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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)

ORIGINAL

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)

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**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 II.(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.

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.

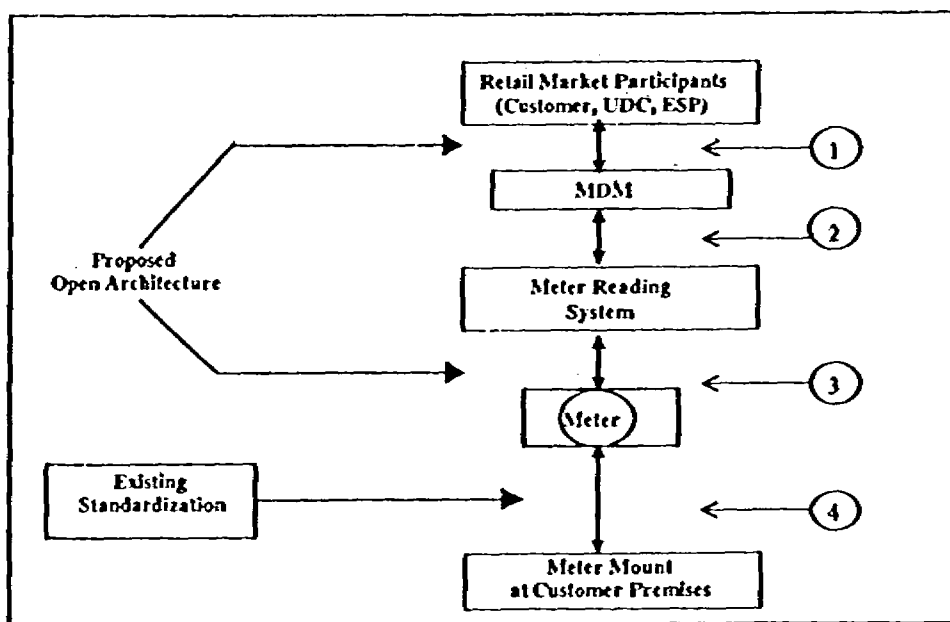
To promote customer choice, the unbundling of metering and data communications functions must occur. Unbundling is the separation of what were vertically-integrated electric utility functions into discrete, independent functions, which can be served by existing or new business entities in an open competitive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

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.

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.

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:

³ The meter socket issue was addressed earlier.

- (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 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:

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.

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.

- (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 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 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

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.

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.

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.

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

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.

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 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 occurrences. 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.