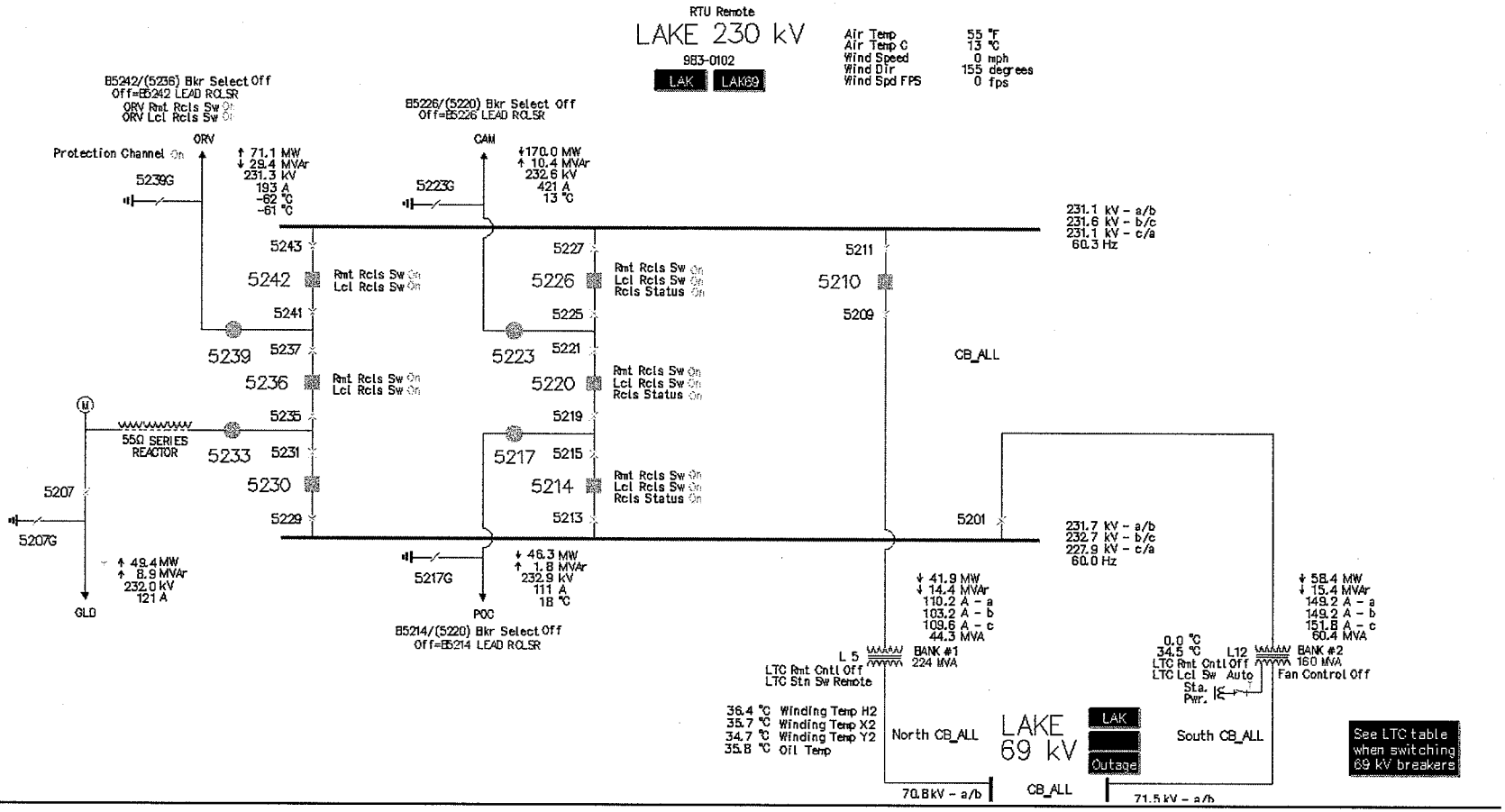
The Interconnection point with the Western system is metered on 230 kV at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 230 kV yard. This is a bi-directional meter with the accuracy rating of 0.3%. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 230 kV switchyard at the Interconnection point of the 230 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 400:1 and PT ratio 1200:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

- **HERDLYN 69 INTERCONNECTION**

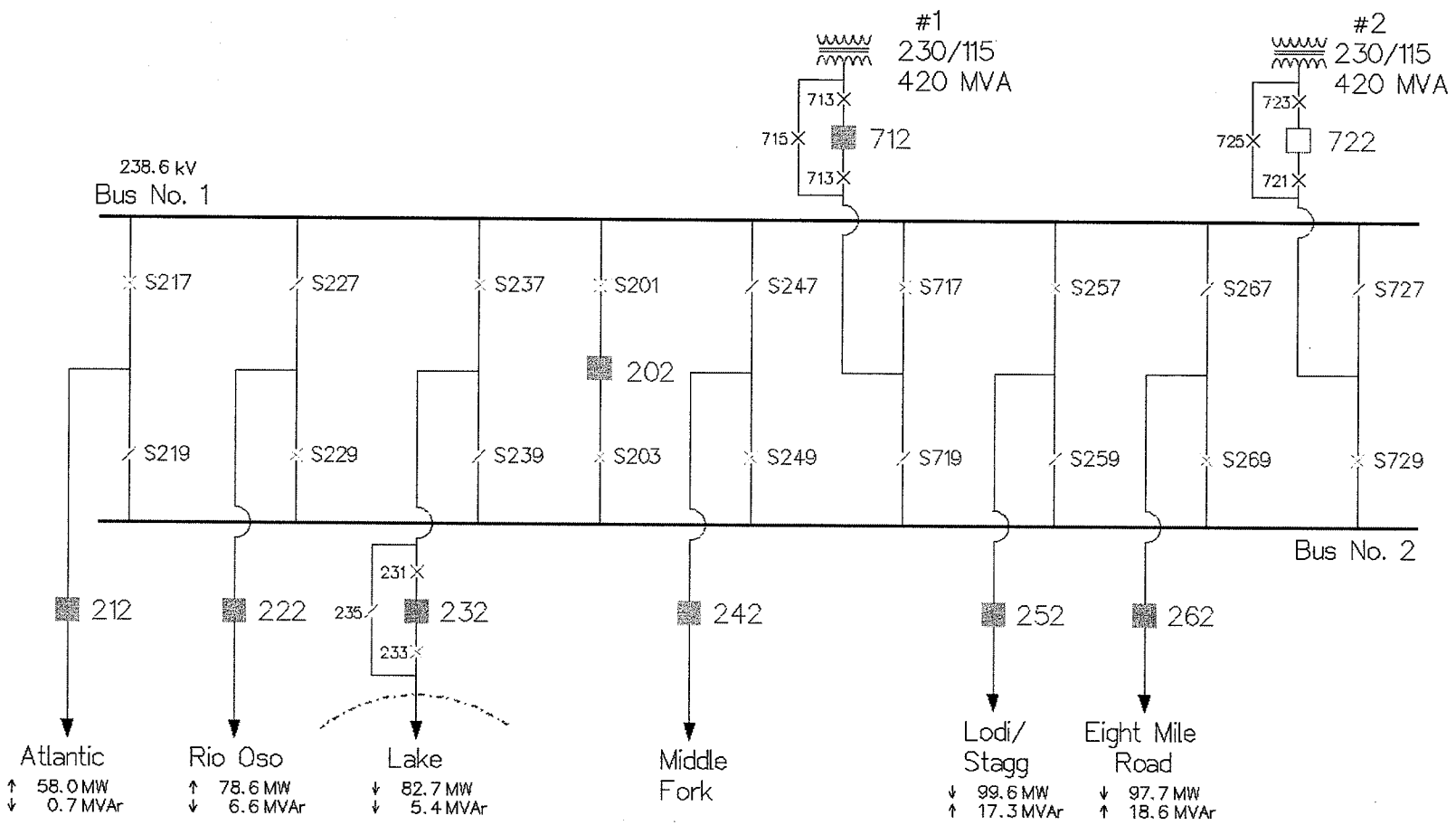
The Interconnection point with the Western system is metered on the Herdlyn-Tracy 69 kV line at Tracy Substation. The meter is currently a Quad-4 that has the capability of metering Watthours and Varhours. The meters are located in the 69 kV yard. This is a bi-directional meter with the accuracy rating of 0.3 %. The instrument transformers (C.T.s and P.T.s) for revenue meters are located in the 69 kV switchyard at the Interconnection point of the 69 kV bus. All P.T.s and C.T.s are rated at 0.3 % accuracy class with CT ratio of 240:1 and PT ratio of 320:1. The meter's MW and MVar milliamp analog outputs (bi-directional) and the MWh and MVarh pulse outputs are provided to the ISO's EMS RTU. The MWh and MVarh pulse (bi-directional) outputs are also stored in internal data recorders for MV90 use. The meters are polled by Western's / SMUD's MV90 system via dial-up telephone lines on a daily basis. ~~Western/SMUD shall allow for ISO polling of the data recorders. The MW and MVar analog value can be read using the available second communication port of the RTU.~~

Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at Herdlyn, the Parties agree it will not be considered a scheduling point.

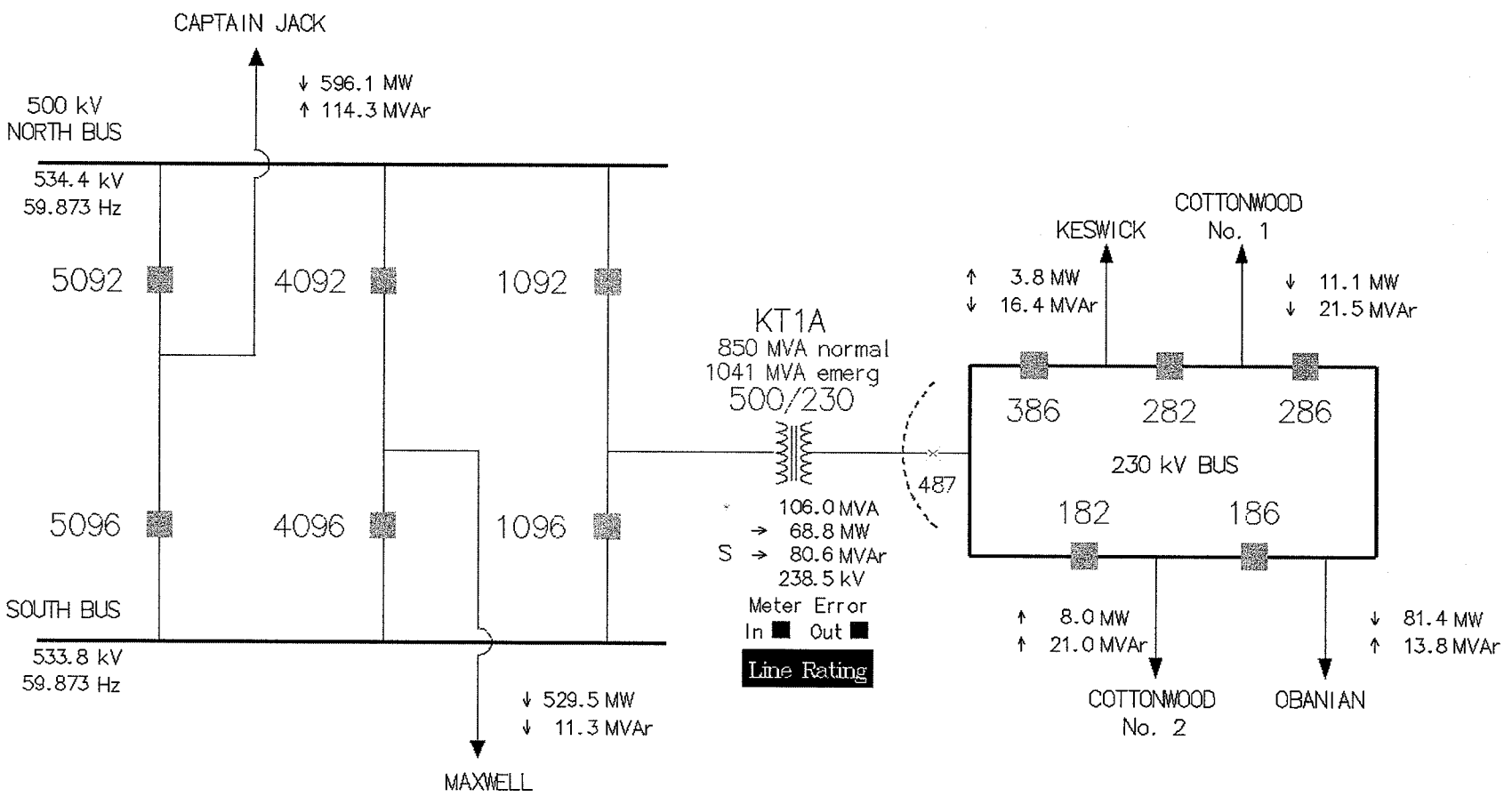

DFR Trouble
EAST BUS
232.6 kV - b/c
0.0 MW
0.0 MVAr
1 A
231.9 kV
(B210)/200 Bkr Slct On
Off=B210 LEAD RCLSR
0.0 MW
0.1 MVAr
1 A
231.6 kV
0.0 MW
0.0 MVAr
1 A
232.1 kV
Auto Sync Init
Off
WEST BUS
232.0 kV - b/c
230 kV/480 V
Sta Pwr.
PT2
PT1
Comm Fail
B300/(200) Bkr Slct On
Off=B200 LEAD RCLSR
Rmt Rcls Sw On
Lcl Rcls Sw On
HED
61.0 MW
12.9 MVAr
151 A
232.9 kV
Rcls Status On
Rmt Rcls Sw Off
Rcls Status Off
Rmt Rcls Sw Off
Rcls Status Off
Rmt Rcls Sw On
Lcl Rcls Sw On
BEL #1
98.1 MW
23.6 MVAr
Rmt Rcls Sw On
Lcl Rcls Sw On
ELK
95.0 MW
11.1 MVAr
Rmt Rcls Sw On
Lcl Rcls Sw On
POC #1
20.6 MW
5.3 MVAr
Rmt Rcls Sw On
Lcl Rcls Sw On
POC #2
21.8 MW
6.7 MVAr
RTU Remote
RANCHO SECO
230 kV
Control room 4320 or 4350
Swyd Control room 4317
Switchyard 4435
TEST BREAKER
Rmt Rcls Sw On
Lcl Rcls Sw On
BEL #2
98.5 MW
20.4 MVAr
PG&E Tesla Tel. (209) 836-0180


RTU Remote
LAKE 230 kV
983-0102
LAK
LAK69
Air Temp 55 °F
Air Temp C 13 °C
Wind Speed 0 mph
Wind Dir 155 degrees
Wind Spd FPS 0 fps
B5242/(5236) Bkr Select Off
Off=B5242 LEAD RCLSR
ORV Rmt Rcls Sw On
ORV Lcl Rcls Sw On
B5226/(5220) Bkr Select Off
Off=B5226 LEAD RCLSR
ORV
CAM
Protection Channel On
5239G
5223G
↑ 71.1 MW
↓ 29.4 MVAr
231.3 kV
193 A
-62 °C
-61 °C
↓ 170.0 MW
↑ 10.4 MVAr
232.6 kV
421 A
13 °C
231.1 kV - a/b
231.6 kV - b/c
231.1 kV - c/a
60.3 Hz
5243
5242
5241
5239
5237
5236
5235
5233
5231
5230
5229
5227
5226
5225
5223
5221
5220
5219
5217
5215
5214
5213
5211
5210
5209
Rmt Rcls Sw On
Lcl Rcls Sw On
Rcls Status On
CB_ALL
55Ω SERIES REACTOR
5207
5207G
↑ 49.4 MW
↑ 8.9 MVAr
232.0 kV
121 A
GLO
5217G
↓ 46.3 MW
↑ 1.8 MVAr
232.9 kV
111 A
18 °C
POC
B5214/(5220) Bkr Select Off
Off=B5214 LEAD RCLSR
5201
231.7 kV - a/b
232.7 kV - b/c
227.9 kV - c/a
60.0 Hz
↓ 41.9 MW
↓ 14.4 MVAr
110.2 A - a
103.2 A - b
109.6 A - c
44.3 MVA
L 5
BANK #1
224 MVA
LTC Rmt Cntl Off
LTC Stn Sw Remote
36.4 °C Winding Temp H2
35.7 °C Winding Temp X2
34.7 °C Winding Temp Y2
35.8 °C Oil Temp
North CB_ALL
LAKE
69 kV
LAK
Outage
South CB_ALL
70.8kV - a/b
CB_ALL
71.5 kV - a/b
↓ 58.4 MW
↓ 15.4 MVAr
149.2 A - a
149.2 A - b
151.8 A - c
60.4 MVA
0.0 °C
34.5 °C
L12
BANK #2
160 MVA
LTC Rmt Cntl Off
LTC Lcl Sw Auto
Sta. Pwr.
Fan Control Off
See LTC table when switching 69 kV breakers

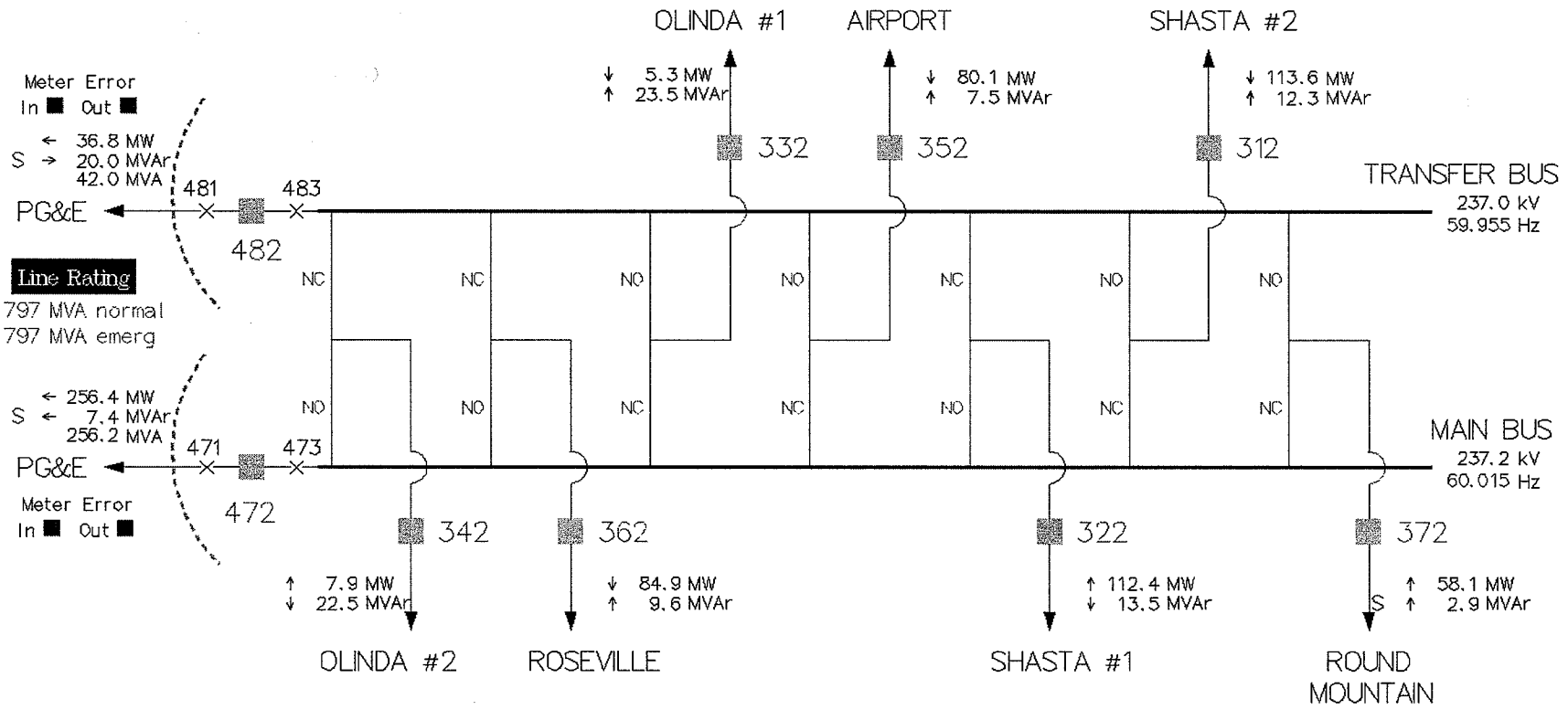
Gold Hill 230 kV Substation



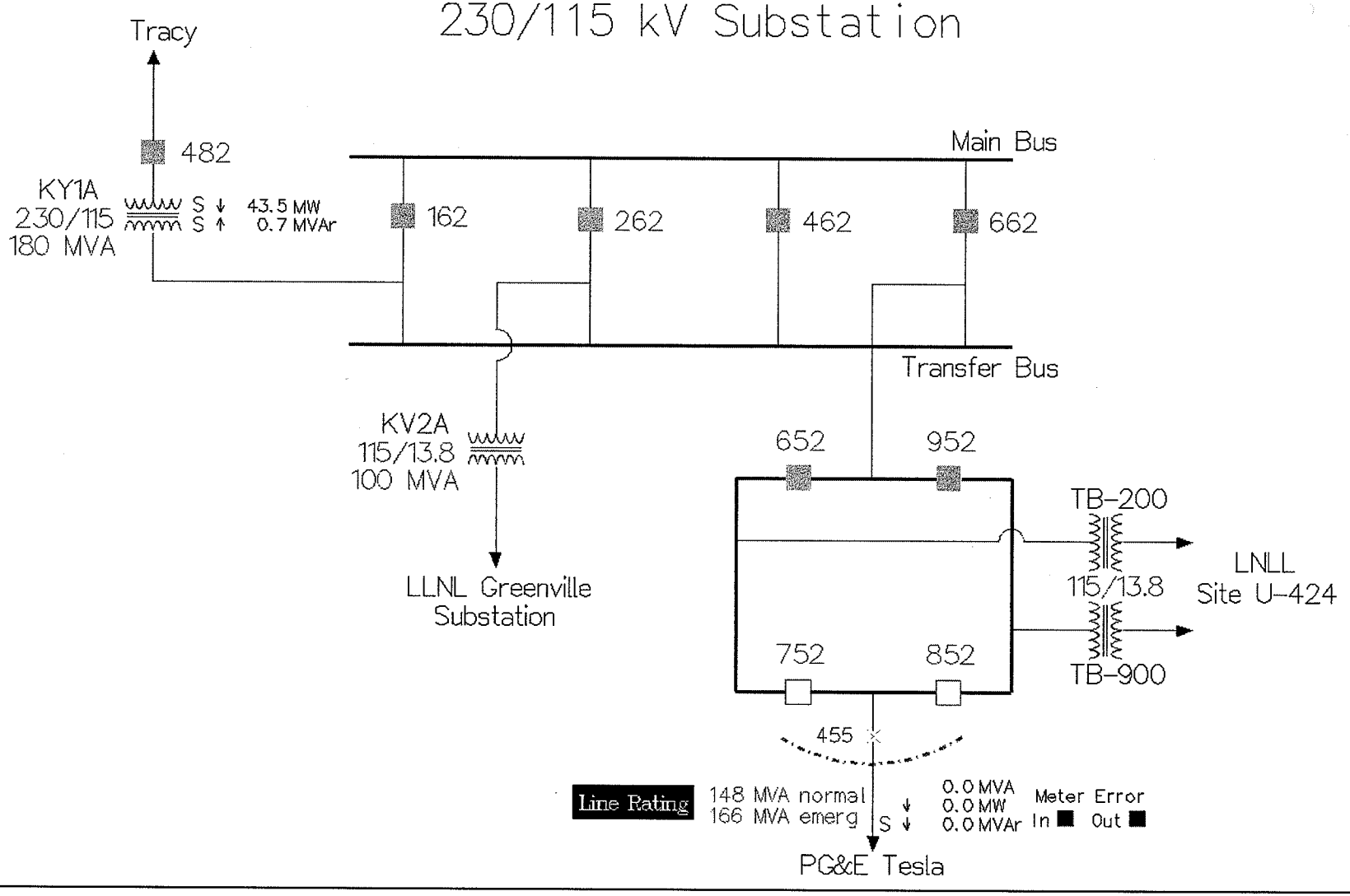
OLINDA

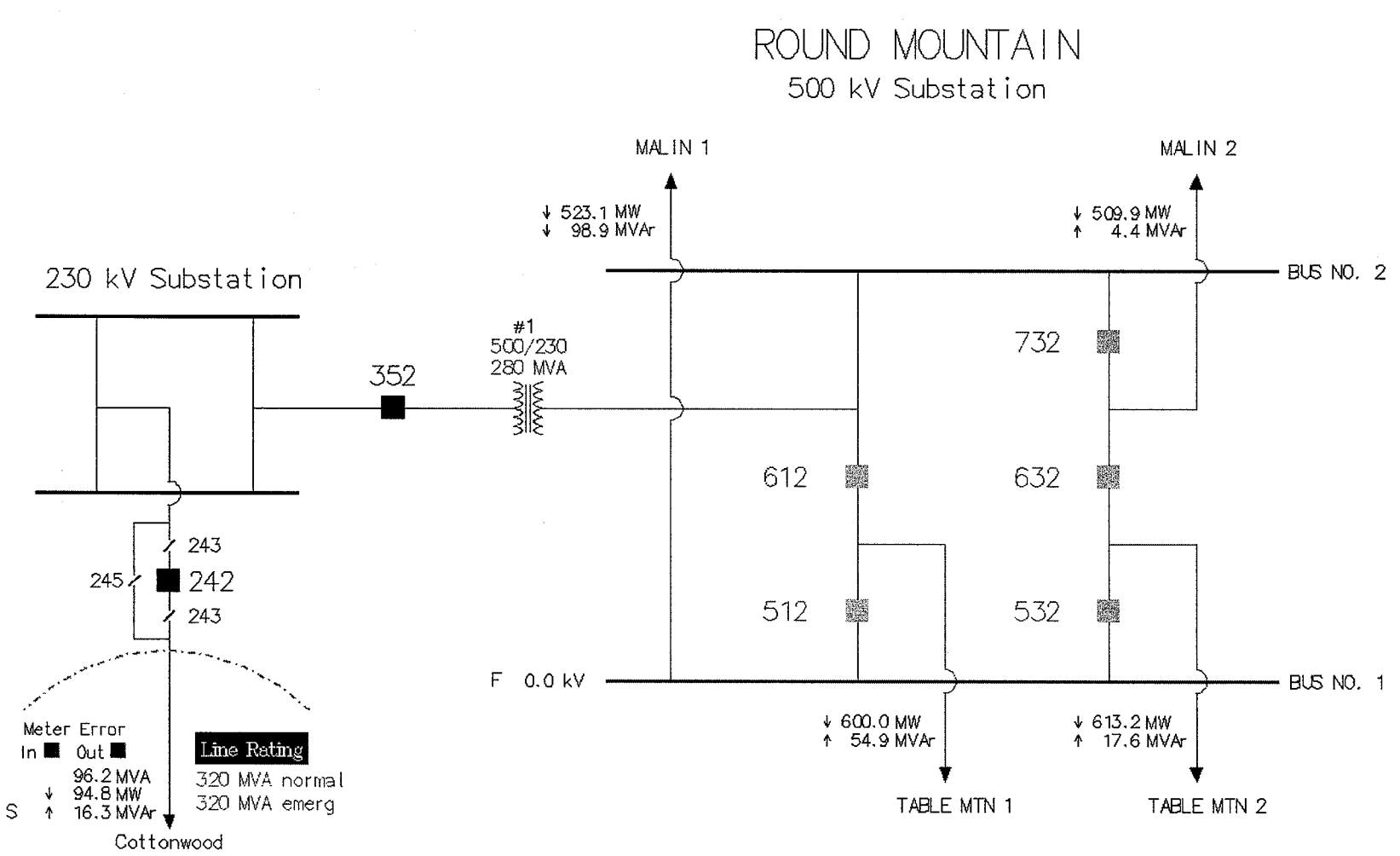

CAPTAIN JACK
↓ 596.1 MW
↑ 114.3 MVAr
500 kV
NORTH BUS
534.4 kV
59.873 Hz
5092
4092
1092
5096
4096
1096
SOUTH BUS
533.8 kV
59.873 Hz
↓ 529.5 MW
↓ 11.3 MVAr
MAXWELL
KT1A
850 MVA normal
1041 MVA emerg
500/230
106.0 MVA
→ 68.8 MW
S → 80.6 MVAr
238.5 kV
Meter Error
In ■ Out ■
Line Rating
487
KESWICK
COTTONWOOD
No. 1
↑ 3.8 MW
↓ 16.4 MVAr
↓ 11.1 MW
↓ 21.5 MVAr
386
282
286
230 kV BUS
182
186
↑ 8.0 MW
↑ 21.0 MVAr
↓ 81.4 MW
↑ 13.8 MVAr
COTTONWOOD
No. 2
OBANIAN

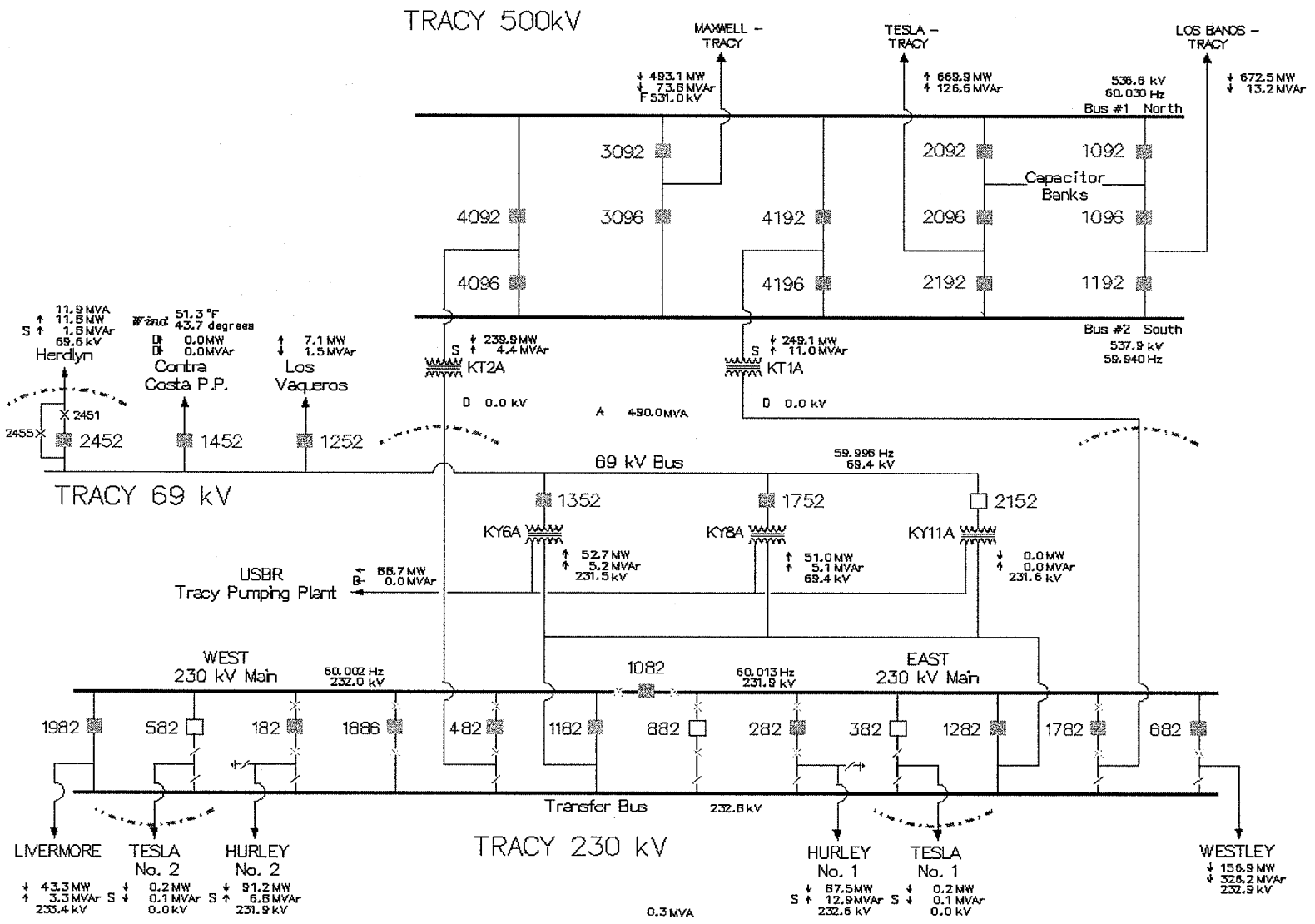
Cottonwood 230 kV Substation



Lawrence Livermore
230/115 kV Substation

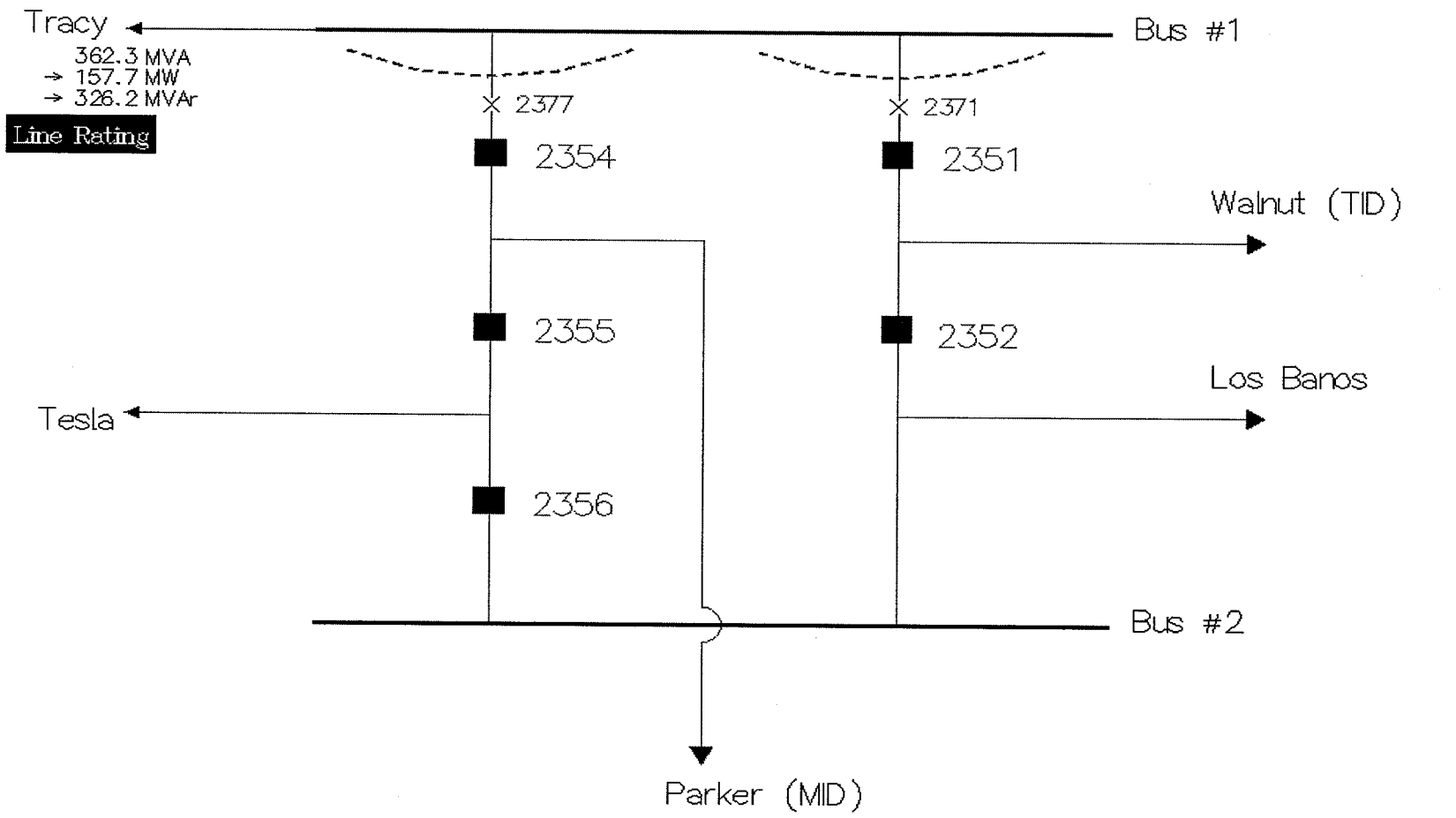



ROUND MOUNTAIN
500 kV Substation
MALIN 1
MALIN 2
↓ 523.1 MW
↓ 98.9 MVAr
↓ 509.9 MW
↑ 4.4 MVAr
BUS NO. 2
230 kV Substation
#1
500/230
280 MVA
352
732
612
632
512
532
243
245
242
243
F 0.0 kV
BUS NO. 1
↓ 600.0 MW
↑ 54.9 MVAr
↓ 613.2 MW
↑ 17.6 MVAr
TABLE MTN 1
TABLE MTN 2
Meter Error
In
Out
96.2 MVA
↓ 94.8 MW
S ↑ 16.3 MVAr
Line Rating
320 MVA normal
320 MVA emerg
Cottonwood


TRACY 500kV
MAXWELL – TRACY
TESLA – TRACY
LOS BANDS – TRACY
493.1 MW
73.8 MVAr
F 531.0 kV
669.9 MW
126.6 MVAr
536.6 kV
60.030 Hz
Bus #1 North
672.5 MW
13.2 MVAr
3092
2092
1092
Capacitor Banks
4092
3096
4192
2096
1096
4096
4196
2192
1192
Bus #2 South
537.9 kV
59.940 Hz
11.9 MVA
11.6 MW
1.8 MVAr
69.6 kV
Herdlyn
51.3 °F
43.7 degrees
0.0 MW
0.0 MVAr
Contra Costa P.P.
7.1 MW
1.5 MVAr
Los Vaqueros
239.9 MW
4.4 MVAr
KT2A
249.1 MW
11.0 MVAr
KT1A
D 0.0 kV
A 490.0 MVA
D 0.0 kV
2451
2455
2452
1452
1252
69 kV Bus
59.996 Hz
69.4 kV
TRACY 69 kV
1352
1752
2152
KY6A
KY8A
KY11A
52.7 MW
5.2 MVAr
231.5 kV
51.0 MW
5.1 MVAr
69.4 kV
0.0 MW
0.0 MVAr
231.6 kV
USBR
Tracy Pumping Plant
88.7 MW
0.0 MVAr
WEST 230 kV Main
60.002 Hz
232.0 kV
1082
60.013 Hz
231.9 kV
EAST 230 kV Main
1982
582
182
1886
482
1182
882
282
382
1282
1782
682
Transfer Bus
232.6 kV
TRACY 230 kV
LIVERMORE
43.3 MW
3.3 MVAr
233.4 kV
TESLA No. 2
0.2 MW
0.1 MVAr
0.0 kV
HURLEY No. 2
91.2 MW
6.8 MVAr
231.9 kV
0.3 MVA
HURLEY No. 1
87.5 MW
12.9 MVAr
232.6 kV
TESLA No. 1
0.2 MW
0.1 MVAr
0.0 kV
WESTLEY
156.9 MW
326.2 MVAr
232.9 kV

WESTLEY (MID/TID)

230 kV Substation



SERVICE SCHEDULE 4

RESPECTIVE JURISDICTION FOR OPERATIONAL CONTROL OF INTERCONNECTION

[Section 3.2.1]

- **Rancho Seco Interconnection**
  (Rancho Seco – Bellota #1 and #2-230 kV Lines)

  PG&E has ownership and maintenance, switching and clearance jurisdiction of both lines and all its associated facilities from Bellota Substation up to but not including disconnect switches 357 and 317 at Rancho Seco Substation. The ISO has the operational control of ~~this facility~~Bellota Substation and the lines up to but not including switches 357 and 317, and will be involved in coordination of switching.

  SMUD has operational control, ownership and maintenance, switching and clearance jurisdiction of ~~both lines and all their associated~~all facilities at Rancho Seco Substation up to and including disconnect switches 357 and 317.

  Common point of Tie Line Control Metering: Rancho Seco Substation.

- **Lake Interconnection**
  (Lake – Gold Hill 230 kV Line)

  SMUD has operational control, ownership and maintenance, switching and clearance jurisdiction of the line and all its associated facilities from Lake Substation to Gold Hill Substation ~~including the revenue metering set~~up to but not including the termination structure at Gold Hill Substation.

  PG&E has ownership and maintenance, switching and clearance jurisdiction of ~~the line and all its associated~~all facilities at Gold Hill Substation beginning at the termination structure. The ISO has the operational control of ~~this facility~~Gold Hill Substation, including disconnect switches 233 and 235 and will be involved in coordination of switching.

  Common point of Tie Line Control Metering: Lake Substation.

- **Olinda Interconnection**
  (KT1A 525/230/34.5 kV Bus Tie)

Western and TANC systems interconnect at the 500/230 kV transformers of the Olinda substation~~, which use common meters that are switched with the energized bus~~.

Western has operational control, ownership, maintenance, switching and clearance jurisdiction of ~~both busses and all of its associated facilities~~all facilities, both 500 and 230 kV including disconnect switch 487 ~~(PCB 182 and 386)~~ on the 230 kV bus.~~, which control will be exercised consistent with directions when issued by SMUD as Control Area Operator and in coordination with the ISO as the immediately adjacent Control Area Operator as necessary and appropriate.~~ SMUD will provide operational direction from the 230 kV side up to and including disconnect switch 487. The ISO will provide operational direction from the 500 kV side down to, but not including, switch 487.

Common point of Tie Line Control Metering: Olinda Substation

- **Cottonwood Interconnection ("G" 230 kV Bus Tie)**

PG&E owns the 230 kV busses, which use common meters that are switched with the energized bus.

~~Western dispatchers operate the xx kV capacitor banks in the Western Substation at SMUD Power System Operators request for system voltage control.~~

Western has operational control, and PG&E has ownership, maintenance, switching and clearance jurisdiction of both "G" Section busses and all of its associated facilities including disconnect switches 471 and 473~~-475~~ (PCB 472) on the 230 kV bus #1 and disconnect switches 481 and 483~~and 485~~ (PCB 482) on the 230 kV bus #2 which control shall be exercised consistent with directions when issued by SMUD as Control Area ~~O~~operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

PG&E has ownership, maintenance, switching and clearance jurisdiction of its lines and all its associated facilities at the Cottonwood Substation. The ISO has the Operational Control of the PG&E lines at this facility and will be involved in coordination of switching, except to the extent that operational control has been delegated to Western in the Transmission Exchange Agreement.

Common point of Tie Line Control Metering: Cottonwood Substation

- **LLNL U-424 Interconnection**

(LLNL 115 kV Bus Tie)

Western and ~~ISO~~PG&E share 115 kV busses at adjacent substations, which use common meters that are switched with the energized bus. LLNL has operational control, ownership, maintenance, switching and clearance jurisdiction of the busses and all its associated facilities up to and~~but not~~ including disconnect switch 455 ~~(PCB 752 and 852) on the 115 kV bus~~, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

Common point of Tie Line Control Metering: LLNL U-424 Substation

- **Round Mountain Interconnection**
  (Round Mountain – Cottonwood 230 kV Bus Tie)

  PG&E operates 230 kV and 500 kV busses at the Round Mountain Substation.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Cottonwood-Round Mountain 230 kV line and all of its associated facilities up to but not including disconnect switches 243 and 245 (PCB 242) ~~on the 230 kV bus~~, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

  PG&E has ownership and maintenance, switching and clearance jurisdiction of its lines and all its associated facilities at Round Mountain Substation. The ISO has the operational control of this facility and will be involved in coordination of switching.

  Common point of Tie Line Control Metering: Round Mountain Substation

- **Tracy 230 to Tracy 500 kV Interconnection**
  (Tracy 230 kV Bus Tie to Tracy 230/500 kV Transformers)

  Western owns and operates the 230 kV bus at the Tracy substation, which use common meters that are switched with the energized bus.

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities including disconnect switches 481 and 485 (PCB 482) and 1781 and 1785 (PCB 1782) on the 230 kV bus, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in

coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

Common point of Tie Line Control Metering: Tracy Substation

- **Tracy-Tesla Interconnection**
  (Tracy-Tesla 230 kV Lines)

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities including disconnect switches 381 and 385 (PCB 382) and 581 and 585 (PCB 582) ~~on the 230 kV bus~~, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

  PG&E has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities at Tesla Substation. The ISO has the operational control of this facility and will be involved in coordination of switching, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

  Common point of Tie Line Control Metering: Tracy Substation

- **Tracy-Westley Interconnection**
  (Tracy-Westley 230 kV Bus Tie

  Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 230 kV bus and all its associated facilities up to and~~but not~~ including disconnect switches 681 and 685 (PCB 682) ~~on the 230 kV bus~~, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

  MID/TID has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities at ~~Herdlyn~~Westley Substation. ~~SMUD~~MID/TID has the operational control of the line and associated ~~breakers~~disconnect switches 2377 and 2371 (PCB #2351 and #2354) at

Westley and will be involved in coordination of switching, which control will be exercised consistent with directions when issued by the ISO~~SMUD~~ as ~~c~~Control ~~a~~Area operator and in coordination with SMUD~~the ISO~~ as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

Common point of Tie Line Control Metering: Westley Substation

- **Herdlyn 69 Interconnection**

Western and ISO share 69 kV busses at adjacent substations, which use common meters that are switched with the energized bus.

Western has operational control, ownership, maintenance, switching and clearance jurisdiction of the Tracy 69 kV bus and all its associated facilities including disconnect switches 2451 and 2453 (PCB 2452) and 2455 on the Tracy 69 kV bus, which control will be exercised consistent with directions when issued by SMUD as ~~c~~Control ~~a~~Area operator and in coordination with the ISO as the immediately adjacent Control Area ~~O~~operator as necessary and appropriate.

PG&E has ownership, maintenance, switching and clearance jurisdiction of the line and all its associated facilities, including disconnect switch 79, at Herdlyn Substation. The ISO has the operational control of this facility and will be involved in coordination of switching. SMUD will have operational control of this facility and will be involved in coordination of switching.

Common point of Tie Line Control Metering: Herdlyn Substation

Although a physical interconnection exists between the Expanded SMUD Control Area and the ISO Control Area at Herdlyn, the Parties agree it will not be considered a scheduling point.

Special Operating Condition: Because ISO Control Area load exists on the 69 kV Herdlyn line that extends from the Western side of the Tracy Substation into the ISO Control Area that is served by PG&E, and the connection between the 69 kV Herdlyn line and Tracy Substation is not being operated as a Control Area scheduling point, the Parties have agreed that Tracy meter values will be adjusted to remove the Herdlyn line load from the Expanded SMUD Control Area and add it to the ISO Control Area. The Parties shall amend this Agreement to the extent that the Herdlyn line load becomes subject to any policy and provisions for pseudo ties to the ISO Control Area, provided that such policy and provisions shall be consistent with WECC and NERC business practices and criteria.

SERVICE SCHEDULE 6

REAL – TIME OPERATING LIMITS

[Section 3.2.3.1]

~~Rancho Seco Interconnection~~

~~Summer normal operating limit: 988 MW~~
~~Summer emergency operating limit: 1180 MW~~

~~Line Conductor: Summer Normal Rating: 494 MW (1239 Amps) each line~~
~~Summer Emergency Rating: 590 MW (1482 Amps) each line~~

~~Winter normal operating limit: 1578 MW~~
~~Winter emergency operating limit: 1694 MW~~

~~Line Conductor: Winter Normal Rating: 789 MW (1981 Amps) each line~~
~~Winter Emergency Rating: 847 MW (2127 Amps) each line~~

~~The above rating is applicable to each individual Rancho Seco – Bellota transmission line. The summer and winter emergency rating is applicable only during contingency conditions and has a 100 hour usage over the lifetime of the conductor. Summer ratings are valid April 1 through October 31.~~

~~Lake Interconnection~~

~~Summer normal operating limit: 303 MW~~
~~Summer emergency operating limit: 351 MW~~

~~Line Conductor: Summer Normal Rating: 303 MW (760 Amps)~~
~~Summer Emergency Rating: 351 MW (880 Amps)~~

~~Winter normal operating limit: 426 MW~~
~~Winter emergency operating limit: 474 MW~~

~~Line Conductor: Winter Normal Rating: 426 MW (1070 Amps)~~
~~Winter Emergency Rating: 474 MW (1190 Amps)~~

~~The emergency rating is applicable only during contingency conditions.~~

~~Olinda Interconnection~~

~~Normal operating limit: 850 MVA~~
~~Emergency operating limit: 1041 MVA~~

~~The emergency rating is applicable only during contingency conditions and has a 4-hour limit per event.~~

~~Cottonwood Interconnection~~

~~Normal operating limit: 1594 MVA~~
~~Emergency operating limit: 1594 MVA~~

~~The emergency rating is applicable only during contingency conditions.~~

~~LLNL U-424 Interconnection~~

~~Normal operating limit: 148 MVA~~
~~Emergency operating limit: 166 MVA~~

~~The above rating is a simultaneous flow limit applicable to the LLNL-Tracy and the Tracy-Tesla 115 kV line.~~

~~Round Mountain Interconnection~~

~~Normal operating limit: 320 MVA~~
~~Emergency operating limit: 320 MVA~~

~~Line Conductor: Normal Rating: 320 MVA (800 Amps)~~
~~Emergency Rating: 320 MVA (800 Amps)~~

~~The emergency rating is applicable only during contingency conditions.~~

~~Tracy 230 Interconnection~~

~~Normal operating limit: 850 MVA~~
~~Emergency operating limit: 1041 MVA~~

~~The above rating is applicable to each individual transformer bank.~~

~~Tracy-Tesla Interconnection~~

~~Normal operating limit: 580 MVA~~

~~Emergency operating limit: 580 MVA~~

~~The above rating is a simultaneous flow limit applicable to both Tesla - Tracy 230 kV lines.~~

~~Tracy-Westley Interconnection~~

~~Normal operating limit: 650 MVA~~
~~Emergency operating limit: 650 MVA~~

~~Line Conductor: Normal Rating: 650 MVA (1630 Amps)~~
~~Emergency Rating: 650 MVA (1630 Amps)~~

~~The above ratings are based upon the limiting facility.~~

~~Herdlyn 69 Interconnection~~

~~Normal operating limit: 72 MVA~~
~~Emergency operating limit: 72 MVA~~

~~Line Conductor: Normal Rating: 72 MVA (600 Amps)~~
~~Emergency Rating: 72 MVA (600 Amps)~~

~~The above ratings are based upon the limiting facility.~~

SMUD -WAPA Control Area

Points of Interconnection/Control Area Tie Points/Branch Groups

Rating

		Summer					Winter						
		NORMAL		*EMERGENCY*			*NORMAL*		*EMERGENCY*			SMUD CA Ties	
		MVA	Amps	MVA	Amps		MVA	Amps	MVA	Amps			
Olinda													
KT1A 525/230/34.5	PCB 182 & 386	850		1041		4h	850		1041		4h	1	
Cottonwood													
230kV "G" Bus 1	PCB 472	797	2000	797	2000	n/a	797	2000	797	2000	n/a	2	
230kV "G" Bus 2	PCB 482	797	2000	797	2000	n/a	797	2000	797	2000	n/a		
Lawrence Livermore													
115 kV Tesla Line 1	PCB 752 & PCB 852	164	825	194	975		256	1262	274	1350		3	
Round Mountain													
230kV Cottonwood Line	PCB 242	320	800	320	800	n/a	370	930	370	930	n/a	4	
Tracy													
KT1A 525/230/34.5	PCB 1782	850		1041		4 h	850		1041		4 h	5	
KT2A 525/230/34.5	PCB 482	850		1041		4 h	850		1041		4 h		
230kV Tesla Line 1	PCB 382	683	1715	683	1715	n/a	746	1873	746	1873	n/a	6	
230kV Tesla Line 2	PCB 582	683	1715	683	1715	n/a	746	1873	746	1873	n/a		
69kV Herdlyn Line	PCB 2452	95	800	95	800	n/a	95	800	95	800	n/a	7	
Westley													
230kV Tracy Line	PCB 2351 & PCB 2354	650	1632	747	1878	30 m	650	1632	747	1878	30 m	8	
Rancho Seco													
230kV Bellota Line 1	PCB 210 & PCB 310	494	1239	590	1482	100 h	789	1981	847	2127	100 h	9	
230kV Bellota Line 2	PCB 250 & PCB 350	494	1239	590	1482	lifetime	789	1981	847	2127	lifetime		
Lake													
230kV Gold Hill Line	PCB 5230 & PCB 5236	303	760	351	880	30 m	426	1070	474	1190	30 m	10	

NOTES:
Summer and Winter Periods Defined by WECC OTC Policy Committee
All limits shown are the maximum based on the most limiting element at the identified location.
Transfer limits may be less than the amounts shown at the tie-points above based on an established path rating,
or due to power flows exceeding limit on another system element.
Rancho Seco & Lake total scheduling limited by contract to 1,271 MW, otherwise individually thermally limited
Herdlyn - Tracy meter values will be adjusted to remove Herdlyn line load from the SMUD CA and add it to the ISO CA. Herdlyn loads will not be scheduled.
Update 5/31/05

The Parties shall each maintain and have in service and operational at all times an automatic under frequency load shedding program and associated equipment designed and implemented in accordance with WECC Coordinated Off-Nominal Frequency Load Shedding and Restoration Plan (Final Report, November 25,1997, revised December 5, 2003). In addition, during a system emergency, the ISO and SMUD shall take actions appropriate for the prevalent condition or situation, upon which the Parties shall mutually agree and in accordance with Good Utility Practice as defined in ICAA 2.2.7, such that neither Party will cause an operational burden on the other Party. Such actions shall be as identified in operating procedures and/or agreements that shall be

mutually agreed upon by the Parties prior to the implementation of the Expanded SMUD Control Area.

Nomograms for simultaneous import limits into the Expanded SMUD Control Area will continue to be established by the SVSG and updated on an annual, or as required, basis. SMUD and all other SVSG members have committed to continue participation in the SVSG after SMUD forms a ~~c~~Control ~~a~~Area as before. SVSG Nomograms shall establish simultaneous import limits into the Expanded SMUD Control Area under specific transmission contingencies as well as with all lines at the Interconnection in service. SMUD shall at all times make such simultaneous import limits, as calculated in real time from the pertinent SVSG Nomogram, electronically available to the ISO. SMUD shall comply with import limits in all circumstances by managing SMUD loads and resources to maintain total imports at or below the simultaneous limit by limiting flows at each Interconnection point to the lower of the contract or thermal limit at that Interconnection point. Operating instructions will be prepared for the ISO and Expanded SMUD Control Areas to implement the SVSG Nomograms in their respective coordinated operating procedures.

SERVICE SCHEDULE 7

VOLTAGE CONTROL

[Section 3.2.5]

SMUD and ISO operator actions are necessary to ensure system voltages are maintained within operating limits. The normal operating range for the SMUD 230 kV system is 230-236 kV. The normal operating range for the Western 500 kV system is 525 - 538 kV; Western's 230 kV system is 230 - 236 kV; Western's 115 kV system is 115 - 118 kV.~~; and Western's 69 kV system is 66 - 70 kV.~~ The specific operator actions related to voltage control are detailed in joint operating procedures developed by SMUD, the ISO and other impacted entities, as described in Service Schedule 10, which may be changed from time to time by mutual agreement of the Parties and other affected entities. The Parties will use best efforts to maintain the voltage schedules at the interconnection points~~below~~, subject to the joint operating procedures.

~~**Rancho Seco Interconnection**~~

~~Voltage Schedule: 230 - 236 kV~~

~~**Lake Interconnection**~~

~~Voltage Schedule: 230 - 236 kV~~

~~**Olinda Interconnection**~~

~~Voltage Schedule: 525/230/34.5 kV~~

~~**Cottonwood Interconnection**~~

~~Voltage Schedule: 230 kV~~

~~**LLNL Interconnection**~~

~~Voltage Schedule: 115 kV~~

~~**Round Mountain Interconnection**~~

~~Voltage Schedule: 230 kV~~

~~**Tracy 230 Interconnection**~~

~~Voltage Schedule: 230 kV~~

~~**Tracy-Tesla Interconnection**~~

~~Voltage Schedule: 230 kV~~

~~**Tracy-Westley Interconnection**~~

~~Voltage Schedule: 230 kV~~

~~**Herdlyn 69 Interconnection**~~

~~Voltage Schedule: 69 kV~~

The goal for net MVAR exchange between ~~c~~Control ~~a~~Areas is zero. SMUD and the ISO will monitor the net MVAR exchange and request system voltage adjustments as necessary to minimize the MVAR interchange while maintaining normal voltage ranges.

The transmission system voltage profile has a higher priority than net MVAR interchange. When either a high or low voltage limit is approaching, the respective system operator shall take sufficient corrective measures, disregarding the MVAR interchange, to bring the voltage within limits.

SERVICE SCHEDULE 16
INTER-CONTROL AREA REQUIREMENTS
FOR SCHEDULING AND DELIVERING REGULATION SERVICE
TO THE ISO

1. General

1.1 Purpose. This Service Schedule 16 sets forth the requirements and processes that must be satisfied by an entity requesting the ability to schedule and deliver regulation service into the ISO Control Area ("requesting entity") and that must be coordinated through SMUD (referred to herein as the "Host Control Area") and the ISO should the requesting entity request the certification, scheduling and delivery of regulation service into the ISO Control Area. The ISO requires the requesting entity to be represented by a Scheduling Coordinator in any associated ISO processes. The requirements encompass technical (energy management system ("EMS")/AGC and communications), interchange scheduling, telemetry and control aspects of interconnected Control Area operations.

1.2 NERC/WECC Operating Standards Observed. Nothing in this Service Schedule 16 is intended to change, supercede, or alter either Party's obligations to abide by NERC standards and WECC criteria.

1.3 Applicable Standards. This Service Schedule incorporates by reference the ISO's *"Standards for Imports of Regulation"* ("Standards"), except that Section 6.2.4, Section 6.3.1, and Section 6.4.3 of the Standards shall be revised as set forth in Section 3.1 and Section 3.2 of this Service Schedule 16. The Standards document is available for viewing and can be also downloaded from the ISO internet home page: "http://www.caiso.com". SMUD and the ISO have also jointly developed certain specific implementation procedures to facilitate dynamic scheduling and to ensure that NERC and WECC policies and criteria are satisfied, including the WECC RMS.

1.4 Meaning of "System Resource". "System Resource" is defined in the ISO Tariff and, in the context of this Service Schedule 16, may include combinations of resources as described in the Standards.

2. Telecommunications Requirements

The ISO and Host Control Area shall establish and maintain real time, redundant, diversely routed, bi-directional, communications links between the ISO EMS and the Host Control Area EMS, utilizing standard inter-control center communications protocol ("ICCP"). Further details regarding telecommunications requirements may be found the Standards.

3. Telemetry and Control

3.1 Telemetry. For each operating hour for which a System Resource is scheduled to deliver regulation service to the ISO Control Area, the Host Control Area shall provide, via the ICCP communication links to the ISO EMS, the data for each System Resource set forth in the Standards.

3.1.1 Host Control Area responsibility under Section 6.2.4 of the Standards shall be limited to polling the ISO EMS and transmitting data to the System Resource on a two second basis, and receiving System Resource data and transmitting to the ISO EMS on a two second basis. The Host Control Area will not be responsible for the time it takes the System Resource to process and respond to data. The ISO and SMUD will work together to meet each other's requirements for telemetry.

3.1.2 Host Control Area responsibility under Section 6.4.3.1 of the Standards shall be limited to passing on the "On/Off Line Status" as received from the System Resource.

3.1.3 Host Control Area responsibility under Section 6.4.3.2 of the Standards shall be limited to passing on the "On/Off AGC/Control Status" as received from the System Resource.

3.1.4 Host Control Area responsibility under Section 6.4.3.4 of the Standards shall be limited to passing on the "Operating Low Limit Status" as received from the System Resource.

3.1.5 Host Control Area responsibility under Section 6.4.3.4 of the Standards shall be limited to passing on the "Operating High Limit Status" as received from the System Resource.

3.2 Control. Host Control Area obligation under Sections 6.3.1 and 6.4.3.3 of the Standards shall be limited to receiving control signals, in real time, from the ISO EMS, via the ICCP communications links, and passing through those signals to the System Resource operator, thereby facilitating the System Resource to vary its energy production when issued a new set-point signal by the ISO. Further detailed information regarding control requirements may be found in the Standards. Should there be a need for alternative arrangements for telemetry, the ISO and SMUD will work together to establish such alternative arrangements in a manner that does not contravene applicable NERC and WECC requirements and practices, provided that SMUD is not obligated to incur additional costs not paid for by the owner of the System Resource.

4. Interchange Scheduling Requirements

4.1 Dynamic Scheduling. The Host Control Area may, after review and if it determines in its sole discretion that it is willing to proceed, support a requesting entity's application to arrange dynamic interchange schedules for the delivery of regulation service to the ISO Control Area, reflecting the System Resource's instantaneous energy production or allocation level as caused by real time control signals issued by the ISO EMS/AGC and taking into account available transmission capacity. All schedules need to be e-tagged in accordance with NERC and WECC requirements and practices.

4.2 Treatment of Area Control Error. The Host Control Area shall instantaneously compensate its AGC for the System Resource's variable energy output level such that the System Resource actual energy production, caused by the ISO EMS/AGC control signals, has no effect on the Host Control Area's Area Control Error ("ACE").

4.3 Integration of Dynamic Scheduling. For each operating hour during which regulation service was dynamically scheduled for delivery to the ISO Control Area, the Host Control Area shall compute an integrated amount of interchange based on the System Resource's integrated energy production, by integrating the instantaneous System Resource production levels. Such integrated MWH value shall be agreed to hourly by the real time schedulers.

4.4 Access to Information. The Parties agree to exchange information related to control signals issued and telemetry received with respect to the delivery of regulation service (1) at the request of the other Party for purposes of after-the-fact interchange accounting or (2) on demand for any other purpose.

5. Other

5.1 Losses. A requesting entity shall be responsible for transmission losses caused by transmitting regulation service within or across the SMUD and ISO systems in accordance with the applicable ISO and SMUD requirements.

5.2 Certification. Only a requesting entity meeting ISO-certified System Resource/Host Control Area arrangements and separate applicable Expanded SMUD Control Area requirements will be allowed to bid or self provide regulation service in the ISO's ancillary services market through an ISO-certified Scheduling Coordinator.

5.3 Performance Assessment. The ISO will monitor and measure imported regulation service, whether bid or self-provided, against the performance benchmarks described in the Standards.

SERVICE SCHEDULE 17

INTER-CONTROL AREA REQUIREMENTS FOR SCHEDULING AND DYNAMIC DELIVERY OF ENERGY, SUPPLEMENTAL ENERGY, AND ENERGY ASSOCIATED WITH NON-REGULATION ANCILLARY SERVICES TO THE ISO

1. General

1.1 Purpose. This Service Schedule 17 sets forth the requirements and processes that must be satisfied by an entity requesting the ability to schedule and deliver dynamically energy, supplemental energy, and energy associated with ancillary services (other than regulation service) into the ISO Control Area ("requesting entity") and that must be coordinated through SMUD (referred to herein as the "Host Control Area") and the ISO should the requesting entity request to implement of a dynamic scheduling functionality and delivery of energy, supplemental energy, and energy associated with ancillary services (except regulation service) into the ISO Control Area. The ISO requires the requesting entity to be represented by a Scheduling Coordinator in any associated ISO processes. The requirements encompass technical (energy management system ("EMS")/automatic generation control ("AGC") and communications), interchange scheduling, telemetry, and aspects of interconnected Control Area operations.

1.2 NERC/WECC Operating Standards Observed. Nothing in this Service Schedule 17 is intended to change, supercede, or alter either Party's obligations to abide by NERC standards and policies and WECC criteria.

1.3 Applicable Standards. This Service Schedule 17 incorporates, by reference, the ISO Tariff Dynamic Scheduling Protocol. SMUD also has certain specific implementation requirements to ensure that NERC and WECC policies and criteria are satisfied, including the WECC RMS.

1.4 Meaning of "System Resource". "System Resource" is defined in the ISO Tariff and, in the context of this Service Schedule 17, may include combinations of resources as described in the ISO Tariff Dynamic Scheduling Protocol.

2. Telecommunications Requirements

The ISO and Host Control Area shall establish and maintain real time, redundant, diversely routed, communications links between the ISO EMS and the Host Control Area EMS, with the primary link utilizing the standard inter-control center

communications protocol ("ICCP") in accordance with the ISO Tariff Dynamic Scheduling Protocol and SMUD protocols.

3. Telemetry

For each operating hour for which a System Resource is scheduled to deliver energy, supplemental energy, and/or energy associated with any of the non-regulating ancillary services to the ISO Control Area, the Host Control Area shall provide, via the ICCP communication links to the ISO EMS, the data for each System Resource as set forth in the ISO Tariff Dynamic Scheduling Protocol and SMUD protocols.

4. Interchange Scheduling Requirements

4.1 Dynamic Scheduling. The Host Control Area will support a requesting entity's application to arrange dynamic interchange schedules for the delivery of energy to the ISO Control Area, reflecting the System Resource's instantaneous energy production or allocation level and taking into account available transmission capacity. All schedules need to be e-tagged in accordance with NERC and WECC requirements and practices, as provided in Section 5.2 of this Service Schedule 17.

4.2 Treatment of Area Control Error ("ACE"). The Host Control Area shall instantaneously compensate its AGC for the System Resource's energy output that is generated or allocated for establishing the dynamic schedule to the ISO such that the System Resource energy production or allocation changes have an equal in magnitude and opposite in sign effect on the Host Control Area's ACE.

4.3 Integration of Dynamic Scheduling. For each operating hour during which energy was dynamically scheduled for delivery to the ISO Control Area, the Host Control Area shall compute an integrated amount of interchange based on the System Resource's integrated energy production, by integrating the instantaneous System Resource production levels. Such integrated MWH value shall be agreed to hourly by the real time schedulers.

4.4 Delivery of Megawatts ("MW"). The Host Control Area shall not be obligated to make up any difference between the dynamic energy schedule and the MW being generated or allocated by the System Resource.

4.5 Access to Information. The Parties agree to exchange information related to telemetry sent and received with respect to the delivery of energy (i) at the request of the other Party for purposes of after-the-fact interchange accounting or (ii) on demand for any other purpose.

5. Other Host Control Area Responsibilities

5.1 Operational Jurisdiction. The Host Control Area will have, at a minimum, the level of operational jurisdiction over the System Resource and the associated dynamic schedule that NERC and WECC vest in Host Control Areas.

5.2 E-Tagging. The Host Control Area and the ISO Control Area must support associated e-tagging as described in the ISO Tariff Dynamic Scheduling Protocol and deemed to be consistent with NERC and/or WECC requirements.

5.3 Real-Time Adjustments. The Host Control Area must have a means to manually override and/or otherwise adjust the dynamic signal in real time, if needed.

5.4 Coordination with Other Control Areas. The Host Control Area must provide in real time the instantaneous value of each dynamic schedule to every intermediary Control Area through whose systems such dynamic schedule may be implemented to the ISO.

6. Other

6.1 Losses. A requesting entity shall be responsible for transmission losses caused by transmitting energy, supplemental energy, and energy associated with ancillary services (other than regulation service) within or across the SMUD and ISO systems in accordance with the applicable ISO and SMUD requirements.

6.2 Certification. Only a requesting entity meeting ISO-certified System Resource/Host Control Area arrangements and separate applicable Expanded SMUD Control Area requirements will be allowed to bid or self provide ancillary services in the ISO's ancillary services market through an ISO-certified Scheduling Coordinator.

6.3 No Guarantee of Award. Certification of a System Resource/Host Control Area arrangement allows for bidding of supplemental energy and/or certain ancillary services into the ISO market; it does not, however, guarantee selection of such bid.

6.4 Performance Assessment. The ISO will monitor and measure dynamically imported ancillary services, whether bid or self-provided, against the performance benchmarks described in the ISO Tariff Dynamic Scheduling Protocol.

7. CONSENT TO IMPLEMENTATION OF DYNAMIC SYSTEM RESOURCES

Each dynamically scheduled System Resource shall be permitted pursuant to this Service Schedule 17 only upon written consent of both the Host Control Area and the ISO, which written consent may be communicated by e-mail, and only if the System Resource is subject to a Dynamic Scheduling agreement for Scheduling Coordinators with the ISO.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing documents as described in those documents, in accordance with Rule 2010 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 835.2010.

Dated at Folsom, California, on this 29th day of September, 2005.

John Anders BRM

John Anders