# Supplement to the Commission's Report on the Power Plant Performance Program

**Carl Wood, Presiding Commissioner for Rulemaking 02-11-039**

**California Public Utilities Commission**

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## I. Summary and Introduction

- This is a progress report on the Implementation of Senate Bill 39 of the 2001-02 Second Extraordinary Session (SB 39xx), as required by the Supplemental Report of the 2002 Budget Act (See Appendix A), describing work on the program so far, as well as the Commission's current view of where the program is headed.

- The implementation of Maintenance and Operation Standards under SB39xx, which took effect August 7, 2002, is a crucial part of the state's defense against a repeat of the Electricity Crisis of 2000-2001, which was caused in part by shutdowns of power plants divested during electric restructuring. The program provides a crucial source of information about the generation market that would simply not exist otherwise, as well as the ability to assure that plants are kept in good condition, and operated when needed to meet California's electricity needs.

- To our knowledge this program is the first attempt by any state to regulate the maintenance and operation of privately owned power plants. The program is technically and administratively difficult.

- The legislation sets up a two-part process, in which a joint Committee of the Commission and the California Independent System Operator (CAISO) establishes standards, and the Commission implements and enforces those standards.

- The Commission is implementing this complex program by providing technical, procedural, and legal assistance to the Committee, which is responsible for adopting the new Operation and Maintenance Standards, and through careful design of the implementation and enforcement process for those standards. The Commission has released a draft General Order on implementation of Maintenance Standards, and will begin enforcement audits when that order is finalized.

- In addition to audits, the Commission will enforce standards through inspections and special investigations. If necessary, the Commission will impose sanctions through formal proceedings that will accord full procedural rights to facility owners.

- The legislation applies to about 188 plants, which can generate enough power to supply about three-quarters of the CAISO's peak demand. The Commission expects to concentrate its enforcement efforts on plants fired by natural gas, which are the most likely to affect the reliability of the state’s electric supply.

- Since January 2001, staff has performed 868 power plant inspections, spending an average of three hours and forty-five minutes on each inspection. Staff hired since the August, 2002 effective date of SB 39xx have spent the bulk of their time

in training and in implementing the program. Current projections are that they will spend increasing amounts of time in audits, investigations, and enforcement in beginning in early 2004**.**

- Commission staff continues to inspect out-of-service power plants; the implementation of Maintenance and Operations Standards will enhance the effectiveness of these inspections.

- The Commission will collect data from various sources in order to target audits and enforce standards.

- The state's budget crisis threatens the future of this crucial program, since about one quarter the project's staff, newly trained, has already left under the threat of layoffs.

- The budget asked for several specific workload figures. Because this program is a work in progress, some industry data is not yet available. This report presents currently available data; the Commission and the Presiding Commissioner will submit updates as additional information becomes available.

  In 2001 and 2002 there were, respectively, 7974 and 7396 unplanned outages at all California power plants, respectively; however, no figure is now available only specifically for those power plants subject to SB 39xx. The Commission is currently gathering information from generators on safety problems at power plants.

**II. The implementation of Maintenance and Operation Standards under Senate Bill 39xx, which took effect August 7, 2002, is a crucial part of the state's defense against a repeat of the Electricity Crisis of 2000-2001, since that crisis was caused in part by shutdowns of power plants divested during electric restructuring. The program provides a crucial source of information about the generation market that would simply not exist otherwise, as well as the ability to assure that plants are kept in good condition, and operated when needed to meet California's electricity needs.**

Enacted in April 2002, SB 39xx is a crucial part of the state's defense against a repeat of the energy crisis that ravaged the state's electric system in the years 2000-2001. The stage for the crisis was set by the state's ill-advised program to restructure the electric industry, which placed nearly a third of the state's generating capacity under private ownership and transferred regulatory responsibility for wholesale electric prices to the Federal Energy Regulatory Commission (FERC).

Prior to the power plant divestiture phase of deregulation, Californians could depend on an integrated approach to operation and maintenance of a fleet of power plants by their utility owners, who were comprehensively regulated and required to provide reasonably priced, reliable service under state government oversight.

Divestiture fractured responsibility for operation and maintenance. The state's electric utilities no longer were responsible for coordinating the maintenance and operation of the state's power plants. Rather, those functions were left to market mechanisms.

The state's electricity crisis, which was unprecedented in its scope and impact, resulted (among other things) in power cuts to millions of Californians. On thirty-eight days between October 2000 and May 2001, the state's Independent System Operator ordered rotating blackouts (to all customers in specific geographic areas) or specific power interruptions to certain customers.[1] Beginning in May 2000, wholesale prices increased by factors as high as 50 times previous levels, eventually resulting in overcharges estimated at 9 billion dollars to Californians alone.[2] In June 2001, when FERC finally ordered generators to make all supplies available, through the so-called "must-offer" rule, prices dropped sharply, and power cuts essentially ended.

The blackouts, power cuts, and price increases were in significant part due to shutdowns of, or reduced production from, the state's power plants, including the state's older oil and gas-fired generating plants. During the restructuring of the electric industry, the state's three large investor-owned utilities sold most of these plants--amounting to more than 16,000 megawatts or roughly a third of the state's total generating capacity-- to several independent generating companies. At one point during the winter of 2000, fully half of the total capacity of the plants owned by the five largest independents[3] was out-of-

[1] The specific interruptions affected firms that had received discounts in return for allowing their power to be interrupted; however, those interruptions were generally expected to be occasional and most likely to occur during peak electricity demand in the summer.
[2] Market prices increased throughout the West.
[3] AES/Williams, Duke, Dynegy, Mirant, and Reliant.

service. Averaging over the hours when power was cut between October 1, 2000 and May 31, 2001, roughly 5,000 MW--nearly a third--of this capacity was out of service. [4]

Such outage rates raised crucial public questions about the legitimacy of plant outages, particularly because market shortages result in increased profits to generators. Plant owners claimed, among other things, that the utilities (the plant's previous owners), anticipating sale of the plants, had deferred necessary maintenance, and that unusually high demand for electricity the previous summer, and resulting unprecedented production from their plants during that season had led to unusually high wear and tear.

Investigations of these claims faced major barriers, primarily due to a lack of ready information on the maintenance history and condition of power plants, as well as the record of operations of the plants themselves. Unions claimed that the new owners had cut back sharply on maintenance staff on the plants, contributing to the plant's poor performance.[5] A number of academic studies argued that prices were well above competitive levels, even in hours when supplies exceeded demand, and no shortage existed. However, all these studies had to make many assumptions, since relevant data was held closely confidential under FERC rules. In particular, these studies had to make assumptions about reasonable levels of plant outages, since detailed information on actual outages were not available.

In April 2002, citing reports that "average monthly power plant outages for the year 2001 were double what they were in the year 2000 and triple what they were in 1999," as well as evidence that "generators have manipulated California's marketplace by withholding power in order to maximize profits and assert market power in California," a Senate Rules Committee Report on SB 39xx concluded that "the state has a public health and safety interest to examine the problem and take action to remedy it."[6] Accordingly, SB 39xx finds that the public interest requires that power plants in the state be properly maintained and operated, and directs the California Public Utilities Commission (Commission) and the California Independent System Operator (CAISO) to work together to achieve this goal. On April 25, 2002, the Governor signed this bill, which took effect on August 7, 2002.[7] (For the text of the bill, see Appendix B.)

The legislation set up a two-part process for the adoption and implementation of maintenance and operation standards, the subject of this report. First, the legislation established a special joint committee, California Electric Generation Facilities Standards Committee (Committee), to adopt standards. Second, the legislation also directed the Commission to implement and enforce them. The legislation also directed the

[4] December 7, 2000, according to data provided to The Commission by the California Independent System Operator. See California Public Utilities Commission, *Investigative Report on Wholesale Electric Generation,* September 2002, p.16.

[5] See March 2001 *International Brotherhood of Electrical Workers (IBEW) Journal*

[6] See the second of two Senate Floor Analyses dated 4/10/02 at http://www.leginfo.ca.gov,

[7] The bill took effect 90 days after May 9th, the close of the extended legislative session in which the bill passed.

Commission to enforce CAISO's rules (or "protocols") which govern when generators can schedule planned maintenance at their power plants.

Meanwhile, using its subpoena power, the Commission obtained actual data on power production and power plant outages from the CAISO, and found that many plants that remained in service were not utilized fully during the over 200 hours when power supplies were cut, in part because their owners did not bid power from those plants into the state's markets. However, even that study depended on the only available summary database of plant outages, supplied by the CAISO. After investigation of a few hours of disaggregated data, FERC staff announced that errors in the summary database largely invalidated the Commission's conclusions (though the details of the FERC's work have not been released and cannot be confirmed). In any case, both the federal and state reports depended on the accuracy of outage data supplied by generators to the CAISO; as can be seen below, this data may be seriously flawed.

FERC has established several proceedings to investigate the physical withholding elements of the crisis, but has conducted its proceedings largely in secret, so its conclusions cannot be reviewed.[8] In certain of these cases, FERC has already settled with generators for relatively small amounts of money. In one case, FERC released documents related to a settlement only in response to a suit brought by *The Wall Street Journal*. These documents included transcripts that appear to show that the generator in question feigned some of the shutdowns in order to increase the market price of electricity.[9] FERC's settlement, which required the generator to return roughly $13 million, took account of unjustified profits only on the two days covered by the transcripts, ignoring the possibility that the conduct revealed had occurred over a period of months. A group of California utilities and public agencies (including the Commission) presented evidence at FERC that such market manipulation was widespread.[10] Still, FERC's reports so far largely concentrate on activities by Enron, which had little generation in California, and which was bankrupt and essentially out of business by the time the investigations got underway.

Finally, FERC continues to move toward reliance on markets for provision of electricity, despite many evident problems. In particular, FERC has announced its intention to

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[8] The Federal Power Act expressly withholds authority over facilities used for the generation of electric energy, FPA 201(b), 16 USC 824(b); it is not clear what authority FERC is exercising in these investigations.

[9] See http://www.ferc.gov/industries/electric/indus-act/wem/pa02-2.asp, "Commission Approves $13.8 Million Settlement With Reliant Energy over Physical Withholding In California Power Exchange Market." The transcripts contain extensive discussions between traders, brokers, and plants. For example, on June 19, 2000, an operations manager for Reliant (one of the independent generators) told a power plant manager: "Longer term than that we may … need to get some [power plant] units off for a couple of days to try to get some movement hopefully in the PX [the California wholesale market]." The response of the plant manager: "Yeah, I see. Okay then, I'll just look at my manning schedule and cancel some overtime probably."

[10] Filing of the California Parties, March 3 and 20, 2003, in FERC Docket EL 00-95.

remove the "must offer" rule--the requirement that ended the crisis--as soon as circumstances allow.

If the state intends to rely on independently-owned power sources, the implementation of SB 39xx must be a priority. FERC's record to date makes it clear that California cannot depend solely on the federal government to protect Californians from future crises in electric markets. The program set up by SB 39xx provides crucial protections for California's ratepayers, using the state's jurisdiction over the operations and maintenance activities of the state's electrical generating plants. While this program presents some unprecedented technical difficulties (discussed below), California has little other choice but to move forward with the implementation of this program. Through this program, the state will be able to monitor the condition of the state's power plants, as well as their maintenance and operation. The program provides a crucial source of information about the generation market that would simply not exist otherwise, as well as the ability to assure that plants are kept in good condition, and operated when needed to meet California's electricity needs.

**III. To our knowledge this program is the first attempt by any state to regulate the maintenance and operation of privately owned power plants. The program is technically and administratively difficult.**

The program established by SB 39xx is complicated both technically and administratively, and represents a major challenge for the Committee and the Commission. The program must deal with a wide variety of power plants, owned by several different independent owners. Inherent in any such program are tradeoffs between the costs imposed by regulatory programs versus the benefits derived through regulation.

The program is based in part on existing regulatory models. One is the nuclear industry, which is subject to extensive regulation by the Nuclear Regulatory Commission (NRC) and audits by the Institute of Nuclear Power Plant Operators (INPO). Another is the airline industry and the Federal Aviation Administration, which requires airlines to keep aircraft of many different types maintained properly and safe.

The Commission and the Committee, in their respective roles, need to steer a careful course between a regulatory program that is ineffective, and one that places unnecessary and uneconomic burdens on the industry. Clearly, individual power plants don't pose safety hazards to the general population as severe as those inherent in the airline or nuclear industry. However, power outages caused by unreliable power plants, in the aggregate, can cause significant health and safety hazards and damaging economic consequences to the general population. The Commission believes that while an effective regulatory program is required for California's fossil-fired and hydroelectric power plants, that program should be less stringent than those applicable in the nuclear and aviation industries.

Power plants are of various designs, operate under a variety of environmental conditions and are very complicated. This fact makes the task of designing standardized maintenance standards difficult. Some of California's power plants are powered by boilers, which vary widely in design and operation. Other power plants are powered by gas turbines, while "combined cycle plants" use both gas turbines and steam generators. Hydroelectric plants also make a crucial contribution to the state's electricity supplies. All of these power plants have subsystems designed and built by various manufacturers with different maintenance requirements. In addition, they vary in age from brand new to 50 years old, operate in various environments (cold, heat, salt water, etc.) and may be designed for base load or peak power purposes, necessitating different maintenance programs. Further complicating the imposition of a regulatory scheme, plants built for one purpose, such as continuous baseload operation, are now used to meet seasonal or daily peaks, subjecting them to stresses and conditions for which they were not designed.

Beyond the mere mechanical differences are business issues which affect company profits and viability, such as different business plans, different tolerances for risk, different marketing strategies, different maintenance strategies, maintenance required by manufacturer's long term service agreements (LTSAs), age and efficiency of the

company’s fleet, etc. Under the old regulated regime, decisions were less driven by corporate profits because utilities were allowed a reasonable return on investment. This allowed the utilities to make decisions taking reliability responsibilities into account, rather than simply maximizing profits.

**IV. The Commission is implementing this complex program by providing technical, procedural, and legal assistance to the Committee, which is responsible for adopting the new Operation and Maintenance Standards, and through careful design of the implementation and enforcement process for those standards. The Commission has released a draft General Order on implementation of Maintenance Standards, and will begin enforcement audits when that order is finalized.**

The Commission and the Committee, in cooperation with the CAISO, are moving to adopt and implement Operation and Maintenance Standards as required by SB 39xx. The Committee is adopting the standards systematically, dividing them into five different component standards. After the Committee adopts each standard, the Commission considers implementation methods and rules. The Commission is also planning to enforce Outage Coordination Protocols already adopted by the CAISO. The maintenance standards are the most detailed of the standards adopted so far; both in design and implementation. The objective has been to be effective across many different kinds of plants, in different geographical locations, and operating under different management philosophies. Operation Standards, now under development, are likely to be similarly complex.

Under Section 761.3 of the Public Utilities Code, the Committee is composed of 2 members nominated by the Commission and CAISO, respectively, and a third member chosen by them. CPUC Commissioner Carl Wood and Michael Kahn, Chairman of the CAISO Board of Governors, nominated Glenn Bjorklund, a former executive for the Southern California Edison Company, as the third member of the Committee. Section 761.3 also directs the Committee to adopt standards for the maintenance and operation of most generators in California (for a discussion of generators exempt from the statute, see Section VI.) The statute requires the CAISO and the Commission to provide staff to the Committee. The Committee has been holding public meetings since December 2002, with full opportunity for participation in developing these standards.

The Commission has provided extensive staff support to the Committee's work in this complex undertaking, including technical, procedural, and legal assistance. Commission Administrative Law Judges have assisted the Committee in holding public meetings, developing the Committee's record, and in developing General Duty Standards (see below). Commission technical staff have consulted with the Committee on revisions to Maintenance Standards, have been largely responsible for drafting of Logbook Standards, have established the Committee's document repository and website, and are now developing Operations Standards. Commission Legal staff have provided legal assistance throughout this process. (See Appendix C for a chronology of Committee and Commission Actions; also see http://www.cpuc.ca.gov/static/cegfsc/index.htm, the Committee's website for standards adopted by the Committee and other documents).

Section 761.3 also directs the Commission to implement and enforce the standards adopted by the Committee and to enforce the protocols of the CAISO for the scheduling of power plant outages. In November 2002, The Commission opened a corresponding

rulemaking proceeding, R.02-11-039,[11] to implement and enforce adopted standards with the participation and comments of generators and other parties. The Commission has received comments on the implementation of each of the standards so far adopted by the Committee. Meanwhile, the Commission has hired new staff (see Section IX) and initiated the Electric Generation Performance Program, part of the "California Energy Plan" sponsored by the Commission, the California Energy Commission (CEC) and the Consumer Power and Energy Financing Authority. On October 2, 2003, the Commission released a draft General Order on the implementation and enforcement of Maintenance Standards, and will begin enforcement audits when the Commission issues a final decision.

The Committee has divided the Operation and Maintenance standards into five components. First, in order to set an overarching set of expectations for power plant owners, and recognizing that detailed standards would take some time to develop and implement, the Committee has adopted a set of umbrella "General Duty Standards" intended to take effect quickly. Second, the Committee has also approved a comprehensive and detailed set of Maintenance Standards, covering the plants mechanical and management systems. Third, the Committee has approved standards for records (logbooks) to be kept by thermal power plants. Because a good record of plant operations and maintenance activities is crucial to implementation of any standard, the Committee considers the Logbook standard to be an integral part of Maintenance and Operation Standards. Fourth, the Committee has issued draft Logbook Standards for hydroelectric plants and asked parties to confer and produce a final version for the Committee's consideration. Fifth and finally, the Committee has ordered its staff to develop a set of Operation Standards. Each of these standards is discussed in more detail below.

## GENERAL DUTY STANDARDS

The General Duty Standards, adopted May, 2 2003, are a set of six short rules that summarize generator's responsibilities as the owner of facilities that are essential to the public. The rules provide an overarching, umbrella standard requiring generators to make good faith efforts to provide power when California needs it. Further, the standards serve as interim standards while the Committee and the Commission develop and implement much more detailed standards. The Committee approved the General Duty Standards on May 2, 2003. The Commission has received comments on implementation of those standards and will issue a decision on implementation of those standards later this year.

## MAINTENANCE STANDARDS

The Maintenance Standards adopted by the Committee on May 2, 2003 are the most detailed of the standards adopted so far, both in design and implementation. The objective has been to be effective across many different kinds of plants, in different geographical locations, and operating under different management. Originally developed at the CAISO, and based on similar programs in other industries, the maintenance

[11] (See http://www.cpuc.ca.gov/proceedings/R0211039_doc.htm)

standards program requires that generators follow 18 standards, which amount to good maintenance principles, when carrying out their power plant maintenance programs, but does not spell out the contents of those programs specifically.

The Commission will therefore implement these standards by requiring generators themselves to specify how they will comply with the standards. In particular, under a proposed Commission General Order issued October 2, 2003, generators are required to maintain specific maintenance plans and to make those plans available to Commission Staff upon request. Once the General Order is adopted in final form, the Commission staff will begin detailed, on-site audits to assure that generators are complying with the standards.

Originally developed at the CAISO, the Maintenance Standards are based on standards applied in similar industries. For example, nuclear power plants are covered by a federal regulatory scheme consisting of general standards for all nuclear plants, a set of plans for compliance prepared by each plant, and a system of industry-wide compliance audits. The Federal Aviation Administration oversees a similar system for airline maintenance programs.

The maintenance standards are general rather than specific and prescriptive, because they are designed to apply to a wide variety of power plants managed under different management approaches. Even among gas-fired power plants, for example, no one set of maintenance intervals, for example, can be applicable to combustion turbines, steam boilers, and combined cycle plants of many different individual designs and in different locations. Further, plant owners can take different approaches to maintaining plant availability, ranging from regular and systematic overhauls to replacement of parts only upon failure. Which approach is most effective depends on the likelihood of component failure, the criticality of the part to plant operation, and the availability of replacement part; areas that involve expertise and judgment, and which may vary between plants and between different components. Thus, the 18 standards require generators to maintain programs rather than specific maintenance activities, and cover nine functional/organizational areas:

- Maintenance Organization Management and Leadership
- Maintenance Personnel Resources
- Maintenance Strategy
- Maintenance Procedures Use
- Work Management Process
- Procurement of Parts, Material and Services
- Equipment Performance and Monitoring
- Maintenance History, and
- Maintenance Facilities, Tools, and Equipment.

Each of the 18 standards is accompanied by a number of assessment guidelines, which help both generators and regulators judge whether the generator is complying with the standard. For example, the first standard in the Maintenance Organization Management and Leadership category is Safety. The Safety standard is accompanied by specific assessment guidelines for generators on how individuals and managers, at all levels in the organization must contribute to the safety culture of the work environment and how work practice norms in the organization must promote the safety culture.

Because the guidelines overlap to some extent, generators are not expected to comply with each and every guideline; rather, they are required to have effective programs overall in each area covered by a standard.

## LOGBOOK STANDARDS

Because a good record of plant operations and maintenance activities is crucial to implementation of Operations and Maintenance Standards, the Committee has adopted, as an integral part of those standards, a requirement that power plants keep complete logbooks. The standard requires logbooks to contain a formal record of real time operating decisions and actions as well as the status of the generating units and auxiliary equipment. Further, the logbooks must record 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 power plant, as well as communications between the power plant and outside entities. Standards require that this information be readily available to operators and Commission Staff, as well as other authorized personnel.

On April 1, 2002, the Committee adopted a logbook standard for thermal power plants. The Committee has since proposed a corresponding standard for hydroelectric power plants. The Commission requested and received comments on the implementation of the standard for thermal power plants; and issued a proposed decision on October 29, 2003.

## OUTAGE COORDINATION PROTOCOLS

SB 39xx requires the Commission to enforce the CAISO's Outage Coordination Protocols, which require generators to report maintenance schedules to the CAISO, and to change those schedules at the CAISO's request. These protocols assure that only so many generators schedule maintenance at any one time, in turn assuring that enough generators remain on line to meet load year-round. Since the CAISO's protocols are already in place, the Committee does not need to act. The Commission will consider implementation and enforcement of these protocols in its ongoing OIR.

## OPERATIONS STANDARDS

The Committee has asked its staff to develop operating standards for power plants that are consistent with:

- Public health and safety, including the need for electrical reliability
- The duty power plants have to serve the public,
- Efficient and effective operations at the highest performance standards, providing power at reasonable rates,
- Delivery of power when and where it is needed, and
- Applicability to a wide range of power plant technologies and operating conditions.

Therefore, the Committee specified that the standards should

- Assure the availability of power, in order to avoid blackouts and service interruptions,
- Assure that plants operate to make power available when needed through timely plant start-up and participation in bidding or scheduling process,
- Except in exceptional circumstances, restrict operations procedures (such as rapid changes in generation levels) that could damage plants and reduce their availability,
- Assure the CAISO's ability to dispatch plants as needed, and
- Assure that the plants are operated so that the CAISO can meet applicable requirements promulgated by the Western Electricity Coordination Council (the West's electricity reliability organization).

Acting as staff to the Committee, and working with the CAISO, Commission staff is currently reviewing current and past day-to-day operating practices at California electric generating facilities and comparing these operating practices to accepted industry standards. Further, staff will analyze and identify operating practices that could adversely affect the reliability and availability of California power plants and recommend appropriate standards and assessment guidelines. Operations standards, like maintenance standards, are likely to be general rather than prescriptive, since they will apply to many different kinds of plants, in different geographical locations, and operating under different management philosophies. The staff will proposed draft standards to the Committee later this year.

**V. In addition to audits, the Commission will enforce standards through inspections and special investigations. If necessary, the Commission will impose sanctions through formal proceedings that will accord full procedural rights to facility owners.**

The Commission will enforce the standards once they are adopted and implemented, by conducting audits, inspections and special investigations. Using performance data, inspection reports, and other data, the Commission will target plants that appear to have performance problems and will conduct "triggered audits." In addition, the Commission will conduct "random" audits to detect deferred maintenance. The Commission will also use plant performance data to target which standards and which plant systems to examine in each audit. Once the program is fully established, and if the program is fully staffed, the Commission expects to conduct roughly two audits a month, using teams of five to six engineers and other analysts. If generators do not correct violations of standards, the Commission will take formal enforcement action, according enforcement targets full due process rights.

TRIGGERED AUDITS

The purpose of triggered audits is to target power plants that have shown a clear decline in performance. Commission staff will monitor performance data collected from various sources (see Section VIII) and outage inspections. Any indication of performance decline that would jeopardize the performance of the plant and reliability of the grid will prompt Commission staff to conduct a triggered audit.

RANDOM AUDITS

The purpose of random audits is to detect early indications of performance problems caused by poor maintenance. Deferred maintenance can cause problems that are not immediately apparent, but can cause serious—and expensive—problems in the longer run. In order to prevent outages that will adversely affect the reliability of the grid, Commission will conduct random audits to assure that generators do not systematically defer maintenance.

AUDIT SCHEDULE

The Commission expects to begin to audit power plants as soon as standards are adopted and implemented. Once all the standards are fully implemented, the staff will begin a full audit schedule, with teams of several engineers, financial examiners, and/or analysts. The objective of the audit will be to determine whether the power plant is in compliance with Operation and Maintenance Standards. The teams will examine performance data and other information about each plant, as well as maintenance filings and other information submitted by each plant, to identify the most important plant and management systems for analysis. Auditors will visit plant and headquarters sites, submit

data requests, analyze the information they collect, and prepare a written report on each audit. Each team will spend roughly a month on each audit. With full staffing, the Commission expects to field two audit teams at once, with a total of 24 audits per year.

ENFORCEMENT

If auditors find that plants are out of compliance with the standards the Commission will try to resolve problems informally, but where generators do not respond cooperatively, the Commission will open formal proceedings. In such cases, the Commission will as always take care to preserve the due process rights of the targets of enforcement action, through full notice of any action, development of a public record, the opportunity for hearings, and the right of appeal of Commission decisions.

SPECIAL INVESTIGATIONS AND INSPECTIONS

In addition to targeted and random audits, the Commission will enforce standards through continued inspections and special investigations. As discussed in Section VII, the Commission continues to inspect power plants that go out-of-service or that cut production due to mechanical or other problems. Both independently, and as part of its audit program, staff will conduct investigations of problems at power plants, to determine the cause of such problems. Staff will also analyze performance data on equipment failures to identify problems that appear to be industry wide.

**VI. The legislation applies to about 188 plants, which can generate enough power to supply about three-quarters of the CAISO's peak demand. The Commission expects to concentrate its enforcement efforts on plants fired by natural gas, which are the most likely to affect the reliability of the state's electric supply.**

In its enforcement efforts, the Commission expects to emphasize power plants that are most important to the state's electricity system and those that are most likely to affect reliability. Generally speaking, nuclear plants, Qualified Facilities,[12] and municipal plants are exempt from SB 39xx. The remaining 188 plants[13] that are subject to SB 39xx comprise roughly half of the state's capacity, and are equivalent to about 75% of the peak load of the CAISO. Of these plants, only 127 are larger than 10 megawatts. An informal study of these covered plants by CPUC staff suggests that those fired by natural gas[14] are the most likely to affect system reliability, in part because they are large and in part because they are out-of-service more of the time than other kinds of plants.

The legislation exempts several classes of power plants, which are therefore not subject to maintenance and operations standards. While the legislation does not explicitly state the reason for these exemptions, exempted plants appear less likely to be poorly maintained or to be used to influence market prices. To simplify somewhat, the legislation exempts nuclear power plants, qualifying facilities (plants that use cogeneration or renewable resources), and power plants owned by municipalities. Nuclear power plants, which are regulated by the federal Nuclear Regulatory Commission, are already subject to audits of maintenance, operations, and safety. Plants owned by municipal utilities were unaffected by industry restructuring and are thus generally directly operated by those utilities, which have a direct stake in maintaining adequate power supplies. Finally, the prices charged by many qualifying facilities are set by contract with the state's utilities; these contracts impose sizeable penalties if plants fail to meet reliability targets. By number, all but 188 of the state's power plants, 16.8 percent of the state's total, are exempt from the legislation.

However, the 188 power plants that <u>are</u> covered by SB 39xx are a significant part of California's electricity supply, since they can produce 32,769 megawatts, or roughly 50% of the state's installed generation capacity, and about three-quarters of the peak power demand of the state's electricity market, run through the state's Independent System Operator. The CAISO serves nearly all Californians who are not served by the exempt municipal utilities.

Of the 34,769 megawatts of capacity subject to maintenance and operations standards, 83.1.3 percent are fired by fossil fuels, and 78 percent by natural gas specifically.[15]

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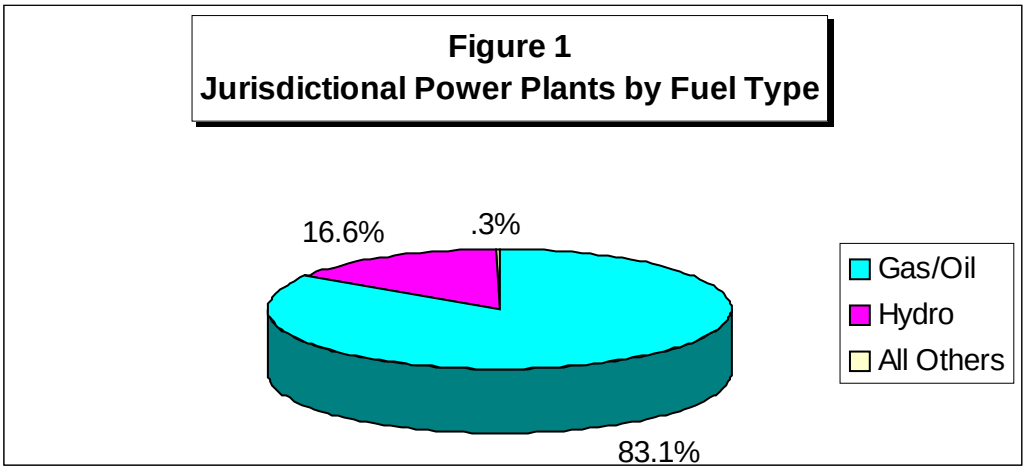
[12] As defined under the federal Public Utilities Regulatory Policies Act (1978); in general, facilities employing cogeneration or renewable resources.

[13] All of these plants are located within California, except for the Mohave plant, which is outside of California but operated by a California electric utility (Southern California Edison).

[14] Some natural gas plants can also use oil, though most use gas for economic and/or environmental reasons.

[15] Six plants, totaling 61 megawatts, use distillate oil only; the Mohave plant, located in Nevada, but operated by Southern California Edison, generates 1580 megawatts.

While only 74 of the 220 plants covered by the law are fired by natural gas, natural gas plants are generally much larger than other covered plants. Another 106 hydroelectric plants covered by the law account for only 16.6% of covered capacity. The remaining 8 plants, powered by other sources, account for only 0.3% of covered capacity. (see Figure 1).




Finally, it appears that gas-fired plants account for more than their percentage share of power plant breakdowns during peak hours. An informal study conducted by Commission staff, while not conclusive, supports this conclusion, and also shows that oil and gas plants accounted for most of the peak megawatts of generation lost to unplanned outages (see Appendix D).

Hydroelectric plants, while crucial to the state's electric system, will probably receive lower priority than gas-fired plants in the enforcement of Maintenance and Operation standards. Because their output can be adjusted very quickly, hydroelectric plants are very valuable in following second-by-second changes in electricity demand, and they can help meet peak demands cost-effectively. Most of the hydroelectric capacity subject to SBx2 39 is operated by the state's investor-owned utilities. This capacity has historically operated at very high rates of availability, in part because hydroelectric plants are relatively simple in mechanical terms compared to thermal power plants. The Commission will monitor their performance carefully, and shift the emphasis of enforcement efforts if problems appear to develop at hydroelectric facilities.

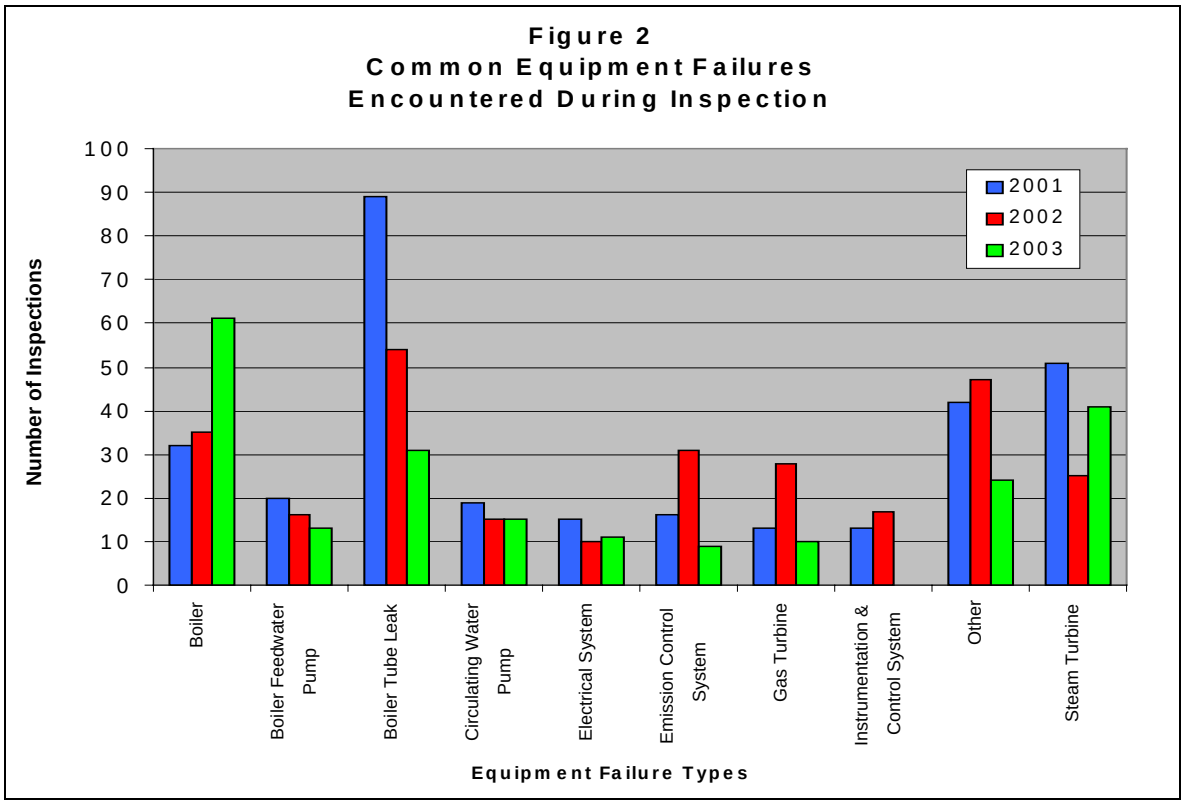
**VII. Commission staff continues to inspect out-of-service power plants; the implementation of Maintenance and Operations Standards will likely enhance the effectiveness of these inspections.**

Commission staff has been inspecting power plant units involved in forced and scheduled outages since January 2001. At first, Commission inspectors were diverted from other duties, including inspections of gas and electric utility infrastructure, which had to be deferred. In 2003, as the Commission hired additional staff (see Section IX), inspectors returned to their previous duties.

Since January 2001, Commission staff has performed approximately 424 inspections associated with forced outages, 369 inspections of scheduled outages and 75 inspections involving units curtailed more than 50 megawatts. On average, Commission inspectors conduct 25 inspections per month. A typical outage inspection involves an hour at the power plant facility; two and a half hours travel time; 45 minutes of report preparation; and 30 minutes of follow-up work. The contribution of inspections to the program's workload is reviewed in Section IX of the report.

Commission staff has found that the most common causes of outages in power plants are boiler-related problems such as boiler tube leaks. Plant age may be a contributing factor since the majority of the plants in California using boilers are at least 30 years old. As the boiler tubes age, they become more susceptible to corrosion leaks as a result of exposure to heat and water. Plants try to reduce corrosion by maintaining proper water chemistry. However, tubes will eventually need replacement.

Other common causes of power plant outages include problems with steam and gas turbines, circulating water pumps, emission control equipment, instrumentation and control systems and electrical systems. Figure 2 shows the most common failures in power plant equipment encountered during inspections.




Based on information gathered during plant inspections, Commission staff has found that the most common cause of restoration delay is the unavailability of parts. In many instances, parts are ordered from suppliers in other states. In other instances, parts must be custom-built for older units.

Inspections of plants involved in outages alone, although beneficial, cannot effectively determine if plants have been maintained and operated properly over time. Therefore, the implementation of Maintenance and Operations Standards will likely enhance the effectiveness of these inspections, since maintenance history can be taken into account.

**VIII. The Commission will collect data from various sources in order to target audits and enforce standards.**

Power plant performance data is necessary to make strategic decisions on auditing and enforcement. The Commission will collect power plant performance data from three primary sources: the CAISO, the North American Electric Reliability Council (NERC) and the generators.

CAISO

As part of its responsibility to plan and operate the California electric grid, the CAISO collects and documents various types of data, including data related to power plant outages. The CAISO maintains most of this data in a database called "Scheduling Logging for the ISO of California" or SLIC.

The SLIC database contains current and historical information on each power plant outage, including the date and time of the outage, the power plant facilities affected, the cause of the outage, and restoration time. The Commission is working with the CAISO to obtain access to the data in the SLIC database.

NORTH AMERICAN ELECTRICITY RELIABILITY COUNCIL (NERC)

NERC is a not-for-profit corporation that sets standards for the operation and planning of electric systems. NERC collects operating information on electric generating equipment from generators nationwide who provide the information to NERC on a voluntary basis. This data is collected into a system called the "Generating Availability Data System" or GADS.

The GADS system is comprised of three databases: The design database, the performance database and the event database. The design database contains information about the physical characteristics of the plants. The performance database contains summary measures on the amount of electricity produced, the hours a unit was available but not used, the time the unit was out of service or operating at limited capacity. The event data describes changes in the plants availability, and tracks the failure of major equipment.

The data in GADS is valuable in performing equipment reliability and availability analysis. The Commission plans to obtain national GADS benchmarking data from NERC. The proposed General Order, issued October 2, 2003, requires California generators to submit GADS data to NERC.

GENERATORS

The Commission will obtain plant-specific data directly from the generators. This will likely include data on equipment condition, outages, operation and maintenance. The data may be provided to the Commission on a periodic basis or obtained during audits and investigations.

PERFORMANCE METRICS

Access to performance data will enable the Commission to establish historical benchmarks and monitor future power plant performance. Commission staff will calculate performance metrics that measure a power plant unit’s vulnerability to forced and scheduled outages.

One of the performance metrics that the Commission plans to use in establishing benchmarks and monitoring performance is the Capacity Unavailability Factor (CUF). CUF is the percentage of hours of generation that was not available over a specified period. Monthly CUF calculations performed for each power plant unit will assist Commission staff in making decisions related to audits and investigations. For example, a power plant unit’s CUF that is higher than the threshold established for that unit, based on its historical benchmark, may trigger a Commission audit or an investigation.

**IX. The state's budget crisis threatens the future of this crucial program, since about one quarter the project's staff, newly trained, has already left under the threat of layoffs. To date, staff hired in early 2003 has spent the bulk of its time in training and in implementing the program, but will spend increasing amounts of time in audits, investigations, and enforcement as the program is more fully implemented in early 2004.**

The Supplemental Report of the 2002 Budget Act asks for performance measurements for evaluating the Commission's power plant performance as well as workload estimates for the Commission staff itself. As this report has explained, this program is a work in progress.

While the Commission is working with the NERC and the CAISO to collect data necessary to evaluate generator performance and the program itself, much of that data is not yet available. This section presents as much data as is currently available, and describes a number of serious incidents reported in the press involving contractors working at power plants.

The rest of this section provides actual workload figures for the Commission's staff during program start-up, as well as estimates for the workload once the program is fully implemented. However, the state's fiscal crisis has already lead to the departure of about one quarter of the project's staff; if threatened layoffs occur, more than two-thirds of the staff working on this program could be laid off.

## Data for Performance Evaluation

In particular, the Budget Report requests:

- The number of unplanned outages and significant events (including major outages, major equipment failures, and/or accidents involving personal injuries/death.
- The number of power plant inspections performed, including the average time per inspection.
- The number of investigations performed due to unplanned outages and/or other major events, including average time per investigation.

### Unplanned Outages and Significant Events

Only limited data on plant outages is currently available. According to the CAISO, generators reported the following unplanned outages between 2001 and August 2003:

## Unplanned Outages 2001-2003

| Year | Total (Year) | Total (Jan Through Aug) |
|---|---|---|
| **2001** | **7974** | **4589** |
| **2002** | **7396** | **5305** |
| **2003** | | **5778** |

**Source: California Independent System Operator (CAISO)**

These figures include outages at nuclear plants and qualifying facilities that are within the ISO's service territory but exempted from SBx2 39. The Commission Staff has requested a breakdown of this data by the size of the outage, and will provide a supplemental report when this data becomes available.

In the future, the Commission will be able to track performance unit-by-unit using two sources of information. The first is the Generating Availability Data System (GADS), maintained by the North American Electric Reliability Council (NERC). GADs includes detailed information on plant availability, design, and events, including outages and outage-related equipment failures. The proposed General Order that would implement Maintenance Standards requires facility owners to report this detailed data to the NERC, and to authorize release of the data to the Commission. Since participation in the GADs system has been voluntary, the GADs database is currently incomplete. Second, the Commission Staff is working with the CAISO to gain direct access to the CAISO's outage database.

Major Equipment Failures

Data on equipment failures is available only when those failures lead to plant outages. The only currently available data on such outage-related failures comes from the Commission's ongoing power plant inspection program. Generally speaking, the Commission inspects plants owned by the state's largest independent generators when those plants lose more than 50 megawatts of capacity due to an outage or other problem. Results of those inspections are presented in Section VII, above.

The Commission Staff will analyze any additional plant failure databases as they become available. As noted above, the Commission is working with the CAISO to gain access to the CAISO's outage database, which includes information on the cause of outages. Further, the NERC's GADs database includes information on outage-related equipment problems. Finally, the Commission has requested data directly from generators on events at power plants, which have led to property damage inside or outside the plants. The Commission will provide supplemental reports as this data becomes available.

Accidents Involving Personal Injury/Death:

Reliable information on accidents at generation plants is not yet available. Staff analyzed data from the federal Occupational Safety and Health Administration (OSHA) on accidents involving personal injury or death in the power production industry.

**Summary of Accidents for SIC Code 4911*
1/1/2001-10/7/2003**

| Year | Fatalities | Injuries Requiring Hospitalization | Injuries Not Requiring Hospitalization |
|---|---|---|---|
| **2001** | **3** | **20** | **6** |
| **2002** | **6** | **28** | **7** |
| **2003** | **5** | **18** | **4** |

**Source: U.S. Department of Labor OSHA Inspection Database**
*** "Establishments that engage in the generation, transmission, and/or distribution of electric energy for sale"**

This database, part of OSHA's enforcement program, was not designed to identify problems at power plants specifically. First, the reports identify the city where the accident occurred, but not the specific location within that city. Second, the reports lump power production, transmission, and generation together. Finally, the accident is classified according to the main business of the employer (rather than the owner of the location of the accident), which makes it difficult to track accidents involving specialized contractors who work at power plants. Therefore, the Commission is in the process of gathering directly from generators information on fatalities and injuries requiring hospitalization. The Commission Staff will submit this information, when available, in a supplemental report.

The Commission has noted a number of incidents reported in the press involving damage by and deaths of contractors working at California power plants, including the following:

- On May 12, 2003 at Calpine's Geysers facility, in Sonoma County, Gregory McVay, 43, a maintenance worker for X-Cell-Marley Construction of Overland Park, KS, died of multiple blunt force injuries after a 30 foot diameter fan inside a cooling tower in which he was working began revolving at up to 150 rpm. A colleague immediately detected the accident and turned off the fan. There are questions regarding how the fan could have been accidentally started.
- On July 8, at Duke's Moss Landing power plant, contactors removing an unused storage tank accidentally ignited more than a million gallons of oil, sending a heavy smoke plume across the surrounding area.
- July 1, 2003 at PG&E National Energy Group's La Paloma Power Plant in Kern County, Francisco Escobar-Serrano, 28, of Mexico, died when he fell into a live

generator breaker. A second unidentified man was injured in the incident. There are questions about why the breaker was live.

- On July 19, 2003 at The Geysers, Sonoma County (Calpine) Barry Carpenter, 44, of Farmington, NM, an "air jammer" for drilling company Air Comp, died of blunt force injuries after an air compressor exploded while he was cleaning a well shaft to prepare for conversion from extraction to reinjection of wastewater as part of a large artificial recharge project.[16]

It is possible that contractors are particularly vulnerable to mistakes, and resulting damage and injury, because they are relatively unfamiliar with their surroundings. Maintenance standards adopted by the Committee clearly require power plants to assure that contractors are adequately trained and act safely. The Commission will pay special attention to these programs in its enforcement efforts. It should be noted however, that Qualifying Facilities like The Geysers are specifically exempted from the Maintenance and Operations Standards.

Power Plant Inspections

As discussed in Section VII, since January 2001, Commission staff has performed approximately 424 inspections associated with forced outages, 369 inspections of scheduled outages and 75 inspections involving units curtailed more than 50 megawatts, for a total of 868 inspections. Staff has spent an average of three hours and 45 minutes on each inspection, including time at the plant, travel, follow-up, and report preparation.

Investigations

Through March 2003, Commission staff conducted an investigation of California's energy crisis, focusing in part on power plant outages during the crisis. The investigation culminated in reports in September 2000 and January 2003, and also contributed to the California Parties' submission in one of FERC's proceedings on the crisis. After August 7, 2002 (when SB 39xx took effect) Commission staff spent roughly six person-years on this investigation. In addition, the Commission staff conducted an assessment of the condition of California power plants. This investigation required roughly one person-month of work.

## Commission Staff Workload

Commission work on SB 39xx will consist of two phases. The first phase, which is ongoing, consists of the adoption of standards (as part of Committee staff) as well as enforcement rules and procedures; design and preparation of data collection systems,

16 The San Francisco Chronicle (Tuesday, July 15, 2003, page a-16) reported that "Susan Gard of state Division of Occupational Safety and Health said the results of Cal/OSHA's investigations into the two accidents were not available…."We're investigating why that tank exploded," she said. "The fact that there were two Calpine fatalities is of concern to us. This is a sprawling, remote location with a bunch of different contractors working 24 hours a day in all kinds of weather. At the same time, we also know that Calpine has a progressive, active safety organization."

review of initial submissions by generators, and training new staff. This first phase of work accelerated in February and March of 2003, when the Commission filled the bulk of 18.5 new positions provided for implementation of this legislation through a budget change proposal (though about one third of those new staffers, and about a quarter of total project staffers, have left under the threat of layoffs).[17] The transition to the second phase is currently projected to begin in early 2004, when enforcement audits begin. Once the program is fully implemented, the Commission will work largely on audits and investigations as well as any formal enforcement proceedings that may be required. As it has since the energy crisis, assuming full program staffing, the Commission will continue to inspect plants roughly once a week when the plants break down or are out-of-service for planned maintenance.

Workload During Start Up

We detail below the staff effort expended on this project, starting in February 2003 when the Commission began to hire additional staff for the program, through August 2003. These figures are based on reports entered into the Commission's Work Tracking System (WTS), a computerized system that records each employee's time per project per day.

From February 2003 through August 2003, Commission staff has spent a total of 18,569 hours on implementation of SB 39xx, or roughly 9.3 person years of effort. (Commissioners and their personal staff have spent additional time on the project). Their time has been divided among the following activities:

| | **Hours** | **Person Years** | **%Total** |
|---|---|---|---|
| Legal Advice | 847 | 0.42 | 4.6 |
| Administrative Law Judges | 893 | 0.45 | 4.8 |
| Clerical Support | 930 | 0.47 | 5.0 |
| Data Analysis, Collection and Reporting | 1667 | 0.83 | 9.0 |
| Development and Implementation of Standards | | | |
| Maintenance | 1830 | 0.92 | 9.8 |
| Logbook Standards | 83 | 0.04 | 0.4 |
| Operations Standards | 276 | 0.14 | 1.5 |
| Not classified or multiple standards | 2799 | 1.40 | 15.1 |
| Inspections of power plants | | | |
| Field | 1110 | 0.56 | 5.9 |
| Office, Report Preparation and Data Follow Up | 1466 | 0.73 | 7.9 |
| General Administration and Supervision | 1303 | 0.65 | 7.1 |
| Training | 5365 | 2.68 | 28.9 |

[17] Several staff now working on this project were engaged in the Commission's Investigation of Wholesale Electricity Markets and in support of the California Party's submissions in FERC's investigation (see footnotes above). Work on that project concluded roughly at the end of January, 2003.

No state civil service categories were available that could be used to hire people who had specific experience with operating or maintenance at power plants; the Commission therefore hired a staff consisting largely of utility engineers. While some of those engineers do have experience at power plants, most do not. Therefore, the Commission has put major emphasis on training the new staff. Since the program's inception in early February, inspectors have taken online training on power plant fundamentals, attended a two-week classroom course on power plant operations, and attended various training workshops sponsored by the CAISO and NERC. In addition, inspectors have participated in various power plant tours to appreciate more fully how theoretical learning applies to practical situations.

Routine Program Workload After Start-Up

In the future, as discussed above, the Commission expects that most staff will work directly on enforcement audits, where the maintenance programs and operations of power plants will be scrutinized. Thus, beginning in 2004, when standards and implementation programs are more fully in place, the Commission expects staff to spend its time as follows:

| | **Person Years** |
|---|---|
| Legal Advice | 0.5 |
| Administrative Law Judges | 0.5 |
| Clerical Support | 1.0 |
| Data Analysis, Collection and Reporting | 2.0 |
| Review and Revision of Standards, Rules and Plans | 2.0 |
| Inspections of Power Plants | 3.0 |
| Audits of Power Plants | 10.0 |
| General Administration and Supervision | 3.0 |

## Impacts of the State's Budget Crisis the Potential Impact of Staff Layoffs

Because of the state's budget crisis, five trained inspectors, about one quarter off the program's staff, have left to take other jobs. These vacancies, and any others that occur, cannot be filled due to a statewide hiring freeze unless special hiring freeze exemptions are granted.

The Commission staffed the program with new employees, recognizing that auditing and investigating power plants required specialized skills. Thus, employees in this program are relatively low in seniority and will be among the first to be affected by any layoff. The Commission estimates that proposed layoffs, would seriously eliminate more than 2/3 of the staff now working on this program.

Without taking resources from other programs, cuts of this magnitude could force the Commission to:

- Completely suspend all inspections (currently numbering 300-400 per year) of out-of-service power plants,
- Delay by at least one year the development and implementation of maintenance and operation standards for those plants; and
- Cut intensive audits at the highest-priority power plants (which supply about a third of the state's electricity) to once every 9 years, rather than once every 3 years.

## APPENDIX A

### From the
### Supplemental Report of the 2002 Budget Act

On or before October 15, 2003, the California Public Utilities Commission (CPUC) shall submit to the chairs of the JLBC and the fiscal committee of both houses of the legislature, a report that provides specific performance measurements for evaluating the Commission's power plant performance program and a workload justification utilizing actual data. The report should include, but not be limited to, the following information:

· The number of unplanned outages and significant events (including major outages, major equipment failures, and/or accidents involving personal injuries/death.

· The number of power plant inspections performed, including the average time per inspection.

· The number of investigations performed due to unplanned outages and/or other major events, including average time per investigation.

## Appendix B: Text of SB 39xx

SBX2 39 Senate Bill, 2nd Ext. Session - CHAPTEREDBILL NUMBER: SBX2 39
CHAPTERED
BILL TEXT

CHAPTER 19
FILED WITH SECRETARY OF STATE APRIL 26, 2002
APPROVED BY GOVERNOR APRIL 25, 2002
PASSED THE SENATE APRIL 11, 2002
PASSED THE ASSEMBLY APRIL 8, 2002
AMENDED IN ASSEMBLY APRIL 3, 2002
AMENDED IN ASSEMBLY APRIL 1, 2002
AMENDED IN ASSEMBLY SEPTEMBER 6, 2001
AMENDED IN ASSEMBLY AUGUST 20, 2001
AMENDED IN ASSEMBLY JUNE 6, 2001

INTRODUCED BY Senators Burton and Speier
(Principal coauthor: Assembly Member Migden)

MAY 17, 2001

An act to amend Section 362 of, to add Section 761.3 to, and to repeal Section 342, as added by Chapter 16 of the Statutes of 2001, Second Extraordinary Session, of, the Public Utilities Code, relating to public utilities.

LEGISLATIVE COUNSEL'S DIGEST

SB 39, Burton. Public utilities.

(1) Under existing law, the Public Utilities Act, the Public Utilities Commission is authorized to supervise and regulate every public utility in the state, and is authorized to do all things that are necessary and convenient in the exercise of that power and jurisdiction. Existing law also provides for the establishment of an Independent System Operator (ISO), a nonprofit, public benefit corporation, to ensure efficient use and reliable operation of the electrical transmission grid and an Electricity Oversight Board (Oversight Board) to oversee the ISO.

This bill would establish the California Electricity Generation Facilities Standards Committee, to adopt and revise standards for the maintenance and operation of facilities for the generation of electricity located in California. The committee would consist of three members, one appointed by the commission, one appointed by the ISO, and a 3rd member with expertise regarding electric generation facilities jointly appointed by the commission and the ISO. The bill would make these provisions inoperative as of January 1, 2005.

This bill would require the commission to implement and enforce

the standards adopted by the committee for the maintenance and operation of facilities for the generation of electricity located in the state, or owned by an electrical corporation, to ensure their reliable operation. The bill would require the commission to enforce the protocols for the scheduling of powerplant outages of the ISO. Since a violation of an order of the commission is a crime under existing provisions of law, the bill would impose a state-mandated local program by expanding the definition of a crime.

This bill would exempt from the above provisions nuclear powered generating facilities that are federally regulated and subject to standards developed by the Nuclear Regulatory Commission, but would require the owner or operator of nuclear generating facilities to file with the Oversight Board and the commission an annual schedule of maintenance for each generating facility and require a good faith effort to conduct maintenance in compliance with the plan and to report any significant variations from the plan to the Oversight Board and the ISO. The owner and operator would be required to report on a monthly basis, to the Oversight Board and the commission, all actual planned and unplanned outages of each nuclear facility during the prior month and to report on a daily basis, to the Oversight Board and the ISO, the daily operational status and availability of each facility for the production of electricity. The bill would exempt from the above provisions facilities that generate electricity using cogeneration and qualifying small power production facilities, as defined. The bill would require an electrical corporation that has a contract with a cogeneration or small qualifying facility with a name plate rating of 10 megawatts or greater to report to the Oversight Board and the commission maintenance schedules. The bill would require each facility with a name plate rating of 10 megawatts or greater to directly report to the Oversight Board and the ISO maintenance schedules.

This bill would require that its provisions not result in the modification, delay, or abrogation of any deadline, standard, rule, or regulation adopted by a federal, state, or local agency for purposes of protecting public health or the environment. The bill would require the ISO to consult with the State Air Resources Board and appropriate local air pollution control districts and air quality management districts to coordinate scheduled outages.

This bill would require the ISO to maintain records of generation facility outages and to provide those records to the Oversight Board and the commission on a daily basis. The bill would require certain entities that own or operate electric generating units in the state to provide a monthly report to the ISO that identifies when, during the preceding month, the unit was unavailable or was only available at reduced capacity, and the reasons therefor. The bill would require the ISO to immediately transmit the information to the Oversight Board and the commission. Since a violation of the act is a crime under existing provisions of law, the bill would create a state-mandated local program by expanding the definition of a crime.

This bill would exempt from the above provisions facilities owned

by a local publicly owned electric utility, as defined, any public agency that may generate electricity incidental to the provision of water or wastewater treatment, and facilities owned by a city and county operating as a public utility furnishing electric service.

(2) Existing law requires the Public Utilities Commission, in proceedings, to ensure that facilities needed to maintain the reliability of the electricity supply remain available and operational, consistent with maintaining open competition and avoiding an overconcentration of market power.

This bill would require the commission to require that generation facilities located in California that have been disposed of pursuant to specified provisions of existing law are operated by the persons or corporations who own or control them in a manner that ensures their availability to maintain the reliability of the electric supply system.

(3) Under provisions that would be added by Chapter 16 of the Statutes of 2001, Second Extraordinary Session, until January 1, 2003, or the occurrence of a specified event, whichever is earlier, electric generation and transmission facilities would be subject to various standards related to their availability. The Oversight Board, in consultation with the commission and the ISO, would be required to prepare and adopt protocols for the scheduling of transmission and generation equipment outages for the purpose of maintenance, repair, or upgrade and to prepare and adopt a schedule of outages in accordance with those protocols.

This bill would repeal those provisions.

(4) Under other provisions that would be added by Chapter 16 of the Statutes of 2001, Second Extraordinary Session, until January 1, 2003, or the occurrence of a specified event, whichever is earlier, the Oversight Board would be required to direct the ISO to develop and submit to the Oversight Board and the commission proposed generation facility maintenance, operating, and availability standards for generator units with a certain capacity. The commission would be authorized to adopt those standards and ensure compliance with those standards. Entities that own or operate certain electric generating units would be required to provide reports on a monthly basis to the ISO that identify any periods the units were unavailable to produce electricity or were available at reduced capacity. The ISO would be required to transmit that information to the Oversight Board and the commission. Electrical corporations having contracts with certain qualifying facilities or cogeneration facilities would be required to report the operational status and availability of the facilities to the Oversight Board and the commission on a daily basis.

This bill would recodify those provisions.

(5) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

(6) This bill would provide that its provisions shall become operative only if AB 28 of the 2001-02 Second Extraordinary Session is enacted and becomes effective.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. The Legislature finds and declares all of the following:

(a) Electric generating facilities and powerplants in California are essential facilities for maintaining and protecting the public health and safety of California residents and businesses.

(b) It is in the public interest to ensure that electric generating facilities and powerplants located in California are effectively and appropriately maintained and efficiently operated.

(c) Owners and operators of electric generating facilities and powerplants provide a critical and essential good to California residents. It is in the public interest that the Public Utilities Commission seek enforcement capability from the Federal Energy Regulatory Commission regarding the private generator agreement to provide for broader state control of operational activities of generation facilities in the state.

(d) To protect the public health and safety and to ensure electrical service reliability and adequacy, the Public Utilities Commission and the Independent System Operator shall work collaboratively to develop clearly articulated, uniform operating practices and procedures. The commission shall enforce compliance with those practices and procedures.

SEC. 2. Section 342 of the Public Utilities Code, as added by Section 3 of Chapter 16 of the Statutes of 2001, Second Extraordinary Session, is repealed.

SEC. 3. Section 362 of the Public Utilities Code is amended to read:

362. (a) In proceedings pursuant to Section 455.5, 851, or 854, the commission shall ensure that facilities needed to maintain the reliability of the electric supply remain available and operational, consistent with maintaining open competition and avoiding an overconcentration of market power. In order to determine whether the facility needs to remain available and operational, the commission shall utilize standards that are no less stringent than the Western Systems Coordinating Council and North American Electric Reliability Council standards for planning reserve criteria.

(b) The commission shall require that generation facilities located in the state that have been disposed of in proceedings pursuant to Section 851, are operated by the persons or corporations who own or control them in a manner that ensures their availability to maintain the reliability of the electric supply system.

SEC. 4. Section 761.3 is added to the Public Utilities Code, to read:

761.3. (a) Notwithstanding subdivision (g) of Section 216 and

subdivisions (c) and (d) of Section 228.5, the commission shall implement and enforce standards adopted pursuant to subdivision (b) for the maintenance and operation of facilities for the generation of electric energy owned by an electrical corporation or located in the state to ensure their reliable operation. The commission shall enforce the protocols for the scheduling of powerplant outages of the Independent System Operator.

(b) (1) The commission and the Independent System Operator shall jointly establish the California Electricity Generation Facilities Standards Committee. The committee shall consist of three members, one a member of the commission appointed by the commission, one a member of the Independent System Operator board appointed by that board, and one individual with expertise regarding electric generation facilities and jointly appointed by the commission and the Independent System Operator board. The committee, within 90 days of the effective date of this section and after providing notice and opportunity for public comment, shall adopt, and may thereafter revise, standards for the maintenance and operation of facilities for the generation of electric energy located in the state. The standards shall be consistent with subdivision (d) of this section.

(2) The committee shall be supported by a reasonable amount of staff time, which shall be provided proportionally by the agencies represented on the committee.

(3) This subdivision shall be operative only until January 1, 2005.

(c) Nothing in this section authorizes the commission to establish rates for wholesale sales in interstate commerce from those facilities, or to approve the sale or transfer of control of facilities that have been certified as exempt wholesale generators by the Federal Energy Regulatory Commission pursuant to Section 79z-5a (1) of Title 15 of the United States Code.

(d) (1) (A) Except as otherwise provided in this subdivision, this section shall not apply to 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.

(B) The owner or operator of a nuclear powered generating facility shall file with the Oversight Board and the commission an annual schedule of maintenance, including repairs and upgrades, updated quarterly, for each generating facility. The owner or operator of a nuclear powered generating facility shall make good faith efforts to conduct its maintenance in compliance with its filed plan and shall report to the Oversight Board and the Independent System Operator any significant variations from its filed plan.

(C) The owner or operator of a nuclear powered generating facility shall report on a monthly basis to the Oversight Board and the commission all actual planned and unplanned outages of each facility during the preceding month. The owner or operator of a nuclear powered generating facility shall report on a daily basis to the Oversight Board and the Independent System Operator the daily operational status and availability of each facility.

(2) (A) Except as otherwise provided in this subdivision, this section shall not apply to a qualifying small power production facility or a qualifying cogeneration facility within the meaning of Sections 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), nor shall this section apply to other generation units installed, operated, and maintained at a customer site, exclusively to serve that customer's load.

(B) An electrical corporation that has a contract with a qualifying small power production facility, or a qualifying cogeneration facility, with a name plate rating of 10 megawatts or greater, shall report to the Oversight Board and the commission maintenance schedules for each facility, including all actual planned and unplanned outages of the facility and the daily operational status and availability of the facility. Each facility with a name plate rating of ten megawatts or greater shall be responsible for directly reporting to the Oversight Board and the Independent System Operator maintenance schedules for each facility, including all actual planned and unplanned outages of the facility and the daily operational status and availability of the facility, if that information is not provided to the electrical corporation pursuant to a contract.

(e) In developing the standards pursuant to subdivision (b), the committee shall take into consideration generation facilities scheduled for retirement, valid warranties on generation facilities, and the operational authority of the Independent System Operator as prescribed in the standard Participating Generator Agreement and applicable sections of the Federal Energy Regulatory Commission's approved Independent System Operator tariff.

(f) Nothing in this section shall result in the modification, delay, or abrogation of any deadline, standard, rule, or regulation adopted by a federal, state, or local agency for the purposes of protecting public health or the environment, including, but not limited to, any requirements imposed by the State Air Resources Board or by an air pollution control district or an air quality management district pursuant to Division 26 (commencing with Section 39000) of the Health and Safety Code. The Independent System Operator shall consult with the State Air Resources Board and the appropriate local air pollution control districts and air quality management districts to coordinate scheduled outages to provide for compliance with those retrofits.

(g) The Independent System Operator shall maintain records of generation facility outages and shall provide those records to the Oversight Board and the commission on a daily basis. Each entity that owns or operates an electric generating unit in California with a rated maximum capacity of 10 megawatts or greater, shall provide a monthly report to the Independent System Operator that identifies any periods during the preceding month when the unit was unavailable to produce electricity or was available only at reduced capacity. The

report shall identify the reasons for any such unscheduled unavailability or reduced capacity. The Independent System Operator shall immediately transmit the information to the Oversight Board and the commission.

(h) This section does not apply to any of the following:

(1) Facilities owned by a local publicly owned electric utility as defined in subdivision (d) of Section 9604.

(2) Any public agency that may generate electricity incidental to the provision of water or wastewater treatment.

(3) Facilities owned by a city and county operating as a public utility, furnishing electric service as provided in Section 10001.

SEC. 5. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

SEC. 6. This act shall become operative only if Assembly Bill 28 of the 2001-02 Second Extraordinary Session is enacted and becomes effective.

## Appendix C

## Chronology of Committee and Commission Activities Relating to Generation Operation and Maintenance Standards

**Opening of Commission Rulemaking Proceeding:**

**11-21-02:** The Commission opened R.02-11-039. Eight respondents were named.

**02-10-03:** Commission held a Prehearing Conference.

**02-19-03:** In a Scoping Memo and Ruling by the Commission's Assigned Commissioner, the proceeding was separated into three phases: Phase 1-Implementation and Enforcement of Maintenance Standards, Phase 2-Implementation and Enforcement of Logbook Standards and CAISO Outage Protocols; and Phase 3-Implementation and Enforcement of Operations Standards, Private Generator Agreements, and Ensuring Facilities Remain Available and Operational.

**05-02-03:** Assigned Commissioner amended Scoping Memo to add Phase 4 regarding Implementation and Enforcement of General Duty Standards for Operation and Maintenance (GDS).

**09-04-03:** Commission adopted D.03-09-002 (adding 16 additional respondents).

**10-02-03:** Commission adopted D.03-10-012 (correcting respondent list by deleting two respondents).

**10-29-03:** Commission issued draft decision adding additional respondents.

**Maintenance Standards:**

**12-20-02:** Committee met to consider Maintenance Standards.

**01-24-03:** Committee met to further consider Maintenance Standards.

**02-03-03**: Committee adopted revised Maintenance Standards subject to legal review.

**03-03-03:** Opening comments filed and served with Commission on Commission implementation and enforcement of maintenance standards.

**03-07-03**: Reply comments filed and served with Commission on Commission implementation and enforcement of maintenance standards.

**03-11-03:** ALJ conducted workshop/informal hearing on Commission implementation and enforcement of maintenance standards.

**03-26-03:** Further comments filed with the Commission.

**03-28-03:** Further reply comments filed with the Commission.

**04-09-02:** Phase 1 of the Commission Rulemaking was stayed pending the Committee filing of the final Maintenance Standards.

**05-02-03**: Committee adopted a final version of the Maintenance Standards.

**05-16-03:** Committee filed a final version of the Maintenance Standards with the Commission. Section 1 of the Maintenance Standards document was identified as the Standards and Sections 2-5 were identified as methods of implementation and enforcement. The Committee also instructed CPSD staff to review the advisory Appendix A of the Maintenance Standards for final revision.

**10-02-03:** Phase 1 of the Commission Rulemaking was reopened before the Commission with the issuance of a proposed General Order (GO). Once adopted, the GO will enable the Commission to implement and enforce the operations and maintenance standards and other requirements included in SBX2 39.

**10-27-03:** Opening comments due on the proposed GO.

**11-03-03**: Reply comments due.

**Logbook Standards (Thermal )**

**01-31-03:** Proposed logbook standards circulated to parties before Committee.

**02-24-03:** Opening comments served on Committee regarding proposed logbook standards.

**03-03-03:** Reply comments served on Committee regarding proposed logbook standards.

**03-28-03:** Revised proposed Logbook Standards distributed to Committee and participants.

**04-01-03:** Committee approved Logbook Standards for Thermal Electric Generating Facilities.

**04-02-03:** Committee filed thermal Logbook Standards with the Commission and served a copy on parties.

**04-08-03:** Opening comments filed and served with the Commission on Commission implementation and enforcement of thermal Logbook standards.

**04-14-03:** Reply comments filed and served with the Commission.

**10-02-03**: Proposed Commission General Order G.O released for comment by parties (see Maintenance Standards).

**10-29-03:** Proposed decision filed and served for comment with the Commission.

**11-18-03:** Comments due on the draft decision.

**11-24-03:** Reply comments due on the draft decision.

**Logbook Standards (Hydro)**

**05-01-03:** Committee considered a Logbook Standard for Hydroelectric Generating Facilities. The Committee requested additional comments and staff analysis.

**05-23-03**: PG&E and SCE provided comments and a jointly developed proposal for logbook requirements for hydroelectric facilities.

**06-03-03:** Committee held action on Logbook Standards (hydro) for further staff development with parties.

**07-01-03:** CPSD met with PG&E and SCE representatives to clarify terminology used in their proposed alternate standards and to discuss CPUC concerns and requirements. PG&E and SCE agreed to revise their alternative logbook standards and to resubmit them to the Committee.

**07-18-03:** Utilities prepared a revised draft of the hydroelectric facilities standards and sent it to CPSD staff.

**08-07-03:** CPSD reviewed the utilities proposal and returned an edited version.

**08-29-03:** Utilities replied with further proposed changes.

**10-14-03**: Consensus draft achieved.

**CPUC Enforcement of CAISO Outage Scheduling Protocols**

**04-23-03:** CPSD and CAISO staff met in Folsom to discuss CAISO operation, current outage scheduling protocols, and proposed oversight and investigation activities.

**09-22-03**: CPSD and CAISO met to discuss plans to establish CPUC access to outage statistics in the CAISO "SLIC" (Scheduling Logging ISO California) Internet based database application.

**10-02-03:** Proposed GO was filed and served for comment. The GO would establish implementation and enforcement mechanisms to assure compliance with CAISO Outage Scheduling Protocols.

Since these standards were originally developed by the CAISO, Committee action is not required.

**Operating Standards and Participating Generator Agreements**

**04-03-03:** At a Committee meeting, CPSD announced general principles and specific objectives to guide the development of the Phase 3 Operational Standards.

**06-25-03:** A contract was signed with Source California as the vendor to review established operating practices and accepted industry standards, provide written analysis and develop recommendations regarding operations standards in cooperation with CPSD.

**08-08-03** Department of General Services reviewed and approved contract.

**09-03-03:** CPSD held a kick off meeting with Source California to confirm scope, guidelines for creating power plant operations standards, and content associated with three phases for an 18-week timeline.

**09-09-03:** CPSD and Source California signed an initial work order to review current operating practices and standards and industry standards, review PG&E/SCE operating practices and procedures of both divested and non-divested plants, and identify positions on system, operating mode, and equipment lists.

**11-5-03:** CPSD and Source California ended a review of approximately 40 position papers on systems, operating modes, and equipment lists that will be used as a basis to draft operating standards within the next several months.

In the next two phases, the Committee will issue draft standards, conduct generator workshops, and develop final measuring tools. The Commission will consider implementation and enforcement, including the potential of integrating standards into existing contractual arrangements that generators have with various entities (e.g. CAISO, WECC).

**General Duty Standards for Operation and Maintenance**

**04-16-03:** Committee's Presiding Officer served a copy of draft GDS and proposed Resolution for comment.

**04-23-03** Opening comments served on Committee.

**04-28-03:** Reply comments served on Committee.

**05-02-03:** Committee adopted the first three of six GDS (i.e., GDS 1-3).

**05-09-03:** Committee's Presiding Officer served amended GDS for further comment (GDS 4-6).

**05-12-03:** Opening Comments on implementation and enforcement of GDS 1-3 filed and served on Commission.

**05-19-03:** Reply Comments on implementation and enforcement of GDS 1-3 filed and served on Commission.

**05-19-03:** Opening Comments on GDS 4-6 served on Committee.

**05-23-03:** Reply comments on GDS 4-6 served on Committee.

**06-03-03:** Committee adopted the final three of the six GDS following the receipt of comments and replies in mid-May and further comments at this meeting. The first three standards were revised for consistency. Consequently, all six were adopted on this date.

**06-06-03:** Committee filed Revised GDS with the Commission for implementation and enforcement.

**06-20-03:** Opening comments filed and served with the Commission regarding the implementation and enforcement of the GDS.

**06-27-03:** Reply comments filed and served with the Commission regarding implementation and enforcement of GDS.

**10-02-03**: Proposed GO issued with the Commission.

## APPENDIX D

### Informal CPUC Staff Study of Power Plants Out-of-Service During Peak Periods

The study was based on data obtained from the CAISO Non-Operational Generator report. The report publishes a snapshot of unit status of all power plants located in California, four times per day, at 7:15 AM, 11:15 AM, 3:15 PM, and 7:15 PM. The report provides a list of all power plants that are not operational due to planned oroutages

Commission staff looked at three years of data (2001 through 2003). The peak demand months, June through September, in each year were chosen as the target period. Forty-four days were randomly selected from the target period balanced evenly among the selected months and years. For each of the forty-four days, the CAISO Non-Operational Generator report for 3:15 PM, which is within the usual 3:00-4:00 PM peak demand hour, was analyzed.

The total number of megawatt-hours for each power plant out during the peak hours on the selected days was calculated. This number roughly estimates the effect, in megawatt-hours, the power plant had on system reliability caused by its unplanned outages during the peak hours. The study found that power plants with the highest megawatt-hours out due to unplanned outages during peak hours were generally natural gas and oil-fired plants.