APPENDIX A
GENERATING ASSET AND
ENERGY STORAGE SYSTEM LOGBOOK STANDARDS

I. PURPOSE

The intent of this document is to define the requirements for facility logs for plants generating electricity by the use of thermal, solar, wind, geothermal energy, and energy storage systems.

II. GENERAL REQUIREMENTS

Each generating or energy storage facility shall maintain a Control Operator Log that contains the chronological history of the facility including detailed entries regarding the operations and maintenance of the facility. Where information is unit specific, information for each unit must be recorded and so identified.

The Control Operator Log is a formal record of real time operating events as well as the overall status of the GAs, ESSs, and auxiliary equipment under the purview of the Control Room Operator. The log shall also contain an accurate and concise record of important and/or unusual events involving operations, maintenance, water chemistry, safety, accidents affecting personnel, fires, contractor activities, environmental matters, and any other pertinent information concerning the operation of the facility. The log shall also record communications between the facility and outside entities including but not limited to the Independent System Operator (ISO), scheduling coordinators or headquarters facilities, regulators, environmental agencies, Cal OSHA, emergency responders or other agencies. The log shall be maintained notwithstanding and in addition to any other similar requirements that mandate that events be recorded. The Generating Asset Owner (GAO) or Energy Storage System Owner (ESSO) must collect and record all information specified in these standards. All such information must be readily available to operators, California Public Utilities Commission staff, and other authorized personnel at all times.

Notwithstanding the above, generators and energy storage resources may elect to record certain kinds of information in separate logs, as authorized by Exception 1, Exception 2, or Exception 3 below. The information specified in Exception 1 may be recorded in an Equipment Out of Service Log. Similarly, the information specified in Exception 2 may be recorded in a Work Authorization log. The information specified in Exception 3 may be recorded in the Work Order Management system or electronic database system for maintenance activities including corrective, preventive, and predictive maintenance. Information recorded in these separate logs need not be recorded in the Control Operator log.

All required logs entries shall be retained in hard copy, electronic format, or both for a minimum period of five (5) years from the date of the log entry. Each log entry shall start by recording the time of the event. The GAO or ESSO is responsible for maintaining the integrity of the generating asset or Energy Storage System facility logs.

III. LOGBOOK REQUIREMENTS

A. Thermal Generating Facilities

Each facility must record a Facility Status Entry at least once each calendar day. If practicable, the control operator shall make that entry at midnight; however, a facility may for operational reasons elect to make that entry at another time. In any case, the Facility Status Entry must be made at the same time each day, except when emergency conditions require a postponement. In the case of such emergency conditions, the entry for that day shall be made as soon as it is safe to do so.

Information in the Facility Status Entry shall include as applicable:

1) Unit status, if on-line, including:
   - Current megawatt (MW) load;
   - Generator Voltage (kV) and MVAR readings;
   - Fuel type and availability;
   - Dispatch instruction records;
   - For units equipped with Automatic Generation Control (AGC) or Automatic Dispatch System (ADS), the status of AGC or ADS equipment, including the availability of AGC or ADS, its operational status (on or off), and the normal range of output possible when the unit is operating under AGC or ADS;
   - Condenser water box differential pressures, condenser back pressure/vacuum readings, boiler, and pre-boiler water chemistry readings (if applicable); and
   - Status of environmental monitoring equipment.
2) Any unit MW output outages or restrictions (derates) including, but not limited to, reasons for and expected time/date of release (including the ISO outage ID number).
3) Status of any environmental constraints such as, but not limited to, total annual NOx allowable emissions vs. year-to-date total emissions or, for peaker plants, total allowable run time vs. current year to date actual run time.
4) Equipment out of service, including any equipment that has been isolated and prepared for an upcoming work authorization with particular emphasis on redundant equipment that if the primary equipment fails, will result in a load restriction or a unit trip (*see* Exception 1).
5) Any abnormal operating conditions.

6) Outstanding work authorizations which may be commonly referred to as clearances (*see* Exception 2) and outstanding maintenance activities (*see* Exception 3).
7) Status of any retention/waste basins.
8) Status of any water conditioning equipment such as facility demineralizers and in stream demineralizers.
9) The on-hand quantities of large consumables including distilled water, hydrogen, nitrogen and hypochlorite, if applicable.
10) Any other pertinent information regarding the status and reliability of the facility.

The first entry in the Control Operator Log at the start of a shift shall identify each operator on that shift and by some regular means distinguish his/her responsibilities (list in a regular order the identity of the Shift Supervisor(s), Control Operator(s), Assistant Control Operator(s) and Plant or Facility Equipment Operator(s)). This initial entry shall indicate that the crew has ascertained the plant or facility status through the shift turnover, review of the log and a check of the indications and alarms in the control room.

Events shall be logged chronologically as they occur. Significant entries will include the control operator's name at the end of the entry preceded by the name(s) of others involved in the activity.

The events recorded in the Control Operator log shall include, but are not limited to, the following:

1) Any changes to facility MW output (except when on AGC and ADS). The current load of the unit shall be recorded as well as the new target load and the reason for the load change including:
    a) As directed by the day ahead schedule;
    b) Deviations from the schedule as directed by a scheduling coordinator;
    c) Load reductions for scheduled equipment outages (cleaning condensers, pump repairs, etc.);
    d) ISO directions;
    e) Unplanned unit equipment problems (forced derates) including load restrictions for environmental causes;
    f) Reducing to minimum load; and
    g) Any other reason.
2) Starting and stopping of equipment and any associated abnormal conditions.
3) Significant operations and milestones in the process of major operations such as start-ups, shutdowns, and heat-treats.

4) During a unit start up, once on-line, each facility load increment released to the scheduling coordinator.
5) Each instance where a unit is placed on or removed from AGC, including a notation if the AGC limits are set for a different value than the normal AGC range for that unit.
6) Any changes to the future schedule for facility output.
7) Detailed account of unit trips including any known or suspected causes and remedial action taken.
8) Load limit position anytime it is placed at any value less than full load and reason for such action.
9) All operating information that affects, efficient, safe, and reliable operation, such as, but not limited to, pressure, temperature, volumetric flow, level, vibration, speed, amperage, and voltage.
10) Information regarding a derate related to weather.
11) All information related to planned outages or derates, including but not limited to communications with scheduling coordinators, headquarters, or the ISO regarding such outages (including requests to take an outage; and notification to the facility that such outages have been approved or denied), the nature of the work to be completed during the outage, initial and revised return-to-service dates, completion of milestones in such work, requests to the ISO or others for extension of such outages including the reason for that extension, and completion of such outages. All entries shall include the date, time, duration, reason or explanation and the identities of all involved.
12) All information related to forced outages or derates, including but not limited to communications with scheduling coordinators, headquarters, or the ISO regarding such outages; the nature of the problem; progress reports on further diagnosis of the problem or on ongoing repairs; estimated and revised return-to-service dates; the nature of any extended work to be completed during the outage; completion of milestones in such work; and completion of such outages. All entries shall include the date, time, duration, reason or explanation and the identities of all involved.
13) All work authorizations issued and released and the reason for such work.
14) Equipment placed in a not normal status.
15) Equipment declared out of service (OOS) including date and time of the initial OOS declaration.
16) Any current or potential fuel-supply problems.
17) Results of performance tests including, but not limited to, hotwell drop tests, turbine stop valve tests, DC lube oil pump test.

18) Equipment outages of environmentally sensitive equipment or environmental monitoring devices.
19) All out-of-limit water chemistry conditions including duration and remedial actions, as well as all boiler chemical feeds and boiler drum blowdowns where applicable.
20) Changes in equipment/systems' normal operating status such as, but not limited to, a suspected boiler tube leak, fouled condensers, a feedwater heater tube leak, excessive vibration, or overheating.
21) Detailed information regarding environmental limitations exceeded, including the date, time, duration, amount, and any known or suspected cause.
22) Detailed reports of observations related to transmission system or facility trouble involving frequency or voltage deviations.
23) Report of any industrial accident including all details of the incident and the names of all parties involved.
24) All other pertinent information concerning the operation of the facility including names of all individuals involved.

B. Renewable Generating Assets and Energy Storage Systems

Each GAO or ESSO must establish written protocols of logbook requirements for each facility (or "site") that address the facility's specific operating characteristics, which may be controlled by remote operating centers. A facility may be comprised of multiple units. An energy storage unit is one or more devices assembled together to store electrical energy and supply electrical energy selected loads at a future time. The GAO or ESSO logbook protocols should define logbook content and how frequently information should be recorded for safe and reliable operation. The protocol must specify all requirements in Appendix A, Section II: General Requirements.

1) Renewable Generating Assets and Energy Storage Systems Control Operator Log Requirements

The Control Operator Log consists of the facility status entry and the event entries and can be recorded by the facility operator and/or the remote operation center operator. The facility operator monitors and controls the operation of each GA and/or ESS facility. The remote operating center operator may monitor and control multiple facilities of renewable GAs and ESSs.

Each facility must record a Facility Status Entry in the Control Operator Log at least once each calendar day. The Facility Status must be made at the same time each day, except when emergency conditions require postponement. In the case of such emergency conditions, the entry for that day shall be made as soon as it is safe to do so.

The first entry in the Control Operator Log at the start of a shift shall identify each operator on that shift and by some regular means distinguish his/her responsibilities (list in a regular order the identity of the Shift Supervisor(s), Control Operator(s), Assistant Control Operator(s), and any other operation staff. This initial entry shall indicate that the crew has ascertained the plant or facility status through the shift turnover, review of the log, and a check of the indication and alarms in the control room.

Information in the Facility Status Entry shall include as applicable:

a) Facility status, including:
   - Current power (MW) and/or energy output (MWh);
   - Available capacity of the facility;
   - GA or ESS Voltage (kV) and VAR readings;
   - Dispatch instruction records;
   - For facilities equipped with AGC or ADS, the status of AGC or ADS equipment, including the availability of AGC or ADS, its operational status (on or off), and the normal range of output possible when the facility is operating under AGC or ADS; and
   - Status of environmental monitoring equipment.

b) Any facility (or site) MW output outages or restrictions (derates) including, but not limited to, reasons for and expected time/date of release (including the ISO outage ID number);
c) status of any environmental constraints such as, but not limited to, weather information or conditions, temperature, ambient derates, etc.;
d) Equipment out of service, including any equipment that has been isolated and prepared for an upcoming work authorization with particular emphasis on redundant equipment that if the primary equipment fails, will result in a load restriction or outage a facility trip (*See* Exception 1);
e) Any abnormal operating conditions affecting efficient, safe, or reliable operation;
f) Changes in equipment/systems' normal operating status such as, but not limited to, HVAC malfunction, leaks, equipment faults, connection/disconnection of equipment, loss of communications, triggered alarms, high equipment temperature alarms, equipment reset, etc.;
g) Outstanding work authorization which may be commonly referred to as clearances (*See* Exception 2);
h) For the ESS and not limited to:

i. Current charge and discharge capacity of the systems MW; and
ii. State of energy such as maximum usable energy the ESS can be charged of discharged (MWh); and charging/discharging status

i) Any other pertinent information regarding the status and reliability of the facility.

Event entries shall be logged chronologically as they occur. Significant entries will include the control operators' name at the end of the entry preceded by the name(s) of others involved in the activity.

The events recorded in the Control Operator Log shall include, but are not limited to, the following:

a) Any changes to the facility MW output (except when on AGC and ADS). The current load of the facility (or sites) shall be recorded as well as the new target load and the reason for the load change including:
   i. As directed by the day ahead schedule;
   ii. Deviations from the schedule as directed by a scheduling coordinator;
   iii. Load reduction for scheduled equipment outages;
   iv. ISO directions;
   v. Unplanned facility equipment problems (forced derates) including load restrictions for environmental causes;
   vi. Reducing to minimum load; and
   vii. Any other reason.
b) Significant operations and milestones in the process of major operations such as start-ups, shutdowns, and derates;
c) Each instance where a facility is placed on or removed from AGC, including a notation if the AGC, limits are set for a different value than the normal AGC, and the normal AGC range for those facilities;
d) Any changes to the future schedule for facility output;
e) Detailed accounts of significant equipment trips including any known or suspected causes and remedial actions taken;
f) Load limit position any time it is placed at any value less than full load and reason for such actions;
g) Abnormal operating issues on parameters affecting efficient, safe, and reliable operation;
h) All information related to forced outages or derates, including but not limited to, communications with scheduling coordinators,

headquarters, or the ISO regarding such outages, the nature of the problem; progress reports on further diagnosis of the problem or on ongoing repairs; estimated and revised return-to-service dates, the nature of any extended work to be completed during the outages; completion of milestones in such work; and the completion of such outages. All entries shall include the date, time, duration, reason or explanation and the identities of all involved;

i) All work authorizations issued and the reason for such work;
j) Equipment placed in a not normal status;
k) Equipment declared OOS including date and time of the initial OOS declaration;
l) Any current or potential energy source problems for ESS, an energy source may be electricity from the grid or a co-located or hybrid photovoltaic (PV), wind, or other electric generator;
m) Equipment outages of environmentally sensitive equipment or environmental monitoring devices. Environmentally sensitive equipment are components which are easily affected by external factors, such as weather conditions and/or atmospheric pollutants. These types of equipment can not only be impacted by these factors, but also pose a potential risk to the nearby environment and operations if it fails or is damaged;
n) The functional status of communication systems and supervisory Control Data Acquisition (SCADA) systems;
o) Record communication with internal and external entities;
p) Detailed information regarding environmental limitations exceeded, including the date, time, duration, amount, and any known or suspected cause;
q) Detailed reports of observations related to transmission system or facility trouble involving frequency or voltage deviations;
r) Report of any industrial accident including all details of the incident and the names of all parties involved; and
s) All other pertinent information concerning the operation of the facility including names of all individuals involved.

C. Exceptions

1) In lieu of logging equipment out of service (OOS) information in the facility status entry, an Equipment OOS Log may be utilized, at the discretion of the GAO or ESSO, to track equipment declared out of service. The work authorization program is intended to provide a safe work environment for current maintenance activities. If a delay is encountered in the repair process, the work authorization should be released, and the equipment declared OOS. If the OOS designation is

expected to be of short duration (five days or less), the OOS entry should be carried forward in the facility status Control Operator Log entry. If a longer period is anticipated, the OOS entry can be recorded in the OOS log to avoid carrying it forward repeatedly in the Control Operator Log. Information in the Equipment OOS Log shall include the following:

- Equipment description;
- Date declared OOS;
- Reason for being declared OOS;
- Estimated time for equipment to return to service;
- Name of person declaring equipment OOS;
- Maintenance order number or similar tracking mechanism;
- Contact person(s); and
- Date equipment returned to service.

2) In lieu of logging outstanding work authorizations in the plant status entry, a Work Authorization Logbook may be utilized, at the discretion of the GAO or ESSO, during periods of construction, overhauls, or major work; and contains work authorizations, commonly referred to as clearances issued, released, and associated with the special activity. All other entries pertaining to the special activity shall be entered in the Control Operator Log. Work authorization log entries do not need to be carried forward for each facility status but may remain for the duration of the special activity. Information in the Work Authorization Log shall include the following:

   - Date and time the clearance was issued;
   - Name of the Control Operator or Assistant Control Operator issuing the clearance;
   - Identification of clearance; and
   - Name of person the clearance is issued to.

3) In lieu of logging outstanding maintenance activities, a work order management system or electronic database system may be utilized at the discretion of the GAO or ESSO to track maintenance activities and status. This method of recordkeeping is intended to keep track of maintenance records according to maintenance requirements of original equipment manufacturers or industry best practices. Information in the work order management shall include the following but is not limited to:

   - Equipment issue;
   - Work order tracking number;
   - Date and time the work order was issued and completed;

- Names of persons who created, approved work orders and performed the work;
- Maintenance requirement (e.g., OEM recommendation, Non-Destructive Examination, Post heat treatment, etc.,);
- Maintenance activities performed;
- Parts and tools information;
- Job safety and environmental analysis information; and
- Permit information such as hot work, confined space entry, etc.

IV. GENERATING ASSETS AND ENERGY STORAGE SYSTEMS TO WHICH THESE STANDARDS ARE APPLICABLE

Generating Asset and Energy Storage System Logbook Standards are applicable to each facility that generates electric energy by the use of thermal, wind, solar, or other resources or stored energy owned by an electrical corporation or is located in California that is 50 MW or larger. GA and ESS Logbook Standards are not applicable in the following cases (*see* California Pub. Util. Code §§ 761.3 (c)(1)(A)761.3 (c)(2)(A).

1) Nuclear-powered generating facilities that are federally regulated and subject to standards developed by the Nuclear Regulatory Commission, and that participate as members of the Institute of Nuclear Power Operations.
2) Qualifying small power production facilities or qualifying cogeneration facilities within the meaning of §§ 201 and 210 of Title 11 of the federal Public Utility Regulatory Policies Act of 1978 (16 U.S.C. Secs. 796(17), 796(18), and 824a-3), and the regulations adopted pursuant to those sections by the Federal Energy Regulatory Commission (18 C.F.R. Secs. 292.101 to 292.602, inclusive).
3) Generation units installed, operated, and maintained at a customer site, exclusively to serve that customer's load. For the purposes of this General Order, ESS does not include distributed storage systems owned by individual Load Serving Entity (LSE) customers.
4) Facilities owned by a local publicly owned electric utility.
5) Any public agency that may generate electricity incidental to the provision of water or wastewater treatment.
6) Facilities owned by a city and county operating as a public utility, furnishing electric service as provided in California Pub. Util. Code § 10001.

Electrical corporation does not include electric plant:

a) Where electricity is generated on or distributed by the producer through private property solely for its own use or the use of its tenants and not for sale or transmission to others (California Pub. Util. Code § 218(a)),

b) Employing cogeneration technology or producing power from other than a conventional power source solely for one or more of three named purposes (California Pub. Util. Code § 218(b)),
c) Employing landfill gas technology for one or more of three named purposes (California Pub. Util. Code § 218(c)),
d) Employing digester gas technology for one or more of three named purposes (California Pub. Util. Code § 218(d)), and
e) Employing cogeneration technology or producing power from other than a conventional power source for the generation of electricity that physically produced electricity prior to January 1, 1989, and furnished that electricity to immediately adjacent real property for use thereon prior to January 1, 1989 (California Pub. Util. Code § 218(f)).

(END OF APPENDIX A)