Decision 97-12-048 December 3, 1997

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation.	Rulemaking 94-04-031 (Filed April 20, 1994)
Order Instituting Investigation on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation.	Investigation 94-04-032 (Filed April 20, 1994)

OPINION REGARDING THE METER AND DATA COMMUNICATIONS STANDARDS WORKSHOP REPORT

I. Summary

Today's decision addresses in further detail the rules associated with metering and metering services. We authorized the unbundling of metering services in Decision (D.) 97-05-039. In the direct access implementation decision, D.97-10-087, the Commission adopted interim tariff provisions regarding metering. Today's decision refines those interim provisions, and provides additional details with respect to the provisioning of metering services. In crafting solutions to the various meter-related issues, we have attempted to balance all of the competing interests.

This decision recognizes that existing standards and practices are in place and are the starting point for our considerations. At the same time, we realize that national standards have also been developed. In order to make direct access meters and devices available to the public in a timely manner and to have a functioning, unbundled metering environment, we adopt a series of interim metering standards. These interim standards address meter specifications, installation and maintenance, a certification process for meter service providers (MSPs), meter reading, a screening process for meter data management agents (MDMAs), meter data management systems, and meter data formats.

In recognition of the national standards that have been developed, as well as other kinds of criteria, we plan to move toward the adoption of permanent metering-related standards. This decision establishes a process to involve market participants in the review and recommendation of permanent standards. We anticipate that permanent standards will be adopted before the end of 1998.

II. Background

In D.97-05-039, the Commission opened electric metering and billing services to competition. Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (Edison) were ordered in D.97-05-039 and D.97-05-040 to confer with interested parties in an attempt to

develop standards for metering equipment and functions. Such standards are needed to ensure that customers continue to have reliable metering services regardless of who the metering service entity is. A pre-workshop meeting was held on May 28, 1997, in conjunction with a similar meeting for the Retail Settlements and Information Flow (RSIF) workshop. This pre-workshop meeting clarified the division of responsibilities for the meter and data communications workshop and the RSIF workshops. The parties submitted various proposals which were considered at the workshops.

The meter and data communications workshop was held on July 8, 1997. Pursuant to D.97-05-040, the Meter and Data Communications Standards Workshop Report (Meter and Data Workshop Report) was prepared and filed with the Commission on July 25, 1997. An opportunity was provided to parties to file comments to this report.

The Meter and Data Workshop Report contains a number of details and issues related to the offering of metering services. Some of the issues raised in the workshop report have already been addressed in the direct access tariff provisions attached to D.97-10-087, and will not be revisited in this decision. We also adopted some interim metering standards and criteria in D.97-10-087 as part of the direct access tariffs. We stated in D.97-10-087 that we would revisit some of these interim tariff provisions in this decision.

III. Meter And Data Communication Standards Workshop Report

A. Purpose Of The Workshop Report

The purpose of the Meter and Data Workshop Report was for interested parties to attempt to develop a set of statewide standards for metering equipment and functions that can be used by all the market participants. If at all possible, we should develop a uniform, statewide approach to meter and data communications. Such uniformity will make it easier for market participants to offer metering services throughout the state. Differing standards would require participants to be knowledgeable about the applicable rules in each utility distribution company's (UDC's) service territory.

B. Role Of New Market Participants

1. Background

The unbundling of revenue cycle services in D.97-05-039 created opportunities for new market participants. These new opportunities include the role of the metering service provider, meter data management agent, and the billing agent. The Meter and Data Workshop Report describe these three entities as follows:

> **Meter Service Provider:** the entity that installs, validates, registers, and maintains the physical meter required on a premise to measure the required variables.
> **Meter Data Management Agent:** the entity that takes raw meter outputs, validates them using validation, editing and estimating rules, adds corollary information needed to characterize the customer, and makes complete customer information available to others for use in various applications.
> **Billing Agent:** prepares and submits bills to end-use customers, collects and processes payments, and remits aggregate funds and records to its clients.

2. Discussion

The Meter and Data Workshop Report proposes to make the electric service providers (ESPs) and the UDCs responsible for collecting, transferring, and processing metering data for subsequent use. They would be responsible for doing this for each customer that they provide with electricity. It is also proposed that the ESPs and the UDCs be allowed to subcontract revenue cycle services, including metering and meter data management, to other entities.

Under the direct access tariffs adopted in D.97-10-087, the ESPs and the UDCs are the two entities that are responsible for collecting, transferring, and processing metering data for subsequent use. These two entities will assume this responsibility for their respective customers. Should the ESPs or the UDCs decide to do so, they may subcontract these revenue cycle services to other vendors. The ESP may also subcontract with the UDC to perform any of the metering services. (D.97-10-087, App. A, Section H.(1)(a).)

Some of the parties commented that such a result does not permit true unbundling because customers are unable to select their own MSPs. They believe that the customer should be free to select any qualified entity for any one or more of the meter functions. They also contend that they should not be restricted to contracting with only one ESP or one UDC. They argue that under the workshop report's proposal, new ESPs will have the burden of having to provide all the various meter-related services or to provide the administrative support and oversight necessary to permit the subcontracting of meter services.

In Section H of Appendix A of D.97-10-087, we adopted the approach that meter ownership, meter services, and MDMA services be provided by the UDC or an ESP. We also adopted the provision in Section B.(9) that direct access customers may not partition their loads among electric service options or providers. The genesis of these provisions is ordering paragraph 3 of D.97-05-039, which states:

> "Any energy service provider that wishes to offer its own metering services shall enter into a service agreement with the distribution company specifying the nature of the information to be collected, the means for sharing data, and a reasonable approach for ensuring that the metering equipment is installed, calibrated and maintained properly. The distribution utility shall not unreasonably refuse to enter into such an agreement. In our direct access proceeding, we will consider rules necessary to support this process, consistent with the discussion contained in this opinion."

Our reasons for limiting end-use customers to select their metering services from only ESPs or the UDCs are several. First, this limitation allows us to maintain some level of control over potentially dangerous meter installations. It also provides a mechanism to ensure that the providers of electrical services remain accountable. And third, it promotes efficient administration by minimizing mechanisms to track all of the different service options and providers. By having the UDC or the ESP remain responsible for meter installations, we can ensure that certain meter installation standards are adhered to, and that the direct access tariffs are followed. If these standards are not adhered to, the Commission can institute proceedings to revoke the registration of the ESP and take other corrective measures as

provided for in Public Utilities Code Section 394.25. The UDC, as an entity regulated by this Commission, would face similar actions.

If a customer was free to choose from the various participants offering a variety of metering services, it would be much more difficult for the Commission to exercise control over these kinds of participants. An example of this is the MSP. If the end-use customer was able to select its own MSP to install a meter for direct access, the meter installer would not encounter any tariff restrictions or controls over its actions. Safety concerns over meter installation, as well as concerns over the reliability and accuracy of the meters, require that the Commission retain some regulatory oversight in this area. We have created that oversight by making the UDC or the ESP responsible for the metering functions.

We see merit in eventually allowing customers to choose their own individual metering services from different providers. However, due to safety, reliability, and accuracy concerns, such choices are not feasible at this time. If systems can be developed to address these concerns, we would be willing to revisit the further unbundling of metering services in the future. The Rule 22 Tariff Review Group that was authorized in D.97-10-087 is one place where such ideas can be developed.

C. Costs For Metering Services

One of the issues raised in the comments to the Meter and Data Workshop Report concerns the charges for metering and billing services. Some of the parties contend that since current UDC rates already compensate the UDCs for the provisioning of metering services, the UDCs must provide these services to any direct access customer at no additional charge during the time that existing rates are frozen. If separate charges for these services are levied, then the existing tariffs must be reduced to avoid a double collection of costs.

This view is reflected in Section B.(14)(g) of Appendix A of D.97-10-087, which states:

> "The UDC can recover the costs of Direct Access service only once (i.e., any cost recovered under one cost recovery mechanism [fees, charges, direct access implementation rates or existing rates] should not also be recovered through another mechanism.)"

The possibility of other charges was addressed in D.97-10-087. We plan to examine, in a proceeding to be determined, whether fees for discretionary and non-discretionary services are appropriate, and whether there should be any offsets to those fees. (D.97-10-087, pp. 23, 25, 29.)

Another issue that is related to the cost of metering services is who should be the default provider of billing and metering services. In Section A.(1) of Appendix A of D.97-10-087, we adopted the provision that "All customers who have not chosen to use direct access remain on default UDC services." This means that if a customer decides not to participate in direct access, the customer's billing and metering will be done by the UDC.

Customer Choice For Energy Services (CCES) proposes that the Commission consider an auction system where the UDC and ESPs can compete for the right to offer default billing and metering services. CCES contends that this proposal is similar to the carrier of last resort idea that is found in the universal service policy for the telecommunications industry. (See D.96-10-066, pp. 193-203.)

We believe that it is premature for the Commission to adopt this kind of proposal for the electric industry. Competitive choice in the electric industry is in its infancy. It is too early to predict how many customers will elect direct access, and how many will stay with the incumbent utility. Also, it is uncertain what kinds of services market participants will develop for the direct access market. The introduction of an auction mechanism to determine who should be the default billing and metering service provider would add a layer of complexity to the changes that are already occurring. In addition, we are not convinced that there should be a distinction between the default provider of electricity and the default provider of metering and billing services. Efficiency would seem to suggest that all three services should be handled by one company.

D. Open Architecture Standards

1. Direct Access Metering Requirements

Developing meter and data standards requires an understanding of metering requirements and how different metering systems can communicate with each other.

Interval meters will be required for all direct access customers with a maximum demand that is equal to or exceeds 50 kilowatt (kW).[1] For customers whose maximum demand is below 20 kW, existing meters will be adequate for customers using load profiles. Customers below 20 kW who want to participate in the hourly PX rate option are required to have an interval meter. For those customers who remain full service customers of the UDCs, the UDCs will continue to own the meters.

All interval meters must be capable of recording the minimum data. This minimum data consists of hourly data that is required for the direct access settlement process so that the customers can be billed. The Meter and Data Workshop Report notes that current UDC constraints dictate the use of 15-minute interval data for all direct access customers beginning on January 1, 1998. Such a limitation is to be lifted no later than January 1, 1999. D.97-10-087 approved the use of 15-minute interval data in Section H.(1)(b) of Appendix A for interval meters. For customers on demand-based rate schedules which require that data be based on 15-minute increments, we will require that the data be measured in 15-minute intervals for the purposes of calculating demand revenue.

The meter must also be read. The Meter and Data Workshop Report calls for meters to be read no less frequently than monthly, and in accordance with the UDC/ESP contract.

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[1] Unless the Commission decides otherwise, beginning October 1, 1998, hourly interval meters will be required for all direct access customers with a maximum demand that is equal to or exceeds 20 kW. (D.97-10-086, pp. 37-38, 56.)

2. Unbundling

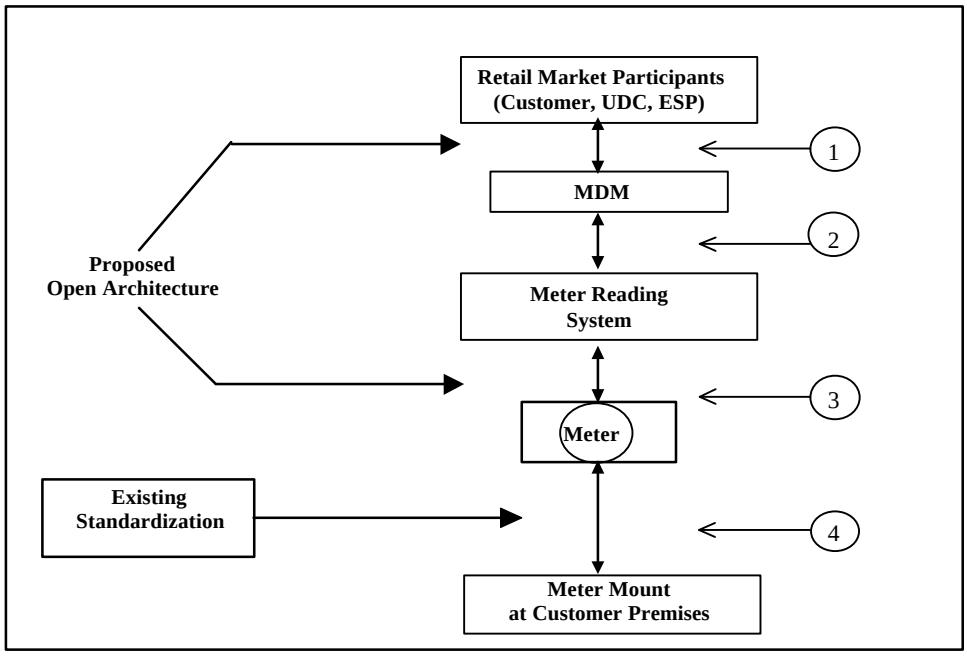
The goal of direct access is to facilitate customer choice. To facilitate customer choice, the Meter and Data Workshop Report proposes the following objectives: promote an open market; use existing standards where available; and encourage and manage interoperability. Interoperability is the ability of dissimilar devices or systems to communicate between each other in such a way that the characteristics of the device or system providing the service to the user of the data are transparent.

To promote customer choice, the unbundling of metering and data communications functions must occur. Unbundling is the separation of what were vertically-integrated electric utility functions into discrete, independent functions, which can be served by existing or new business entities in an open competitive environment. Metering services are comprised of the following unbundled functions:

- meters;
- meter installation;
- meter operation and maintenance services;
- meter testing and certification;
- meter reading; and
- meter data management.

The format of the data from the meter must be compatible with the format of the data that is available from the meter data management server. In order for the different metering systems to be able to communicate with each other, consideration must be given to an open architecture standard. The Meter and Data Workshop Report describes open architecture as an environment where the specifications for interfaces, services, protocols and data formats are vendor-neutral, published, freely available, and agreed upon in an open process under the auspices of a recognized national or international standards body. Open architecture serves as the vehicle for allowing interoperability to take place. Interoperability in turn enables customers to choose from multiple suppliers of electric services the providers that best meet their needs.

The components which make up the metering systems are the meter, the meter reading system, and the meter data management (MDM) server. In the joint comments filed by the Chair of the Industry Canada Task Force, Data and Metering Specialties, Inc., the Electric Power Research Institute, Southern California Gas Company, Utility Consumers' Action Network, and the Office of Ratepayer Advocates,[2] the joint parties identified four key interfaces, two of which they believe should be standardized. These four interfaces facilitate the communication of the meter data. The joint parties have included the four interfaces in the diagram shown below. The diagram was derived from the open architecture diagram that appears in the Meter and Data Workshop Report at page 17.



The first interface, which is indicated by the number "1" in a circle,

[2] We refer to all these filing parties as the "joint parties." The Automatic Meter Reading Association had joined in the comments of the joint parties, but subsequently withdrew its endorsement of the joint comments in a letter dated September 17, 1997.

is the interface between the MDM server and the end-use applications of meter data. This interface, which the joint parties contend should be standardized, represents the point of access for the customer, the ESP, the UDC, or other appropriate users. This could be a single interface or it could be several interfaces to the same set of meter data. For example, ESPs might have access to an Electronic Data Interchange (EDI) for account management, Hyper Text Transfer Protocol (HTTP) for Internet web browsing, and the Utility Communication Architecture (UCA) data communications for scheduling and data acquisition and enhanced energy services.

The second interface occurs between the meter reading system and the MDM. This interface represents the means by which the meter reading system delivers meter data to the MDM. The joint parties do not believe it is practical to standardize this interface at the present time. For the foreseeable future, the joint parties believe that this interface can be negotiated among the entities providing those functions, without detriment to interoperability. Technologies such as packet radio, hybrid fiber coax, and telephone are some of the means for transporting this data.

The third interface occurs between the meter and the meter reading system. The joint parties believe that this interface should be standardized to enable downstream applications to be independent of the meter vendor or the means of transport.

The fourth interface occurs between the meter and the meter mount, i.e., the point of demarcation between the customer's premises and the UDC's system. The joint parties contend that this interface is already substantially standardized.

The Meter and Data Workshop Report refer to the meter mount as the "meter socket." An open architecture platform would permit the meter of any manufacturer to be installed. The term "meter socket" presupposes that all meters must use a meter socket. One of the comments in the Meter and Data Workshop Report points out that an open architecture platform should "not be defined as beginning with ANSI [American National Standards Institute] approved sockets." (Meter and Data Workshop Report, p. 16.) We agree with this comment. Limiting the design of interval

meters to a meter socket may preclude other interval meter designs from being used. This is contrary to the idea of open architecture. Instead of limiting meter connections to only "ANSI approved sockets," meter connections should be open to "ANSI approved sockets or other mounting options agreed to between the manufacturer and the UDC and ESP."

The Meter and Data Workshop Report states that maximum interoperability will be achieved when meter manufacturers employ multiple vendor and non-proprietary standard interfaces and communications systems. As the market needs become known, meter manufacturers can migrate towards selected ANSI or other national standards for meter interface, and communication system suppliers could migrate toward national standard data communications protocols.

3. Existing Standards

a. Introduction

The Meter and Data Workshop Report describes the various kinds of existing standards and practices for meters and metering equipment, for meter installation and maintenance, and for meter reading. These are described at pages 21 to 24 of the Meter and Data Workshop Report, and are reflected in Tables 1 and 2 at pages 31 and 32 of the workshop report. The Meter and Data Workshop Report also states that existing, accepted industry standards should be used where available.

In developing meter and data standards, we must recognize that existing standards are in place. We cannot simply abandon all of the existing standards, adopt new standards, and expect everyone to be in compliance with the new standards on the following day. Instead, there must be a transition or migration period toward the new meter and data standards. Before these new standards are adopted, interim standards should be adopted which provide direct access participants with a set of guidelines as to what is expected, and which ensure that the meter components and systems remain safe, reliable, and accurate during this period.

As discussed later in this decision, the Commission is not in a position today to determine what the new standards for meters, meter installation

and maintenance, and meter reading should be on a going-forward basis. These are highly technical issues that should be left up to national standard review boards and to market participants to develop. By deferring to market participants and any national guidelines that may be developed, we can help ensure that interoperability will occur. The Commission should, however, establish a process where such agreements, guidelines, and standards can be reviewed and commented upon by interested parties, and recommended to the Commission for adoption.

A set of interim minimum standards needs to be in effect during the transition to the adoption of a final set of standards for meters and metering equipment, meter installation and maintenance, and meter reading. The starting point for such standards is contained in Chapter IV of the Meter and Data Workshop Report, which describes and lists existing practices and standards.

Several comments have questioned some of the existing standards, and whether such standards should be adopted by the Commission.[3] The joint comments of Itron, Inc. and Schlumberger Industries (Itron/Schlumberger) address whether ANSI C12.19 should be adopted as a standard. This was also mentioned in the Meter and Data Workshop Report at page 33. ANSI C12.19 addresses the utility industry end device table data. Itron/Schlumberger contend that this standard was vigorously debated at the workshop, and that some of the major utilities in the United States do not require conformity to this standard. As a result, some of the meter manufacturers have chosen not to implement ANSI C12.19. The workshop report also notes that exception was taken to the adoption of ANSI C12.18, the requirement of a Type 2 optical port, and recommends undertaking a further review of this standard.

[3] The meter socket issue was addressed earlier.

b. Interim Standards For Meters And Metering Equipment

We will adopt the following criteria for meters that are used for direct access. All meters used for direct access must meet, at a minimum, one of the following criteria:

(1) Existing meters that meet the direct access requirements as detailed in D.97-05-040 and D.97-10-087, and that meet all of the local UDC's installation, safety, accuracy, and reliability criteria as of the date of this decision;[4] or

(2) Meters which presently meet the applicable sections of the following ANSI standards:

- ANSI C12.1 Code for Electricity Metering
- ANSI C12.6 Marking and Arrangement of Terminals for Phase-Shifting Devices Used in Metering
- ANSI C12.7 Requirements For Watthour Meter Sockets
- ANSI C12.10 Electromechanical Watthour Meters
- ANSI C12.11 Instrument Transformers for Revenue Metering, 10 kV BIL through 350 kV BIL (0.6 kV NSV through 69 kV NSV)
- ANSI C.12.13 Electronic Time-of-Use Registers for Electricity Meters;
- ANSI C12.20 0.2% and 0.5% Accuracy Classes;[5] or

(3) Meters which meet the Independent System Operator Specification MTR1-96 (Engineering Specification for Polyphase Solid State Electricity Meters for Use on the ISO Grid); or

(4) Existing in-service meters which meet local UDC's installation, safety, accuracy, and reliability criteria as of the date of this decision, and which can be retrofitted with a device to meet these criteria as well as the direct access requirements as detailed in D.97-05-040 and D.97-10-087. If an optical pick-up type retrofit module is used, the meter shall pass the

[4] According to the workshop report, the existing UDC accuracy requirements are 0.3% for solid state meters and 0.5% for electromechanical meters.

[5] This standard has been approved, but has not yet been released.

sunlight interference test described at page 5 of Appendix A of the Meter and Data Workshop Report.[6]

In addition, the meters used for direct access must meet the following requirements:

(1) If the meter has metering communications capabilities, the meter must meet the applicable provisions of the Federal Communications Commission (FCC) Regulations, Part 15, subpart B (47 Code of Federal Regulations), or it must have a Type 2 optical port or other suitable means of on-site or remote interrogation.

(2) If the meter or meter devices are certified by the manufacturer, the manufacturer's certification must conform to the applicable provisions of ANSI C12.1 (Code for Electricity Metering) and ANSI C37.90.1 (Surge Withstand Capability (SWC) for Protective Relays and Relay Systems).

(3) The meter or the meter data system must be capable of providing and storing required interval data for a minimum of 35 days.

In accordance with Section H(2) of Appendix A of D.97-10-087, it shall be the responsibility of the ESP or UDC, as the MSP, to ensure that the meters used for direct access comply with the above interim standards. Failure to comply with the Commission requirements for meters or meter services can lead to the remedial actions provided for in Section H(8) of Appendix A of D.97-10-087, as well as enforcement actions against the ESPs or the UDCs in accordance with the Public Utilities Code.

The Meter and Data Workshop Report recommends that any meter certification be performed by an approved or certified testing facility. The workshop report recommends that the approval or certification of such facilities be

[6] This provision allows an MSP to install retrofit devices on the utilities' existing meters providing that the devices meet applicable standards and the MSP is qualified to install such a device.

specified and enforced by the Commission or another state agency. Appendix A of the workshop report assumes that the Commission will be approving these facilities.

We do not believe that it is necessary for the Commission to approve the meter certification facilities. All new direct access meters will have to comply with our interim meter standards. For the majority of new meters, this means that they will have to meet the various ANSI-prescribed standards. In order to sell their meters to the UDCs, the ESPs, and the MSPs, the meter manufacturers must prove that their meters comply with Commission specifications. (See D.97-10-087, App. A, Section H(2).)

We will require that metering transformers and auxiliary devices be tested in accordance with the applicable provisions of the following ANSI standards: C12.1 (Code for Electricity Metering), C12.11 (Instrument Transformers for Revenue Metering), C57.13 (Requirements for Instrument Transformers), Edison Electric Institute (EEI) Handbook for Electricity Metering, and the local UDC's requirements.

All service entrance equipment shall be required to meet any applicable local jurisdiction code requirements, and the local UDC's electrical service and metering requirements.

We decline to adopt as an interim standard the recommendation in the workshop report that the meters and interval data recorders must have a minimum three-year manufacturer warranty. The length of the warranty should be left up to the manufacturer and to the marketplace to decide. We also decline to adopt the recommendation that in-service meters shall have a maximum failure rate of 2.0% per calendar year and a life expectancy of at least 15 years. It should be left to the market to decide which meters are better built. Our check on the accuracy and reliability of the direct access meters will come in the form of ensuring that the meters are accurate and reliable when they are installed and when they are maintained. In addition, the billing adjustment procedure for meter error that is contained in the direct access tariff provisions will also help ensure that malfunctioning or defective meters are replaced as needed. (D.97-10-087, App. A, Section N.(6).)

c. Interim Standards For Meter Installation and Maintenance

The Meter and Data Workshop Report states that there are no national standards for metering installation and maintenance. The UDCs, however, currently have their own internal standards for metering installation and maintenance. Appendix B of the Meter and Data Workshop Report is a compilation of the UDCs' practices for inspecting and testing meter installations.

For meter installations during the interim period, we will require the meter to be installed in accordance with the local UDC's standards. In addition, the initial meter installation and testing shall be done in accordance with the applicable provisions of Appendix B of the Meter and Data Workshop Report.[7] As for who is qualified to physically install the meters, that issue is discussed in the next section of this decision.

At the present time, the UDC maintains records for all metering devices, including the billing data history, test reports, in-service history, special conditions, and meter characteristics. Due to the unbundling of meters, the UDC will no longer have to do this for meters which it does not own or for which it is not the MSP. The ESP, in its role as the MSP, will be required to maintain these metering records for its customers for whom it has installed direct access meters or other metering devices.[8] The metering records shall be made available to the UDC or the ESP if issues concerning conformity with meter specifications or meter calibration and

[7] As noted by one of the commenting parties, some of the meter tests contained in Appendix B of the Meter and Data Workshop Report could be done prior to the physical installation.

[8] At a minimum, and until a final determination is made by the assigned Commissioners, the ESP in its role as the MSP must maintain the following records of the meters and metering devices: compliance with meter design specifications, test reports, in-service history (including removal date and reasons for removal), special conditions, meter characteristics, nameplate information, and billing data history.

testing arise, or if there is a billing discrepancy as a result of metering error. [9] (See D.97-10-087, App. A, Sections H(4), H(5).) Such records shall also be made available to the Commission upon demand.[10] In addition, an ESP acting as a MSP shall be required to provide the UDC with sufficient identifying and operational meter data that permits the UDC to carry out its functions. This includes such things as the identification of the meter, voltage, and meter constants. This data shall be made available to the UDC within three working days of the meter installation. (D.97-10-087, App. A, Section H.(3).)

To promote a uniform system of metering records, we direct PG&E, SDG&E and Edison to file and serve within 30 days from today a description of the metering records that they maintain, a description or explanation of each record that is maintained, and their recommendations, if any, for a uniform set of metering records. Such a filing shall also include their recommendations for a uniform set of identifying and operational meter data that the ESP is required to transmit to the UDC to permit the UDC to carry out its functions. Interested persons shall be permitted to comment on the filings within 15 days from the date of service. The Commissioners assigned to direct access (assigned Commissioners) are delegated the authority to determine what uniform metering records shall be maintained by the MSPs, and what start-up meter data shall be provided when an ESP installs the meter on behalf of a customer or acts on the customer's behalf as the MSP. Such a determination shall be made in an assigned Commissioners' ruling.

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[9] Sections H(4) and H(5) of Appendix A of D.97-10-087 require that records of meter calibration and meter function tests be kept.

[10] The Commission is contemplating whether a report should be submitted by the ESPs and the UDCs which informs the Commission about the total number of meters and meter devices that are in service, that have been removed, or that failed. Such a report would enable the Commission to keep track of the effects of unbundling metering services. Should a determination be made that such a report is needed, the assigned Commissioners are delegated the responsibility to issue a ruling requiring the ESPs and UDCs to submit such a report.

Another metering record issue concerns the availability of meter registration information. CellNet Data Systems, Inc. (CellNet) recommends that this kind of information be made available on a quarterly basis to MSPs upon the adoption of meter and data standards. The information that CellNet proposes be released would consist of meter numbers, types, voltages, site information, geographic location, and other similar kinds of information. CellNet contends that such information will enable MSPs to estimate likely customer requirements, and enable them to meet customer requests when called upon.

We decline to require the UDCs to make this kind of meter registration information available. Such a requirement would enable MSPs to target their marketing efforts to specific groups of customers. The Commission should leave those kinds of marketing efforts to the market participants, and should not attempt to favor any particular market participant.

The UDCs currently have their own meter maintenance schedules and meter inspection practices. It appears that the meter inspection practices and meter tests appear in Appendix B of the Meter and Data Workshop Report. However, no periodic maintenance schedules are listed in that appendix. We believe that after the initial installation and testing of the meter, the MSP should be required to meet certain periodic maintenance and testing requirements. We approved such a provision in Sections H(6) and I(5) of Appendix A of D.97-10-086. We will require meter maintenance to be performed in accordance with the local UDC's practices during the interim period.

PG&E, SDG&E, and Edison shall be required to file and serve within 60 days from today a description of their respective meter maintenance schedules, and their recommendations for a uniform meter maintenance schedule. The meter maintenance schedules shall indicate the frequency of such maintenance, and the

details of the maintenance tasks or tests associated with such meters.[11] Interested persons shall be permitted to comment on the filings within 15 days from the date of service. The assigned Commissioners are delegated the authority to determine what periodic maintenance schedules and procedures should be adopted. This determination shall be made in an assigned Commissioners' ruling.

Section IV.B.2 of the Meter and Data Workshop Report also mentions service connect and disconnect procedures. The rules regarding the right to connect an interval meter are contained in Section H of Appendix A of D.97-10-087. The rules regarding the right of the UDC to disconnect the end-use customer are set forth in Section R of that appendix. As far as the installation and removal procedures to connect and disconnect a meter are concerned, we noted earlier in this section that the meter installation must be installed in accordance with the local UDC's standards. During the interim period, the removal of an existing meter should also be done in accordance with the local UDC's standards. As stated in Section H(3) of Appendix A of D.97-10-087, the UDC and the ESP need to coordinate the removal and installation of the new meter.

With respect to the security of the meter, the workshop report notes that at the present time, meters and meter panel installations are secured with UDC-approved locking devices, such as seals, locking rings, and meter password protection. The seals and locking rings prevent the meter from being tampered with. The meter password protection is to prevent unauthorized access to the programmable registers for the purpose of changing the program or the stored data.

During the interim period, we will require the meter to be secured with a UDC- or industry-approved locking device. With regard to password protection for the meters, we discussed earlier the requirement that the meter must be accurate. During the interim period, it shall be left up to the meter manufacturers or the

[11] If such tasks or tests are explained in Appendix B of the workshop report, the filing should indicate which of those tasks and tests are performed during the periodic meter maintenance.

manufacturers of retrofit devices to ensure that the stored data remains accurate. Whether that requires a password or some other type of protective device should be left to the manufacturers to design during this interim period.

The Meter and Data Workshop Report also notes that another security-related issue is energy diversion. The workshop report recommends that all MSPs and UDCs develop and implement energy diversion programs, and that their employees be trained to identify, report, and document energy diversion occurences. The workshop reports also recommends that the existing UDC energy diversion programs be deemed to meet such a requirement. The workshop report also proposes that the ESPs, MSPs, and the UDCs be responsible for reporting energy diversion as it is observed.

Under the adopted direct access tariff provisions, the "ESPs shall be solely responsible for having appropriate contractual or other arrangements with their customers necessary to implement direct access consistent with all applicable laws, CPUC requirements and this tariff." (D.97-10-087, App. A, Section B(3)(b).) Among the other tariff provisions is a requirement that if the ESP or the UDC becomes aware of any non-conforming meters or errors affecting billing, they are to inform each other and the customer. (Id., Section H(8)(e).) In addition, Section N(7)(a) of Appendix A references the definition of the unauthorized use of energy. Thus, under the direct access tariff provisions, an ESP is obligated to ensure that its implementation of direct access is consistent with the tariff provisions relating to energy diversion. The ESP Service Agreement also contains a provision in Section 18 that the ESP is to account for each of its customer's loads, and that the ESP is to notify the UDC immediately of any unauthorized energy use. In addition, if the meter maintenance standards eventually incorporate Appendix B of the workshop report, the MSP is to make a visual inspection for evidence of tampering and energy diversion.

We do not adopt the recommendation that all MSPs and UDCs develop and implement energy diversion programs during the interim period, and that they be responsible for report energy diversion as it is observed. We believe that the provisions cited above are sufficient to detect and remedy energy theft. It is

certainly in the interests of the ESPs to be aware of energy diversion because the UDC may terminate service to the end-use customer or to the ESP if suspected energy theft occurs.

Instead of mandating the ESPs to develop energy diversion programs, we encourage the UDCs and the ESPs and their subcontractors to explore whether a joint energy diversion program can be developed. We will leave this up to the industry participants to work out. Should such an agreement be reached, the parties should inform the Commission in writing about such a program.

Another installation-related issue concerns electrical safety. At present, the Meter and Data Workshop Report recommends requiring the meter installer to adhere to safe work practices and to all Occupational Safety and Health Administration safety rules of the California Department of Industrial Relations (Cal OSHA) pertaining to work near energized electrical facilities. The workshop report recommends that all meter installations must comply with Cal OSHA rules, and the safety rules described in Appendix B of the workshop report.

With respect to electrical safety, we will require during the interim period that all MSPs meet the local UDC's safety standards, the applicable safety standards set forth in Appendix B of the Meter and Data Workshop Report, and any applicable electrical codes pertaining to safety that may apply in the local jurisdiction where the direct access meters are located.

PG&E, SDG&E, and Edison shall be required to file and serve within 60 days from today a description of their respective electrical safety standards. If such standards are explained or set forth in Appendix B of the workshop report, the filing should reference that. Interested persons shall be permitted to comment on the filings within 15 days from the date of service. The assigned Commissioners are delegated the authority to determine what local UDC safety standards should be adopted. This determination shall be made in an assigned Commissioners' ruling.

d. Certification Of Meter Service Providers

Due to the unbundling of metering services, the need arises for the Commission to ensure that the metering equipment "meet the same standards of reliability that we demand today from utility owned meters." (D.97-05-039, p. 24.) In addition to the reliability standards, the standards discussed above regarding accuracy and safety need to be met. Under the monopoly metering framework, it was relatively easy to make sure that the regulated utility adhered to these standards. However, as we move into a competitive environment, we need to design new safeguards and controls to ensure that the new MSPs meet the same level of standards.

One of the ways in which the Commission has retained control of the unbundling of metering services is the requirement that meter services may only be provided by the UDC or an ESP. That is, the customer will have to go through the UDC or the ESP for unbundled meter services. The UDC and the ESP are free, however, to subcontract with a third party to provide the metering services, or the ESP can subcontract with the UDC for the provisioning of any component of the meter service. (D.97-10-087, App. A, Section H(1)(a).) By having the customer interact with the UDC or ESP, we maintain the balance between all three parties who need accurate, reliable, and safe meters. Also, should a problem arise between the customer and the MSP, the customer may seek redress from the UDC or the ESP.

When the UDC or the ESP installs an interval meter or a device that allows interval metering to occur, the UDC or the ESP is acting as a MSP. The MSP is responsible for ensuring that all the interval meters comply with Commission meter design specifications and for installing and calibrating the meters in compliance with the Commission's performance specifications. The MSP must be certified to perform the meter installation. (Id., Sections H(2), H(3), and H(4).) If the ESP or the UDC subcontracts the meter installation or meter calibration and testing to a third party, that third party is acting as the MSP and must be certified as well.

Due to the safety hazards that electricity and electrical meters pose, the adoption of certification procedures for MSPs is necessary. Such procedures will ensure that only qualified persons may install, remove, repair, or

maintain the direct access meters.[12] Unfortunately, the Meter and Data Workshop Report did not spend much time on developing the mechanics of such a certification process. In the comments to the workshop report, some of the parties have suggested that the certification process be modeled after the licensing of other kinds of meter providers, and that the MSPs have an electrical contractor's license. In the MSP certification process that we adopt today, many of the ideas and requirements that we impose have come from the statutes set forth in the Business and Professions Code.

The following is the MSP certification process that all UDCs and ESPs must adhere to:

(1) The existing regulated utilities who perform their own electric meter installation and removal, and meter maintenance and repair, shall be given permanent MSP certification. All utility employees who have successfully completed the utility's training programs regarding meter installation and removal, meter maintenance and repair, and related electrical safety programs, shall be permitted to install, remove, maintain and repair direct access meters on behalf of the UDC acting as an MSP.

This provision essentially "grandfathers-in" the existing UDCs' meter installation services. This is appropriate because of the UDCs' extensive experience in this area. Such a provision also forms a ready pool of qualified meter installers.

(2) All non-utility MSPs shall be required to submit a written application to the Commission requesting "Provisional MSP Certification." The Provisional MSP Certification will be granted to persons or entities who possess a general electrical contractor's license issued by the Contractors' State License Board. If the ESP is acting as the MSP, then the contractor's license shall be in the name of the ESP.[13] The ESP may

[12] Pending the adoption of a Commission program to certify meter installers, we allowed the ESPs and the UDCs the opportunity to agree on what meter installers could do the meter installation work on behalf of the ESPs. (D.97-10-087, App. A, Section H.(3).) With the adoption of the certification process, we will now require all meter installers acting on behalf of the ESPs to follow the certification process.

[13] If the ESP is a partnership, corporation, or limited liability company, the ESP shall designate a "responsible managing employee" to take the license examination on the ESP's behalf. (See

Footnote continued on next page

also subcontract the meter services to a third party, in which case the third party would be required to have a general electrical contractor's license.

We require the non-utility MSP to have an electrical contractor's license because the installation, removal or repair of an electric meter by a person other than a public utility is subject to the Contractors' State License Law. Generally speaking, a contractor is anyone who adds materials to, repairs, or subtracts materials from a structure or premises. (Bus. & Prof. Code Section 7026.) A regulated public utility is exempt from the Contractors' State License Law when it performs work on its own property, or when the work is undertaken in furtherance of the distribution of electricity. (Bus. & Prof. Code Section 7042.1.) Thus, anyone else installing, repairing, or removing an electric meter would be required to have a contractor's license. An electrical contractor's license is appropriate because of the electrical voltage that is present. Some might argue that such a requirement is unfair, unnecessary, or anti-competitive. However, such a requirement is dictated by the current statutory provisions in the Business and Professions Code.

The written application shall include the following information: name of the person or entity; business address and telephone number; the name of the person or entity in which the general electrical contractor's license is issued; the license number and expiration date; a description of the applicant's electric meter installation, maintenance, repair and removal experience, as well as the applicant's training and experience regarding electrical safety; and a description of what educational and training requirements in electrical work and electrical safety the MSP will require of its employees before they are allowed to install, maintain, repair or remove electric meters or metering devices. A copy of the general electrical contractor's license shall be attached to the application. The application shall be verified, and if verified outside

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Bus. & Prof. Code Section 7065.) A responsible managing employee shall mean an individual who is a bona fide employee of the ESP, and who is actively engaged in electrical contracting work.

California, the verification must be made by an affidavit sworn or affirmed before a notary public.

In addition to the written application, the MSP shall arrange a bond in favor of the State of California in the amount of $500,000. The bond shall be submitted with the written application. The bond shall be for the benefit of anyone who may be damaged as a result of the MSP's actions in connection with the installation, maintenance, repair, or removal of the electric meter. Should a complaint for damages arising from the MSP's actions be filed in civil court, and a claim is made against the bond, a copy of the complaint shall be served by registered or certified mail upon the Commission's Executive Director.

The bond requirement will ensure that the MSPs adhere to all applicable provisions governing the installation and removal of electric meters. Should an end-use customer suffer damages as a result of the MSP's actions, the bond will provide a source of compensation.

The application shall be submitted to the following: CPUC, MSP Certification Unit, 505 Van Ness Avenue, San Francisco, CA 94102.

Those meter installers who are operating pursuant to an agreement between the UDC and the ESP as provided for in Section H.(3) of Appendix A in D.97-10-087 may continue to install meters in accordance with the agreement. However, the UDCs shall require such meter installers to submit their written application for Provisional MSP Certification within 60 days from today's date. If they apply within that time period, they shall be permitted to continue installing meters in accordance with the agreement until they receive their provisional MSP certification number. Should they fail to apply for Provisional MSP Certification within the 60 day period, or if their written application is rejected, they shall no longer be permitted by the UDC to install meters after the 60th day or after they have been rejected, respectively.

The Executive Director shall determine which of the Commission's staff should handle the MSP certification process. The staff shall then be responsible for developing the necessary internal procedures to effectuate the MSP certification process. Should the staff determine that the application format needs to be changed, the assigned

Commissioners are delegated the authority to make revisions to the application format by way of an assigned Commissioners' ruling.

(3) Upon receipt of the application for provisional MSP certification and the bond, the staff shall review the documents for compliance with this process. If the documents are in order, the staff shall issue a provisional MSP certification number to the MSP. Upon the MSP's receipt of the provisional MSP certification number, the MSP may offer meter installation related services to the ESPs or to the UDCs. By providing such services, the MSP agrees to abide by all Commission decisions, policies, and guidelines governing the installation, maintenance, repair and removal of electric meters. Should it be determined that the MSP is not in compliance with such requirements, the Commission may suspend the provisional MSP certification.

(4) After receiving its provisional MSP certification number, each MSP shall be required to complete 50 successful meter installations before it can apply for permanent MSP certification. Pursuant to the provisions of Section H.(3) of Appendix A of D.97-10-087, the UDC must meet with the ESP for the first 50 installations performed by the ESP. If the ESP is not a licensed electrical contractor, the UDC will be required to meet with the ESP's subcontractor for the first 50 installations. The UDC reserves the right to waive any of the joint meetings.[14] A log of the joint meetings shall be maintained by both the UDC and the MSP. The log shall include the date of the joint meetings, the name and company with whom they met, the type of work performed, and whether the installation passed or failed. The UDC's log shall also include the provisional MSP certification number of the MSP.

(5) Upon the completion of 50 successful joint meetings, the MSP may mail a written request to the MSP Certification Unit requesting that the Commission grant it a permanent MSP certification number.[15] Such a request shall include copies of the log

[14] A waiver of a joint meeting by the UDC shall be counted as a successful joint meeting.

[15] The UDCs may make a written request for a permanent MSP certification number based on the first rule of the certification process. The written request shall describe the educational and

Footnote continued on next page

documenting the joint meetings. The MSP shall serve a copy of its request on all of the UDCs that the MSP had joint meetings with. The UDCs may submit a written objection to the MSP Certification Unit within 20 days of such a request. The objection shall state the reasons why permanent certification should not be granted. If no objection is raised, the staff shall review the MSP's compliance with the 50 joint meetings requirement, and shall issue a permanent MSP certification number if the requirement has been met. If the UDC objects, and no permanent MSP certification number is issued, the staff shall notify the MSP. The MSP may then file a formal Commission complaint against the UDC to determine whether the permanent MSP certification number should issue.

The Legislature, should it deem it necessary, might want to codify this MSP certification process.

e. Interim Standards For Meter Reading

(1) Background

The Meter and Data Workshop Report notes that the meters are currently read by various data acquisition methods, and that the data is transferred daily to the UDC billing systems. With the unbundling of metering services, the MDMA services are to be provided by the UDC or the ESP. The ESP or the UDC may subcontract the MDMA services to third parties, and the ESP may subcontract with the UDC to provide such service. (D.97-10-087, App. A, Section H(1)(a).) If the UDC or the ESP subcontracts the MDMA services to a third party, it is the UDC or the ESP who remains responsible for the MDMA services. (Id., App. A, Section H(7).

The Meter and Data Workshop Report lists the functions that the MDMAs are to perform. We agree that the role of the MDMAs are to perform the following functions:

- Manage the meter reading schedule
- Read and retrieve meter data

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training requirements that its employees must meet before they are allowed to install, maintain, repair, or remove electric meters or metering devices. Such a request shall be verified.

- Validate, edit and estimate meter data
- Calculate usage
- Format data
- Store data on the MDMA server
- Manage data on the MDMA server
- Manage data access to the MDMA server
- Meter/device management (i.e., when the meter/device was installed, what the device type is, what the service history has been, what the service parameters of the meter are, etc.)

In Section H.(7) of Appendix A of D.97-10-087, we listed the obligations of the MDMA. Those obligations are:

> "MDMA services will be performed in accordance with CPUC regulations and will be the responsibility of the party so indicated in the customer's DASR [direct access service request]. MDMA obligations include but are not limited to the following:
>
> (a) Meter data for DA [direct access] Customers shall be read, validated, edited, and transferred pursuant to Commission-approved standards.
> (b) Regardless of whether ESP or UDC perform MDMA services both UDC and ESP shall have access to the MDMA server.
> (c) The MDMA shall provide Scheduling Coordinators (or their designated agents) reasonable and timely access to Meter Data as required to allow the proper performance of billing, settlement, scheduling, forecasting and other functions.
> (d) The MDMA is required to keep the most recent 12 months of Customer consumption data for each DA Customer. Such data must be retained for a period of 36 months. Such data must be released on request to the customer or, if authorized by the customer, to any ESP or to the UDC.
> (e) Within five days after installation of the meter, the MDMA must confirm that the meter and meter reading system is working properly and that the billing data gathered is valid.
> (f) No more than 10 per cent of service accounts read will contain estimated data."

In addition, to the above, the Commission also adopted the tariff provision that "The MDMA shall read interval meters on the utility's scheduled meter reading date, or on such other date as may be mutually determined by the MDMA and the utility." (Id., App. A, Section I.(6).) The Commission also adopted

standards for the accuracy of all meters, the posting of validated meter reading data on the MDMA server, and the retention and format of the meter reading data. (Id., App. A, Section M.) We stated in D.97-10-087 that the tariff provisions in Sections H and M of Appendix A would be adopted on an interim basis, and would be reexamined in this decision.

The Meter and Data Workshop Report at pages 51 to 55 recommended proposed standards for meter reading, data management, and the inspection and checking of meter reading equipment and systems prior to being placed in service. We discuss those proposed standards below, and address whether the interim standards should be changed.

(2) Meter Reading

The workshop report proposes that "100% of data passed to the validation process will be based on actual meter registration." There is no further explanation of this proposed standard. We agree that the data upon which a bill is based must come from the data that is actually registered on the meter. That is implied in the direct access tariff provisions in Section H of Appendix A of D.97-10-087. The workshop report's proposal, however, could be read as requiring that none of the meter data upon which a bill is based can contain estimated data.[16] For that reason, we will not include this proposed standard as part of the direct access tariff provisions.

The second proposed standard addresses the timeliness of the data delivery. Section M(2) of Appendix A of D.97-10-087 contains the interim standards for posting validated meter reading data on the MDMA server. The workshop report recommends that meters be read to ensure overall data delivery timeliness and quality, and that the meters must be read at least monthly.

We first address how often direct access meters are to be read. Earlier, we adopted as a standard that the "meter or meter data system must be

[16] The direct access tariff provisions recognize that some usage data may be inaccurate or missing. (See D.97-10-087, App. A, Sections H.(7)(f) and M.(1).

capable of providing and storing required interval data for a minimum of 35 days." Some meters may be designed to meet only the 35 days, while others may be designed to store the data for a longer period of time. To ensure that the meter data is recorded, we will require the MDMAs to read the meters at least once a month. Such a requirement is also consistent with the timing of how often bills are to be rendered. (See D.97-10-087, App. A, Section N.)

The other timeliness issue is when the meter reading data should be delivered by the MDMA to the MDM server.[17] The workshop report proposes the following schedule for the availability of interval data: that 80% of all the usage data be made available on the first day after the scheduled reading date of the meter; 90% of the usage data be made available within two days of the reading date; and 99.99% of all the usage data be made available within five days of the reading date. SDG&E has proposed moving up the availability of the data by one day. We will adopt the interval data availability schedule recommended in the workshop report.

With respect to the non-interval data, the workshop report recommends that the following schedule be adopted: that 85% of all the monthly meter readings be made available by 6:00 a.m. on the first working day after the scheduled meter reading date; 94% of all the monthly meter readings be made available by 6:00 a.m. on the second working day after the scheduled meter reading date; and 99.99% of all the monthly meter readings be made available by 6:00 a.m. on the fourth working day after the scheduled meter reading date.[18] We adopt the following percentages for non-interval data availability: 85 %, 95%, and 99.99%. As for the 99.99% data availability, we will require that the data be made available within five days of the scheduled reading date.

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[17] Section M.(2)(a) of Appendix A of D.97-10-087 had left the schedule open.

[18] Section M.(2)(b) of Appendix A of D.97-10-087 states that 90% of the data be available on the first working day, and the percentage of available data for the second working day was left open.

Section M.(2) of the direct access tariff should be changed, as follows, to reflect the adoption of the schedules for the availability of both interval data and non-interval data:

"(2) Timeliness For Validated Meter Reading Data

The following standards shall be used to establish the time requirements for posting validated meter reading data on the MDMA server.

(a) Interval Meters:

(i) 80% of all usage data must be available on the first day after the scheduled reading date of the meter.
(ii) 90% of all usage data must be available within two days of the scheduled reading date of the meter.
(iii) 99.99% of all usage data must be available within five days of the scheduled reading date of the meter.

(b) Non-Interval (Monthly) Data:

(i) 85 % of all monthly meter readings must be available by 6:00 a.m. on the 1st working day after the scheduled meter reading date.
(ii) 95% must be available by 6:00 a.m. on the 2nd working day after the scheduled meter reading date.
(iii) 99.99% must be available by 6:00 a.m. on the 5th working day after the scheduled meter reading date."

The next proposed standard relates to the safety requirements for MDMAs. The workshop report recommends that the MDMAs comply with Cal OSHA requirements, and with UDC safety requirements. The workshop report also recommends that the MDMAs report meter, safety, and hazardous conditions to the UDC and the ESP, that site-specific information be provided to the UDC and the ESP, and that access to meter locations be compatible with UDC guidelines. In addition, the workshop report points out that it is against the law for someone to misrepresent oneself as a public utility employee. (See Penal Code Section 538f.)

We will require in the direct access tariffs that all MDMAs comply with the pertinent electrical safety provisions of Cal OSHA and the UDC's safety requirements as they apply to the reading of electric meters. Prior to allowing an ESP, in its role as the MDMA, or a third-party MDMA, to perform meter reading, we will require the UDCs, as discussed below, to review the safety training and procedures that the MDMA and its employees are to follow.

With regard to the recommendation that the MDMA report meter, safety, and hazardous conditions, and that site-specific information be kept, those safeguards are already contained in the direct access tariffs in Sections H(3) and H(8)(e).

Concerning access to meter locations, that is an issue that should be left to the customers, the ESPs, and the UDCs to work out among themselves. At the present time, the UDCs retain keys to gain entry to many different metering locations. Depending on who the customer selects to install, maintain, or read its meter, the customer will need to provide access to that service provider. If the customer selects someone other than the UDC to provide these kinds of services, then the customer will have to continue to provide key access to the UDC, and then decide whether key access should be given to the new provider of such services as well.

The issue of an employee of a MSP or a MDMA identifying him- or herself to a customer will take on a new meaning as metering services become unbundled. Customers can no longer expect that the person appearing at the customer's door is a public utility employee. Customers will need to be educated about that in either the joint Customer Education Program, or as part of the marketing or public relations efforts of the UDCs and the ESPs. The MSPs and MDMAs who are not public utilities must be sure that their employees do not represent themselves as public utility employees. It is in the interests of the MSPs and the MDMAs who are not public utilities to clearly identify what company they are from, what the purpose of their visit is, to carry company-issued identification cards, and a letter or some other writing which describes which ESP the services are being rendered for.

(3) Data Management

The Meter and Data Workshop Report also proposes that the MDMA retain 36 months of raw meter reading history. That proposal has already been incorporated into Section H(7)(d), which requires the MDMA to retain a customer's consumption data for 36 months.

(4) Inspection And Checkout

The workshop report proposes that there be an "inspection and checkout of meter reading" before such services are placed into service. This inspection and checkout consists of two activities. First, the workshop report recommends that all meters and communications systems are to be inspected at the time of installation or maintenance in accordance with Appendix B of the workshop report. The purpose of this is to ensure that the meters and communications systems are capable of providing reliable metering data to market participants. The second proposed activity is for the MDMA to submit an application to the UDC to provide MDMA services, and for the UDCs or an authorized agency to begin administering MDMA acceptance tests.

Regarding the first activity, the direct access tariffs provide that the MSP will be responsible for ensuring that the direct access meters comply with the meter specifications of the Commission, and that the meter has been calibrated and tested. (D.97-10-087, App. A, Section H.)

The second activity addresses the coordination that is required between the MDMAs and the UDCs. The coordination is needed so that the UDC knows who is providing MDMA services, and whether the MDMA's methods and processes will permit the UDC to access the data from the MDMA's server. This activity is also closely tied to the workshop report's recommendation that MDMAs be certified, as well as to our earlier requirement that all MDMAs receive training in electrical safety.

We first address the issue of who should be responsible for coordinating the activities between the UDCs and the MDMAs. Some of the parties have suggested that the Commission or a third party conduct the MDMA acceptance tests. Such activities are best left to the UDCs, the ESPs, and the MDMAs to work out among themselves using the guidelines set forth in Appendix C of the workshop report, and our decisions which affect meter and data standards. It is primarily the UDCs and the ESPs who will be accessing the MDM servers. If the ESP subcontracts the

MDMA services to a third party, the ESP, as well as the UDC, must be able to obtain the data from the MDMA. In addition, it is the UDC or the ESP who is responsible for ensuring that the MDMA services are performed in accordance with the Commission's rules and regulations. (D.97-10-087, App. A, Sections H(1)(a), H(7).) Thus, the MDMA screening process and acceptance tests should involve all of these affected parties. The role of the Commission is to make sure that unbundling is allowed to take place, and that new market entrants are being allowed to offer services which compete with the incumbent UDCs.

Prior to the start of any MDMA acceptance tests, the UDCs shall be required to meet with all ESPs, and the ESP's prospective third party MDMAs, if any, planning to offer MDMA services in the service territory of the respective UDC. Each UDC shall hold at least one such general meeting within 21 days from today's date.[19] The UDC may also meet with each ESP and the ESP's MDMAs on an individual basis. The purpose of such a meeting is to allow the UDCs and the MDMAs to discuss the assumptions and common understandings about each other's meter data management capabilities. The meeting shall discuss the topics listed below. These topics have been extracted from Appendix C of the workshop report.[20] Until a sufficient number of MDMAs enter the market, the UDC is likely to serve as the MDMA for most customers during the short term. Since ESPs will be accessing the UDC's MDMA server, it is important that the topics listed below balance the interests of the ESPs, other third party MDMAs, and the UDCs. To the extent possible, the UDCs

[19] The general meeting is open to all prospective MDMAs and ESPs. Subsequent general meetings shall be held at least once a month if there is widespread interest, for the next twelve months. If there is insufficient demand for a general meeting, each UDC may meet with the ESP, and the ESP's MDMAs, if any, on an individual or small group basis, as needed. After one year, these meetings will be scheduled between the UDC and the ESP and the ESP's MDMAs as the need arises.

[20] Some of the topics addressed in Appendix C are based upon the resolutions of issues that were reached by the technical subgroup addressing the MDMA issues. A summary of the subgroup's resolution of these issues is shown in Appendix D of the workshop report. These topics are also discussed at pages 69 to 75 of the workshop report.

and other affected parties should attempt to develop uniform approaches to these topics within the parameters contained in our direct access decisions. Some of the topics listed are discussed in more detail below.

- Industry standard record layouts
- MDMA system interface protocols
- Published set of rules for validating, estimating and editing data
- Data timeline standards
- MDM server availability standards
- System access controls for the MDM server and related facilities
- Other technical requirements
- Technical assistance regarding MDM server and meter data
- Qualifications for meter reading training (safety, meter reading, differences in meters, etc.)
- Qualifications for MDMA data processing staff
- Confidentiality requirements
- System redundancy and disaster recovery plan
- MDMA acceptance testing procedures
- Discussion of other performance criteria
- The type of changes that require additional acceptance tests
- Other related issues

Appendix C of the Meter and Data Workshop Report recognizes that there is no standard MDMA software package, and that every MDMA applicant will need a system to handle agreed upon industry standard record layouts and MDMA system interface protocols. The MDMA software represents the second interface shown earlier in the diagram. No standardization of this interface is needed so long as the MDMA can deliver meter data to the MDM server. The other interface, which this discussion addresses to a certain degree, involves the first interface shown on the diagram.[21] The purpose of the general meeting and the acceptance testing is to ensure that the MDMA's server can interface with the systems of the ESP and UDC.

[21] This interface is also discussed in the section below on data transformation formats.

One of the topics to be discussed is technical assistance. Appendix C of the workshop report proposes that the ESPs provide such support. The UDCs also need to provide equivalent support if the UDC is acting as the MDMA.

Regarding the UDC qualifications for meter reading training, we stated earlier that the MDMA and its employees must adhere to the applicable safety requirements of Cal OSHA and the UDC. We will also require that all MDMAs and their employees receive training in meter reading that is comparable to the UDC's training and experience requirements before the MDMA's employees are allowed to read meters. This is to ensure that direct access meters are read safely and accurately. Since it is likely that there will be several kinds of direct access meters or meter devices in the field, all MDMAs should be trained in reading the different kinds of metering equipment that they have been retained to read. With respect to the training of MDMA data processing staff, we will require that all MDMAs meet training and experience requirements that are comparable to what the UDC's requirements are.

On the acceptance testing procedures, since the UDCs are likely to provide metering data to the majority of the ESPs in the initial months of 1998, there must be some testing that goes on between the UDC's MDM server and the ESPs. The acceptance testing procedures need to reflect that. In addition, we do not believe that the MDMA applicant should be charged a fee to participate in such testing. Instead, to the extent that the UDCs incur costs to accommodate competing meter reading services, those costs should be booked for possible recovery as a direct access implementation cost.

We also do not agree with the proposal that if a potential MDMA fails the acceptance testing procedures after two attempts, the entity must wait six months before being tested again. Instead of a six-month wait, a wait of three months is appropriate.

With regard to the other performance criteria, the UDCs and the parties need to clarify under what circumstances a UDC "may periodically perform sample tests of any set of meters it desires." Although we see the need for such sampling, it must be agreed upon at the outset as to how often the sampling can take

place and under what circumstances. On the issue of required user conferences, attendance by the MDMAs should be optional. Non-attending MDMAs should be supplied with any printed materials distributed at such conferences. It is certainly in the interests of all MDMAs to participate in the user conferences, because if the MDMA services are not in conformance with applicable Commission rules and regulations, the MDMA's failure to adhere to such standards could lead to the termination of the MDMA's services. (D.97-10-087, App. A, Section H(8).)

Another performance criteria issue is the proposed requirement that all meter readings must be in whole days. CCES points out that metering data is not read at the same time every month, and that the UDCs do not currently receive precise whole day readings. We do not believe that this will be a problem for interval meters because of the nature of the meters. For noninterval meters, having data in whole days makes billing much simpler. However, since meters are not read at the same time every month, conversion to whole day readings will result in some error unless specific rounding rules are adhered to. We will leave this issue to the market participants to work out.

Following the initial general meeting, we will require each UDC to file with the Docket Office within 21 days of the meeting a description of all the topics discussed, and the agreed upon expectations of the parties. In addition, all printed materials disseminated at the general meeting shall be attached to the meeting description. The UDCs shall serve a copy of the meeting description without the attachments on everyone who attends the general meeting. Interested persons may comment on the meeting description within 15 days from being served. The Commission shall use the meeting description and comments to assist in the resolution of any complaints that may be filed regarding such topics or qualifications, and to issue any clarifying decisions that may be needed regarding standards. The agreements reached at the initial general meeting, to the extent they are consistent with our decisions, shall apply on a going-forward basis unless a ruling or decision is issued to the contrary.

In order for the UDC and the Commission to keep track of who is actually performing the MDMA services on behalf of an ESP, we will require as a tariff condition that the UDC require the ESP to indicate on the direct access service request who the MDMA will be if the ESP is not planning to provide that service.[22]

Another issue that is related to the MDMA standards is the tariff provision that "No more than 10 per cent of service accounts read will contain estimated data." (D.97-10-087, App. A, Sections H(7)(f), M(1)(c).) CellNet states that meter data quality relates to how much metering data can be estimated, and how much data is actual. CellNet contends that no technology or system can collect 100% of the data. CellNet is concerned about the 10% reference because it does not specify over what period the standard is measured, i.e., monthly or annually. Second, it does not specify how much data can be estimated. For example, such a provision could be interpreted to permit 99% of the data for this 10% of the accounts to be estimated. Third, CellNet contends that if this standard is applied to hourly data, the UDCs are unable to achieve this standard.

CellNet recommends that this provision be changed to the following: Either no more than 10% of the accounts will contain estimated data, or no more than 1% of all the data (e.g., the 720 hourly reads per month times the number of meters) will be estimated. We will adopt CellNet's recommendation, and change Sections H.(7)(f) and M.(1)(c) of the direct access tariff to reflect that performance related to estimated data must meet one of these two standards.

(5) Screening Process For MDMAs

With the unbundling of metering services, it is necessary to develop a system to ensure that only qualified individuals or entities can perform MDMA services. A system is needed so that the UDC and the ESP can be assured that the direct access meters are being read in an accurate and safe manner. It is

[22] The likely place for such a requirement is in Section H.(7) of Appendix A before the MDMA obligations are set forth.

certainly in the interests of both the UDC and the ESP to ensure that meter readings are accurate. Inaccurate readings may result in a customer's dissatisfaction with a particular provider if a bill is too high, and a back bill charge if the bill is too low.

The standards by which to judge whether an MDMA is qualified should come from the UDCs' current qualifications until such time national qualifications or other uniform qualifications are developed, reviewed, and made a part of the permanent standards. Since it is the UDC or the ESP who is ultimately responsible for the MDMA services, and since those two entities are the ones who will need the metering data information so that they can render their bills, it makes sense to require the UDCs to screen the qualifications of potential MDMAs. This screening process incorporates the safety and meter reading training and experience that we touched on earlier. Should a dispute about a potential MDMA's qualifications arise, a complaint may be formally filed with the Commission by the potential MDMA.

In order for an individual or entity to qualify as an MDMA, we will require the UDCs and the ESPs to adhere to the following before they or any of their subcontractors are permitted to offer any MDMA services:

(1) The existing regulated utilities who perform their own meter reading and meter data management shall be allowed to perform MDMA services for the UDCs, as well as for the ESPs. All utility employees who have successfully completed the utility's training programs regarding meter reading, and related safety programs, shall be permitted to carry out the meter reading activities required of an MDMA. All utility employees who have successfully completed the utility's training programs regarding meter data management (validation, editing, etc.) and entry shall be permitted to carry out the meter data management activities required of an MDMA.

(2) All non-utility entities and ESPs seeking to offer MDMA services shall be required to submit a written request to each UDC in whose service territory the ESP or entity seeks to offer such services. The written request shall include the following information: name of the person or entity; business address and telephone number; a description of the requesting party's experience in meter reading and meter data management; and a description of what educational and training requirements in meter

reading, meter data management, and related electrical safety the MDMA will require of its employees before they are allowed to carry out the MDMA functions. The UDCs shall require the potential MDMAs to attach all pertinent training manuals and materials which describe the training in meter reading, safety, and meter data management that all of its employees have received or will undergo before the employee is allowed to perform MDMA-related activities. The request shall be verified.

(3) Upon receipt of the request, the UDC shall be required to review the written description and any attached materials, and to confirm in writing with the potential MDMA whether the proposed educational and training requirements are comparable with the UDC's requirements. If the UDC states that the proposed MDMA's educational and training requirements are not comparable, the person or entity may file a formal complaint with the Commission with regard to such qualifications. If the UDC states that the proposed MDMA's educational and training requirements are sufficient, then the MDMA may begin offering MDMA services so long as it meets all the MDMA-related requirements.

The MSP is also free to require theMDMA to meet other requirements that are reasonably related to the MDMA's activities.

f. Interim Standards For Meter Data Management Systems

(1) Quality Checks

Meter data management systems are used to edit, estimate, and validate the data collected from the meters. Quality checks on the way in which the raw meter reading data is managed need to be adopted. The Meter and Data Workshop Report recommends the following series of standards.

(a) Missing Interval Data

If more than two continuous hours of interval data are missing, the workshop report recommends that an average daily profile be calculated. The average daily profile is calculated by using the days from the current usage period and as much historical data, up to 90 days preceding the usage period, as required to select three complete days which were not estimated, and which

correspond to the day of the week or holiday with the missing data. If no historical holidays exist, Sunday data would be used instead. The missing data would then be estimated by applying the appropriate average daily profile to the missing intervals.

If the missing interval data is two hours or less in length, the workshop report recommends that the point to point linear interpolation method be used to estimate the missing data.

No one has objected to the method in which missing interval data is to be calculated. We will adopt the above methods.

(b) Validation And Correction Of Consumption Data

The workshop report recommends that consumption data be validated and corrected using the following validations and algorithms.

Spike checks are to be performed on a calendar day basis. The highest interval cannot exceed the third highest interval for that day by more than 180%. In the case of partial days, the spike check should be performed for the adjacent 24 hours. If a spike is found, the MDMA may recheck the data to verify that the spike occurred. If a spike has occurred, consumption data is treated as missing, and the missing intervals are to be estimated according to the missing data estimation rules.

No one has objected to the spike check. We will adopt the spike check.

Another check on consumption data is the high-low average daily usage check. This check is performed at the billing cycle level. This check uses last year's data for the same billing month. An average day's usage is calculated from the historical data. The current average daily total consumption would then be computed using the current span of data. The check compares the current average daily total consumption to the historical average daily total consumption, plus or minus 50%. If the current average daily total consumption is outside these limits, the data should be verified by the MDMA through repolling, meter tests, or other techniques. If the data comes back the same, the data should be flagged as verified.

We adopt high-low average daily usage check.

Another check on the consumption data is the sum check. This compares the energy use recorded by the meter to the energy use recorded by the pulse recorder over the same time period to ensure that the difference is within an acceptable range. To be acceptable, the difference must be less than or equal to one meter multiplier, where the meter multiplier is defined as the constant used to convert the meter readings to kWh. If the difference is greater than one meter multiplier, the data needs to be verified by the MDMA. If the data comes back the same, the data should be flagged as verified.

For non-redundant solid state meters, the sum check needs to be performed before any missing or spike data is changed. For mechanical dial meters, the sum check is valid whether or not any data is estimated. The sum check is adopted.

There are also several hardware checks on the consumption data. The first hardware check is for the MDMA to ensure that the collection device is synchronized to the national time standard before data collection begins. The second hardware check is a time tolerance check to verify that the time difference in the meter and the collection device is within 180 seconds for a 30-day time period. The various scenarios that are likely to result from a time tolerance check are described at pages 61 and 62 of the workshop report. The third hardware check is the pulse overflow. This check determines whether the meter is able to record all the pulses in a single interval. If this check fails, the data is treated as missing, and the missing intervals are estimated according to the missing data estimation rules.

No one has objected to the hardware checks. Those checks are adopted.

If kilovolt-ampere reactive hour (kvarh) data is collected, additional estimation rules are needed. The workshop report recommends that if the kWh channel has zero consumption and for the corresponding time the kvarh channel has registered consumption, the kWh data must treated as missing. If the current average power factor is consistent with the historical average power factor for

the customer, and the kvarh data is consistent with historical kvarh data, the kWh usage is to be estimated using the historical average power factor and the corresponding kvarh data. If this cannot be done, the missing data estimation rules on page 62 of the workshop report would apply.

We adopt the kvarh check for consumption data.

(c) Other Rules

The Meter and Data Workshop Report also proposes several other standards, all of which we adopt. They are: (1) validation results will be stored with and at the same interval frequency as the source data; (2) estimated usage data is to be identified, along with the estimation technique used; (3) usage data will be represented in the appropriate engineering units at the same interval length that was captured in the meter.

(d) Accuracy

The workshop report discusses the meter accuracy at pages 63 and 64 of the workshop report. These accuracy standards are reflected in Section M.(1) of Appendix A of D.97-10-087. With the exception of Section M.(1)(c), which we discussed and changed, we will retain the other accuracy standards shown in that tariff provision.

(e) Collection Of Monthly Data For Load Profiling

The Meter and Data Workshop Report proposes that the following requirements be met when a MDMA is collecting monthly data for load profiling. First, the UDCs recommend five checks for usage reasonableness.

The first is the high-low usage check. This is used to validate that the usage meter read is within a 40% and 200% tolerance window of the highest daily average usage meter reading based on either last year's usage for the same billing month, the previous three billing months, or the previous billing month. If the meter reading falls outside of the tolerance, the meter reading is to be re-read or re-entered, and it is to be flagged to indicate a failure of the high-low usage validation.

The second check is the high-low demand. This check validates that the demand meter reading is within a 75% and 125% tolerance window of the highest average demand meter reading based on either last year's demand for the same billing month, the previous three billing months, or the previous billing month. If the meter reading falls outside of the tolerance window, the meter reading must be re-read or re-entered, and must be flagged to indicate a failure of the high-low demand validation.

The third check is the time of use (TOU) check. This compares the sum of the current season peak kWh meter readings and the current season total kWh meter reading. The difference must be within plus or minus the number of active peaks for the current season. If the difference is greater than the tolerance, the MDMA must verify the data and flag the current season total kWh meter reading to indicate a failure of the TOU validation.

The fourth check is zero consumption for active meters. This check validates that the meter is an active meter. If there is zero consumption, the MDMA must verify the meter reading, and flag the meter reading to indicate a failure of the zero consumption validation.

The fifth check is usage for inactive meters. If consumption is reported, the MDMA must verify the meter reading and flag the meter reading to indicate a failure of the usage for inactive meters.

We will adopt all five of the usage reasonableness tests.

The second kind of tests that the workshop report recommends are three tests for meter configuration.

The first test is the meter reading dial quantity difference. If the dial quantity of the meter reading is different from the expected dial quantity, the MDMA must do further investigation and flag the meter reading to indicate that a meter reading dial quantity was investigated and corrected.

The second test for meter configuration is the meter reading dial decimal quantity. If the dial decimal quantity of the meter reading is

different from the expected dial decimal quantity, the MDMA must investigate further and flag the meter reading to indicate that a meter reading dial decimal quantity was investigated and corrected.

The third test for meter configuration is the external meter identification. This validates that the external meter identification of the meter reading is not different than expected. If the external meter identification is different, the MDMA must do further investigation and flag the meter reading to indicate that a mismatch was investigated and corrected.

We adopt all three meter configuration tests.

The workshop report also recommends that if there is missing or incomplete data, the following two techniques be used to estimate the missing data. If a usage meter reading is missing, the MDMA is to estimate the missing reading. The MDMA is to use last year's daily average usage. If that is not available, then the previous month's daily average usage will be used. If no historical data is available, a daily average usage will be calculated utilizing the appropriate load profile. All estimated usage meter readings are to be flagged to indicate that the reading is estimated.

If a demand meter reading is missing, the MDMA must estimate the missing demand meter readings. To estimate the missing demand meter reading, the MDMA is to use last year's demand. If that is not available, then the previous month's demand will be used. If no historical data is available, the load profile demand will be used. All estimated demand meter readings are to be flagged to indicate that the meter reading is estimated.

We adopt both methods to estimate missing demand and usage.

(2) Data Transformation Formats

Common data formats must be used so that the UDCs, ESPs, and the MDMAs can exchange settlement-quality validated consumption data

starting on January 1, 1998.[23] Appendix E of the Meter and Data Workshop Report contains the MDMA data exchange format that was discussed at the workshop. This data exchange format is called the PG&E Metering Exchange Protocol. This protocol is intended to be used for transmitting metering, billing, and administrative information between companies. The workshop report recommends adopting PG&E's protocol as the interim format standard. The workshop report also notes that several efforts are underway to develop a national standardized format for the MDMA data exchange process.

We will adopt PG&E's Metering Exchange Protocol, as detailed in Appendix E of the Meter and Data Workshop Report, as the interim meter data format standard. The UDCs shall ensure that all MDMAs and ESPs comply with this standard. The adoption of this standard will promote customer choice, and support the interoperability of different meter reading systems.

E. Permanent Standards

As discussed in the various sections above, a number of different national standards are available, while other national standards are still being developed. In addition, there are existing UDC standards and qualifications, as well as other standards developed by knowledgeable bodies with an interest in particular subject matters. Given the time constraints that the Commission and the electric industry participants are operating under, and the number of other direct access issues that need to be addressed, it is impossible to devote sufficient time to review every applicable standard, and to develop permanent standards based on such a cursory review. That is why we have adopted the interim standards discussed above.

We agree with a number of the commenting parties that there should be a migration from existing standards to interim standards which lead to the development and adoption of permanent standards. As we mentioned earlier, the review and development of permanent standards should not rest solely with the Commission.

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[23] These data formats are being used at the first interface as referenced in the earlier diagram.

Many of the standards are technical in nature and beyond the expertise of this Commission. Also, new standards are likely to be developed or existing standards may be revised in the future.

This review and development should involve the market participants who design and manufacture meters, metering devices, and meter reading systems, as well as the UDCs, the ESPs, the MSPs, the MDMAs, and customer groups. Many of these participants are in a much better position than the Commission to judge what standards should apply, and what standards make sense from a business perspective. Accordingly, we will create a working group to be known as the "Permanent Standards Working Group " (PSWG).[24] The purpose of the PSWG is to review the interim standards, particularly the existing UDC practices, as well as existing and proposed national standards and other applicable standards and qualifications. In addition, the PSWG should recommend what should be done about developing a statewide standard for the numbering of meters. This is an issue that needs to be coordinated with manufacturers. The PSWG shall then recommend what permanent standards should be adopted by the Commission. The PSWG should also indicate whether other standards are expected in the future, and recommend a process for reviewing possible future changes to the permanent standards.

The Energy Division staff is directed to hold a workshop within 60 days to determine who is interested in serving on the PSWG, and to establish the various subgroups that may be needed to address particular kinds of standards. Before the workshop is held the Assigned Commissioners may issue a ruling providing additional guidance to the PSWG. Within 180 days of the workshop, the PSWG members shall recommend in a report to the Commission what permanent standards should be adopted. The proposed permanent standards should be attached to the report, or

[24] As with the other working groups that have participated in the restructuring of California's electricity market, there will be no compensation or expense reimbursement. It is in the interests of the market participants to join in such an effort because of the impact that these permanent standards will have on the market.

placed on the Internet. PG&E, SDG&E, and Edison are directed to reproduce the report, file the report with the Docket Office,[25] serve a notice of the availability of the report on the electric restructuring service list,[26] and serve the Commissioners, and the Commission staff with the full reports. Interested parties may file comments within 35 days of the date of service of the notice of availability. The Commission will then issue a decision regarding the adoption of permanent metering standards.

The interim metering standards that we adopt today will continue in effect until the Commission adopts permanent metering standards. We anticipate that this will occur before the end of 1998. The Commission will address in that decision whether existing meters that meet the interim standards should be permanently grandfathered, or whether they should be permanently retired after a fixed period of time. That decision will also address the time for complying with the permanent standards.

Findings of Fact

1. PG&E, SDG&E, and Edison were ordered in D.97-05-039 and D.97-05-040 to confer with interested parties in an attempt to develop standards for metering equipment and functions.

2. The meter and data communications workshop was held on July 8, 1997.

3. The Meter and Data Workshop Report was filed with the Commission on July 25, 1997.

4. D.97-10-087 adopted some interim metering standards and criteria as part of the direct access tariffs.

5. The unbundling of revenue cycle services created opportunities for new market participants.

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[25] Unless otherwise directed in a ruling, this report is to be filed in this docket.

[26] The report shall be forwarded to the Commission's web site to be posted on the electric restructuring web page. A reference to the location of the document on the Commission's web site shall be included on the notice of availability.

6. Under the direct access tariffs, the ESPs and the UDCs are the entities responsible for collecting, transferring, and processing metering data for their respective customers.

7. End-use customers may select their metering services only from the ESPs or the UDCs.

8. The proposal for an auction mechanism to determine who should be the default MSP and billing entity should not be adopted.

9. The goal of direct access is to facilitate customer choice.

10. Open architecture serves as the vehicle for allowing interoperability to take place.

11. The term "meter socket" presupposes that all meters must use a meter socket.

12. There should be a transition toward new meter and data standards.

13. It is the responsibility of the ESP or UDC, acting as the MSP, to ensure that the meters used for direct access comply with the interim meter standards.

14. It is not necessary for the Commission to approve meter certification facilities because all new direct access meters will have to comply with the interim meter standards.

15. Although there are no national standards for metering installation, the UDCs have their own standards.

16. A uniform system of metering records should be maintained by the MSPs.

17. The UDCs currently have their own meter maintenance schedules and meter inspection practices.

18. Sufficient provisions are in place to detect and remedy energy theft.

19. In a competitive environment we need to ensure that the metering equipment placed by the MSPs meets the same level of standards for accuracy, reliability, and safety that the regulated utilities must meet.

20. Due to the safety hazards that electricity and electrical meters pose, the Commission should adopt certification procedures for MSPs.

21. Certification procedures will ensure that only qualified persons may install, remove, repair, or maintain the direct access meters.

22. The requirement of a bond for the MSPs will ensure that the MSPs comply with all applicable provisions governing the installation and removal of electric meters.

23. Before a non-utility MSP may apply for a permanent MSP certification number, each MSP shall be required to complete 50 successful meter installations as verified by the UDC.

24. The UDC may waive any of the joint meetings.

25. MDMA services are to be provided by the UDC or the ESP, or a third party acting on the behalf of the UDC or ESP.

26. MDMAs are to read the direct access meters at least once a month.

27. It is in the interests of the MSPs and the MDMAs who are not public utilities to clearly identify what company they are from and to carry company-issued identification cards.

28. Until a sufficient number of MDMAs enter the market, the UDC is likely to serve as the MDMA for most customers during the short term.

29. Standardization of the MDMA's software is not needed so long as the MDMA can deliver meter data to the MDM server.

30. With the unbundling of metering services, a system to ensure that only qualified individuals or entities can perform MDMA services should be developed.

31. Meter data management systems are used to edit, estimate, and validate the data collected from the meters.

32. Common data formats are needed so that the UDCs, ESPs, and the MDMAs can exchange validated, settlement-quality consumption data.

33. The PG&E Metering Exchange Protocol is used to transmit metering, billing, and administrative information between companies.

34. The review and development of permanent metering-related standards should involve the various market participants.

Conclusions of Law

1. Safety, reliability, and accuracy concerns require that the Commission retain some regulatory oversight of who is responsible for the metering functions.

2. For customers on demand-based rate schedules which require that data be based on 15-minute increments, data is to be measured in 15-minute intervals for purposes of calculating demand revenue.

3. Limiting the design of interval meters to a meter socket may preclude other interval meter designs from being used.

4. Interim standards need to be in effect during the transition to the adoption of a permanent set of metering-related standards.

5. All meters used for direct access must meet the applicable criteria set forth in this decision.

6. Metering transformers and auxiliary devices and all service entrance equipment shall meet the criteria set forth in this decision.

7. Meter installation and testing shall be done in accordance with the criteria set forth in this decision.

8. Metering records for all metering devices shall be maintained and made available by the UDCs and the ESPs in accordance with this decision.

9. The ESP should be required to provide the UDC with sufficient identifying and operational meter data to allow the UDC to carry out its functions.

10. Meter registration information should not be made available to the MSPs.

11. Meter maintenance is to be performed in accordance with the local UDC's practices.

12. The UDCs should ensure that all ESPs and other third-party MSPs comply with the electrical safety requirements discussed in this decision.

13. By requiring end-use customers to interact with the UDC or ESP for their meter services, the Commission can ensure that the meters are accurate, reliable, and safe.

14. All UDCs and ESPs, and any MSPs working on their behalf, must comply with the MSP certification process described in this decision.

15. A nonutility MSP is required to have an electrical contractor's license because the installation, removal, or repair of an electric meter by a person other than a public utility is subject to the Contractors' State License Law.

16. A regulated public utility is exempt from the Contractor's State License Law when it performs work on its own property, or when the work is undertaken in furtherance of the distribution of electricity.

17. The UDCs shall ensure that meter installers operating pursuant to a Section H(3) agreement timely apply for Provisional MSP Certification or take steps to prevent them from installing any further meters.

18. Upon the MSP's receipt of the provisional MSP certification number, the MSP may offer meter installation services to the ESPs or to the UDCs in accordance with the requirements set forth in this decision.

19. If the ESP is not a licensed electrical contractor, the UDC shall be required to meet with the ESP's subcontractor.

20. The waiver of a joint meeting by the UDC shall be counted as a successful joint meeting.

21. If no objection is raised to an MSP's request for a permanent MSP certification number, the staff shall review the MSP's compliance with the requirement of 50 joint meetings and shall issue a permanent MSP certification number if the requirement is met.

22. An MSP whose request for a permanent MSP certification number has been rejected may file a formal complaint against the UDC with the Commission.

23. If the UDC or the ESP subcontracts the MDMA services to a third party, it is the UDC or the ESP who remains responsible for the MDMA services.

24. Section M.(2) of the direct access tariff should be changed to reflect the adoption of the new schedules for the availability of both interval and non-interval data.

25. All UDCs should be required to comply with the MDMA-related procedures set forth in this decision, and to ensure that all ESPs and other third parties comply as well.

26. To the extent that the UDCs incur costs to accommodate competing MDMA services, those costs should be booked for possible recovery as a direct access implementation cost.

27. The UDC will require as a tariff condition that the ESP indicate on the direct access service request who the MDMA will be if the ESP is not planning to provide that service.

28. Sections H(7)(f) and M(1)(c) of the direct access tariff should be changed to reflect the estimated data standards set forth in this decision.

29. The standards to judge whether a MDMA is qualified should be based on the UDC's standards, and the UDCs should screen the qualifications of potential MDMAs.

30. The quality checks on the raw meter reading data that are recommended in the Meter and Data Workshop Report should be adopted and used by all meter data management systems.

31. PG&E's Metering Exchange Protocol should be adopted as the interim meter data format standard, and the UDCs should ensure that all MDMAs and ESPs comply with this standard.

32. The PSWG should be formed to review the available standards and to recommend to the Commission what permanent standards should be adopted.

O R D E R

IT IS ORDERED that:

1. All of the interim metering-related standards and procedures, as discussed and set forth in this decision, are adopted and are effective immediately.

   a. These interim metering standards and procedures shall apply until permanent metering standards are adopted and implemented.

   b. All of the following California utility distribution companies (UDCs): Pacific Gas and Electric Company (PG&E); San Diego Gas & Electric Company (SDG&E); Southern California Edison Company (Edison); PacifiCorp; Sierra Pacific Power Company; and Southern California Water Company, shall adhere to these interim standards and procedures, and shall ensure that the electric service providers (ESPs) and other third parties comply with the applicable interim metering standards and procedures.

   c. The UDCs are directed to incorporate the interim metering standards, procedures, and clarifications into the direct access tariff provisions that were

adopted in Decision (D.) 97-10-087 by making advice letter filings amending such provisions.

(1) The advice letters shall be filed with the Energy Division within 30 days from today's date.

(2) Any protests to the advice letters shall be filed with the Energy Division within 20 days of such filing.

(3) The effective date of the advice letters shall be the 40th day after the filing of the advice letters.

2. The Executive Director shall determine which of the Commission divisions shall handle the meter service provider (MSP) certification process and shall ensure that the assigned staff develops the internal procedures necessary to effectuate the MSP certification process.

a. Should the MSP application format require any change, the Commissioners assigned to direct access (assigned Commissioners) are delegated the authority to make revisions to the application format by way of an assigned Commissioners' ruling.

3. Within 21 days from today, the UDCs shall hold at least one initial general meeting to allow the UDCs and the meter data management agents (MDMAs) to discuss the assumptions and common understandings about each other's meter data management capabilities as set forth in this decision and in the direct access tariff provisions.

a. Subsequent general meetings shall be held at least once a month, for the next twelve months, if there is widespread interest. Otherwise, each UDC may meet with the ESP, and the ESP's MDMAs, if any, on an individual or small group basis, as needed.

b. Within 21 days of the initial general meeting, each UDC shall file in the Docket Office a description of all the topics that were discussed at that meeting and the agreements reached by the parties. All printed materials disseminated at the general meeting shall be attached to the meeting description.

(1) The meeting description shall be served only on those who attended the initial general meeting.

(2) Interested persons may comment on the meeting description within 15 days from being served by filing their comments in the Docket Office, and serving the people described in sub-paragraph (1) above.

(3) The agreements reached at the initial general meeting, to the extent they are consistent with our decisions, shall apply on a going-forward basis unless a ruling or decision is issued to the contrary.

4. Within 30 days from today, PG&E, SDG&E, and Edison shall file and serve a description of the meter records that they maintain.

a. The description shall contain an explanation of each meter record field that is maintained, and recommendations for a uniform set of meter records that each MSP should be required to maintain.

b. The description shall also include a recommendation for a uniform set of identifying and operational meter data that the UDC needs from the ESP to allow the UDC to carry out its functions.

c. Interested parties may file comments regarding this filing. Comments shall be due in the Docket Office within 15 days from the date of service.

d. The assigned Commissioners are delegated the authority to determine what uniform metering records shall be maintained by the MSPs, and what start-up meter data shall be provided to the UDC when a meter is installed by an ESP or another third party.

5. Within 60 days from today, PG&E, SDG&E, and Edison shall file and serve a description of their respective meter maintenance schedules, and their recommendations for a uniform meter maintenance schedule.

a. The description shall indicate the frequency of such maintenance, and the details of the maintenance tasks or tests associated with such meters.

b. Interested parties may file comments regarding this filing. Comments shall be due in the Docket Office within 15 days from the date of service.

c. The assigned Commissioners are delegated the authority to determine what periodic maintenance schedules and procedures should be adopted.

6. Within 60 days from today, PG&E, SDG&E, and Edison shall file and serve a description of their respective electrical safety standards.

a. Interested parties may file comments regarding this filing. Comments shall be due in the Docket Office within 15 days from the date of service.

b. The assigned Commissioners are delegated the authority to determine what electrical safety standards of the UDCs should be adopted.

7. The Energy Division staff shall hold a workshop within 60 days from today to determine who is interested in serving on the Permanent Standards Working Group (PSWG), and to establish the various subgroups that may be needed to review particular kinds of meter standards.

a. Prior to the workshop, the assigned Commissioners may issue a ruling providing additional guidance to the PSWG.

b. Within 180 days of the workshop, the PSWG members shall recommend in a report what permanent metering-related standards should be adopted by the Commission.

c. The proposed permanent standards shall be attached to the report or placed on the Internet.

d. PG&E, SDG&E, and Edison are directed to reproduce the report, file the report with the Docket Office, serve a notice of the availability of the report, including the web site location of the report, and serve the Commissioners and Commission staff with the full reports.

e. Interested parties may file comments within 35 days of the date of service of the notice of availability.

This order is effective today.

Dated December 3, 1997, at San Francisco, California.

P. GREGORY CONLON
President
JESSIE J. KNIGHT, JR.
HENRY M. DUQUE
JOSIAH L. NEEPER
RICHARD A. BILAS
Commissioners

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