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BEFORE THE ARIZONA CORPORATION COMMISSION

Arizona Corporation Commission
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JIM IRVIN
Commissioner – Chairman

RENZ JENNINGS
Commissioner

CARL J. KUNASEK,
Commissioner

IN THE MATTER OF THE COMPETITION IN THE PROVISION OF ELECTRIC SERVICES THROUGHOUT THE STATE OF ARIZONA	DOCKET NO. U-0000-94-165 **NOTICE OF FILING**

The City of Tucson provides Notice of Filing of a Position Paper on Arizona Commerce Commission proposed rules R14-2-1604 and section J of R14-2-1613. The Position Paper analyzes and critiques the revised competitive phase-in rules of R14-2-1604 and the interval meter mandate in R14-2-1613(J).

DATED this 3rd day of August, 1998.

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E EXECUTIVE SUMMARY

E.1 INTRODUCTION

This position paper analyzes and critiques two key provisions of recent rule amendments regarding the opening of retail electricity competition in Arizona. Section 2 examines the revised phase-in rules in Section R14-2-1604 (Competitive Phases). Section 3 scrutinizes the interval meter mandate in section J of R14-2-1613 (Service Quality, Consumer Protection, Safety, and Billing Requirements).

E.2 PARTICIPATION THRESHOLDS

E.2.1 The new phase-in rules, by making nearly all small customers ineligible for the first phase of retail choice, run counter to both the letter and spirit of existing Arizona rules and statutes.

- The new phase-in rules would make nearly all small customers ineligible for the first phase of retail choice with no real compensation.
- The existing phase-in rules (those predating the proposed changes) as well as HB 2663, clearly intend small customers to have a sizable presence in the first phase of retail choice.
- The ACC staff has declared the existing phase-in schedule "unworkable," but has not explained why, despite many opportunities. Specifically the staff has not explained:
  - what technical or logistical barriers the utilities are still facing;
  - why the incumbent utilities have been unable to overcome these barriers, even though they have known about the January 1, 1999, phase-in date for nearly two years;
  - why the utilities will be able to accommodate some residential customers but not additional ones;
  - why the utilities will be able to handle customers that peak above 40 kW but not those that peak below 40 kW;
  - where the 40 kW threshold came from;
  - why the incumbent utilities cannot accommodate quantities of small customers that the public power entities will have to accommodate; and
  - why non-residential customers that peak at less than 1 MW have to aggregate to participate in retail choice.
- The new phase-in rules are inconsistent with the ACC staff's stated desire to make its own retail access rules consistent with HB 2663.
- The ACC staff is discarding rules that resulted from extensive deliberations involving a broad range of stakeholders, and replacing them with unsubstantiated suggestions from utilities.
- The affected parties have been given little time to respond to these major changes in the rules.

E.2.2 Arizona's barriers to small customer participation are characteristic of a "big dogs eat first" approach to retail access that the large majority of restructuring states have rejected.

Table E-1
States That Give Small Customers
Equal Access to Retail Choice

State	Electricity Sales* (Thousands of MWH)	Small Customers Get Equal Access to Retail Choice?
California	218,812	√
New York	131,527	In most service territories
Pennsylvania	127,623	√
Illinois	126,231	?
Michigan	96,302	√
New Jersey	66,889	√
Massachusetts	47,294	√
Connecticut	28,417	√
Montana	13,820	
Maine	11,726	√
New Hampshire	9,127	√
Rhode Island	6,604	

*Source: U.S. Energy Information, *Electric Power Annual 1996* (published February 1998).

- Since all customer classes must bear the costs of electric restructuring, all customers should reap its benefits in an equitable manner.

E.2.3 The 40 kW threshold will produce lengthy competitive inequities between similarly sized commercial customers

- Arizona's 40 kW threshold will have the dangerous effect of creating competitive inequities between customers of similar size and category of business.
- The irony of this 40 kW threshold is that it could be punishing electric customers who have engaged in activities – such as improving energy efficiency and shaving peak loads – that the state should be encouraging.
- Arizona's long "small customer waiting period" would exacerbate the effects of these competitive inequities. Of the states and utilities that make most residential and small commercial customers wait for retail choice, the proposed Arizona rules would make small customers wait the longest.

Table E-2
Small Customer Waiting Periods for States/Utilities
That Do Not Give Small Customers Equal Access to Retail

State/Utility	Mandatory Eligibility Date for Larger Customers	Mandatory Eligibility Date for Most Smaller Customers	Small Customer Waiting Period
Rhode Island	7/97	1/98	6 months
New York (Niagara Mohawk)	11/98	4/99	6 months
New York (NYSEG)	8/98	8/99	12 months
Montana (MPC)	7/98	12/99	17 months*
Arizona	1/99	1/01	**24 months**

- The long waiting period would hurt non-participants not only because they would have to wait longer to seek a better price for their power. Rather, there is also a high likelihood that few good deals would be available by the time the smaller customers become eligible. If the early participants were able to sign long-term contracts, it is possible that their competitive advantages would extend beyond two years.

E.2.4 Wide participation by smaller customers early in the retail access process will not harm Arizona electric system reliability.

- The argument that small customer participation should be restricted because it will make forecasting loads less complicated for the ISO has little merit. The California Public Utility Commission (CPUC) also considered limiting early participation to aggregators and very large customers for this reason, but rejected the idea. The CPUC realized that schedule coordinators would perform a second level of aggregation in addition to the aggregation naturally provided by aggregators and other marketers.
- If the ACC wants to improve further the accuracy of load forecasts there are more effective policies it might consider including:
  - certifying schedule coordinators for creditworthiness and technical competence, as is done in California;
  - pushing to have the new ISO perform "top-down" forecasting as is done by the PJM-ISO; and
  - supporting the imposition of penalties on schedule coordinators that submit forecasts that are not within a certain range of accuracy.
- It is likely that Arizona UDCs are overcautious about load forecasting and scheduling not because they fear for the reliability of the electric system, but because they are concerned about their cash flows. Better policies (than delaying small customer participation) to address this problem include:
  - ISO procedures that allow for day-after settlement would be a more targeted solution for the cash flow problems of the UDCs;
  - Making strict bonding requirements part of the certification procedures for both ESPs and Schedule Coordinators; and

- ISA or ISO requirements that all suppliers have capacity reserves and other ancillary services.

E.2.5 The claim that small customer participation in direct access must be delayed to prepare the market infrastructure is unfounded.

- Under the new, proposed phase-in schedule, the utilities will still have to develop their metering, billing, and data exchange systems to accommodate at least ½ of 1 percent of the residential customers by July 1, 1999. Therefore the biggest logistical challenge, the development and implementation of these systems, will still have to be met under the proposed rules.
- Even to serve a small fraction of the load, the data and software systems will have to handle each possible type of transaction and address all logical possibilities, however rare. Expanding these systems to larger numbers of customers does not require changes to information flow or system logic, only to storage capacity.
- It is very unlikely that early demand for retail choice will overwhelm the systems of the Arizona utilities, based on the experience of states with actively competitive markets.
- Almost all the restructuring states have allowed small customers equal access to retail choice in the first phases. Many of these states, like California and Pennsylvania, have many more utilities and electric customers than Arizona, and therefore face more complicated metering, billing, and data exchange logistics.
- Arizona utilities also have an advantage over utilities in states such as California, Massachusetts, and Rhode Island because they have been able to observe the practices, innovations, and mistakes of those that have gone before.
- The Arizona utilities have known about the phase-in date for nearly two years, and thus have had adequate time to prepare their systems.
- There is no guarantee that extending the deadlines for the Arizona utilities would not simply allow them to delay further any meaningful progress to establishing mechanisms for retail competition, and request another delay as the new deadlines near.

E.3 It Is Not Cost-Effective to Require Arizona Customers Over 20 kW to Purchase An Interval Meter.

E.3.1 The interval meter requirement is a form of "reregulation" that would prevent customers from choosing the level of the metering they need.

- At a time when the ACC is trying to stimulate choice and innovation in metering services, it is surprising that the ACC is introducing a regulation that would dictate the type of meters that customers must use for retail choice.
- The proposed interval meter mandate is written so broadly that many customers would have to install expensive meters for loads with extremely predictable load profiles. For example, under the proposed rules, street lights and traffic lights would have to be interval metered.

E.3.2 Interval meters are uneconomic for many customers who peak above 20 kW and this could deter them from participating in retail choice.

- Some advocates for interval meter requirements have cited a "meter affordability" analysis by Southern California Edison to justify these requirements. However, there are a number of problems with that analysis including:
  - ♦ unrealistically high retail choice savings assumptions.
  - ♦ savings estimates that are dependent on the availability of a California billing option called Real Time Pricing (RTP). There is a possibility that Arizona customers may have more difficulty obtaining these RTP options than California customers.
  - ♦ The SCE analysis fails to acknowledge that these meter requirements would still deter many customers from participating in direct access, even though interval meters were "affordable," according to SCE's narrow definition. This is an important consideration for policymakers who wish to stimulate competition in their electric markets.

E.3.3 From a societal perspective, load profiling is much more cost-effective than interval meter requirements.

- A more fundamental problem with the SCE analysis, however, is the limited way it frames the cost and benefit question. The question should not be whether customers in the 20-50 kW range can afford an interval meter, but whether society will benefit from requiring such meters.
- Analysis for the Electric Power Research Institute (EPRI) using actual Salt River Project customer data, shows that the costs of interval metering requirements far outweigh their benefits. No matter what interval meter cut-off level was used (the peak demand level above which customers must use interval meters) the benefit-cost ratio was less than 0.05.

E.3.4 Errors due to load profiling may be small compared to other errors and uncertainties in the system.

Uncertainties and errors in load scheduling and settlement come from several sources besides load profiling. These sources include

- inaccurate or inappropriate assignment of loss factors to customers in different voltage classes
- load forecast model estimation error for a given set of weather conditions
- day-ahead weather forecast error
- market price volatility
- generation supply availability.

All of these errors and uncertainties in the system would be present even if all customers had hourly metering. At the same time, load profiling methods are available that can provide estimates with small errors and uncertainties. Thus, the emphasis on load profiling error as the problem, and interval metering as the solution, is misplaced.

1 INTRODUCTION

On June 23, 1998, the Arizona Corporation Commission (ACC) Staff released the first draft of amendments to the electric competition rules that the ACC had issued in December 1996 as part of Decision No. 59943. On July 10, the ACC circulated a second set of rules with additional changes for informal comment. On July 15, 16, and 17, the ACC held public meetings in Phoenix, Tucson, and Flagstaff. The ACC released a final version of the proposed rule changes on July 24,1998.

This position paper, prepared on behalf of the City of Tucson by XENERGY Consulting Inc., analyzes and critiques two key provisions of these recent rule amendments. Section 2 examines the revised phase-in rules in Section R14-2-1604 (Competitive Phases). Section 3 scrutinizes the interval meter mandate in section J of R14-2-1613 (Service Quality, Consumer Protection, Safety, and Billing Requirements).

2 PARTICIPATION THRESHOLDS

2.1 THE NEW PHASE-IN RULES, BY MAKING NEARLY ALL SMALL CUSTOMERS INELIGIBLE FOR THE FIRST PHASE OF RETAIL CHOICE, RUN COUNTER TO BOTH THE LETTER AND SPIRIT OF EXISTING ARIZONA RULES AND STATUTES.

2.1.1 The new phase-in rules would make nearly all small customers ineligible for the first phase of retail choice with no real compensation.

On June 25, 1998, the Arizona Corporation Commission (ACC) sent out the first draft of proposed revisions of rule R14-2-2-1604 that effectively eliminated almost all small customer participation in the first phase of retail choice.

<u>The changes would effectively ban all small commercial customers and many medium-sized commercial customers from the first phase of direct access.</u> Under the original phase-in rules, each utility had to make 20 percent of its 1995 system retail peak load available for competitive generation supply. All customer classes were eligible for retail access on January 1, 1999, on a first-come, first-served basis. The new changes would prevent non-residential customers with single premise non-coincident peak load demands of less than 40 kilowatts (kW) from participating in the January 1, 1999, phase of direct access. The vast majority of Arizona's non-residential customers fall below this level. The rule changes would also deny retail access to any non-residential customer under one megawatt (MW) that is unable to join an aggregation that is at least one MW in size.

<u>By removing the limits on how much of the competitive load can be claimed by very big (> 3 MW) customers, the new phase-in rules could theoretically shut out all commercial customers from the first phase.</u> If the big industrial customers establish contracts with alternative suppliers more quickly than the smaller customers, a reasonable scenario, there could be nothing left for the commercial customers, even those that are eligible for retail choice.

<u>These changes would also drastically reduce the number of residential customers that could participate in the first phase of direct access.</u> Under the original phase-in rules, not only could residential customers participate in the first phase of retail access on a first-come, first-served basis, but also 3 percent of *the system retail peak load* (15 percent of the 20 percent) was specifically reserved for residential customers. The new changes would limit first-phase residential participation to a minimum of *½ of 1 percent of residential customers*. This reserved share would increase by ½ of 1 percent each quarter until January 1, 2001, when all customers would become eligible.

To appreciate fully how drastic this reduction in reserved residential eligibility is, it is important to focus on what pies are being used, rather than how these pies are being sliced. The original pie was system load. The new pie is residential load, which itself is only a slice of the original pie. Rather than having 3 percent of the pie reserved for them, on January 1, 1999, residential customers will now only get ½ of 1 percent **from a piece** of the original pie.

It is widely acknowledged that aggregation is an important method for pooling small customer loads and thus giving these small customer opportunities to negotiate better deals for their electricity. However, the new phase-in rules would eliminate the language that says "[a]ggregation of loads of multiple consumers should be permitted."

The new phase-in rules contain two changes that supporters of these rules might point to as compensation for the small customers. The first is a possible 3-5 percent rate reduction for standard offer customers. The second is the shift of the date on which all retail load becomes competitive from January 1, 2003, to January 1, 2001.

Yet neither of these changes has any real value for the small customer. The 3-5 percent rate reduction is just a suggestion, not a mandate. The acceleration of the full eligibility date looks more impressive, but the original rules did make 50 percent of retail load competitive by January 1, 2001, 30 percent of which (6 percent of total retail load) was reserved for residential customers. Assuming that residential customers account for a third of total retail load, this 6 percent of total retail load would actually accommodate 18 percent of residential load. In addition, the 18 percent would be only the minimum residential share. Other residential customers (as well as small commercial customers) could get retail choice as long as the total limit of 50 percent of retail load had not been exceeded. Since the existing rules also limit the very large (> 3 MW) customers to half of the competitive load, it is likely that some of the total allowable load would be left over for the small customers.

Thus, under existing rules, 25-30 percent of residential customers will likely be eligible by January 1, 2001. While this percentage is certainly less than the 100 percent residential eligibility under the proposed rules, the difference is probably meaningless. The increased residential eligibility is only valuable if there is some reasonable expectation that by 2001, more than 20-30 percent of residential customers will want alternative suppliers. The early evidence from the restructured California, Massachusetts, and Rhode Island electric markets makes this highly doubtful. A recent study by the Economic Resource Group also estimated that utilities are likely to only lose 5-20 percent of their residential market share due to retail competition.[1]

In addition, as section 2.3 explains, the best deals from alternative electric suppliers will probably be available only during the beginning of retail access. By backloading small customer participation until 2001, the new phase-in rules could cause them to miss these better bargains.

Of course, there is no need for a tradeoff between early and later small customer participation in retail choice. HB 2633, which restructures public power entities, gives residential customers a sizable share in the first phase of the phase-in and also allows them full retail choice eligibility by December 31, 2000. There is no reason why the ACC cannot recommend a similar schedule.

2.1.2 The existing phase-in rules as well as HB 2663, clearly intend small customers to have a sizable presence in the first phase of retail choice.

Unlike the proposed rule changes, the existing phase-in rules were the product of four years of careful deliberation by a broad spectrum of Arizona electric customers and other stakeholders. These existing phase-in rules clearly intend small customers to have a sizable presence in the first phase of retail choice. The existing rules say that the competitive load should be made available "on a first-come, first-served basis as further described in this rule, to all customer classes (including residential and small commercial customers) not later than January 1, 1999."

The existing phase-in rules, as noted in the previous section, also explicitly reserve 3 percent of total system load for residential customers in the 1999 phase, and reserve 6 percent for them in the 2001 phase. By limiting the share of the competitive load that can be taken by the biggest consumers (> 3 MW), the existing phase-in also allows both residential and small commercial customers to gain an even larger share of the competitive load.

HB 2663, which was signed into law in late May 1998, and which restructures the public power entities of Arizona, also mandates that 3 percent of the retail load be reserved for residential customers. The fact that the ACC staff recommendations for a 40 kW barrier to small customers were issued before the signing of HB 2663, suggests that the Arizona legislators and the Arizona governor considered these arguments for delaying small customer participation and rejected them.

2.1.3 The ACC staff has declared the existing phase-in schedule "unworkable," but has not explained why, despite many opportunities.

The ACC staff admits that it changed the phase-in schedule because "[s]everal incumbent electric providers have expressed concerns that the original rules create an unworkable schedule for the phase-in to competition."[2] Yet the ACC staff provides no explanation of why the existing schedule is "unworkable." As a result, thousands of small customers may have to wait two more years for retail choice without ever knowing why.

Specifically, the ACC staff does not explain:

- what technical or logistical barriers the utilities are still facing
- why the incumbent utilities have been unable to overcome these barriers, even though they have known about the January 1, 1999, phase-in date for nearly two years
- why the utilities will be able to accommodate some residential customers but not a few additional ones

- why the utilities will be able to handle customers that peak above 40 kW but not those that peak below 40 kW
- where the 40 kW threshold came from
- why the incumbent utilities cannot accommodate quantities of small customers which the public power entities will have to accommodate
- why non-residential customers which peak at less than 1 MW have to aggregate in order to participate in retail choice

The ACC staff has had numerous opportunities to explain its new phase-in rules, but has chosen not to. The May 29, 1998, revised ACC staff report only says that "[c]ustomers with load ≥ 40 kW can be aggregated to achieve the 1 MW threshold starting on 1/1/99." There is no discussion of the reasons for this particular number or for consumption-based barriers in general.

The staff report did precede its listing of the implementation steps with a brief discussion of general implementation principles. Yet no explanation was made of how this 40 kW threshold might have been derived from these principles. In fact, the threshold is inconsistent with a number of these principles including to "provide the benefits of competition to all ratepayers in a timely manner" and "reduce the length of the transition period."

The July 24, 1998, memorandum from the Commission that accompanied the new proposed rules only mentioned the introduction of the 40 kW threshold. The memorandum did not justify or even discuss this new threshold, although the memorandum did explain the reasoning for other changes in the proposed rules.

There is no precedent in any other state restructuring plan for Arizona's 40 kW threshold. The threshold bears a faint resemblance to California's 20 kW threshold for defining customers as being "small commercial." California customers with maximum peak demands below 20 kW are entitled to 10 percent reductions in their rates. Similarly, Arizona customers below the 40 kW could receive 3-5 percent rate reductions under the proposed rules. It is important to note, however, that the California 20 kW threshold is not a barrier to participation in retail access, while the Arizona 40 kW threshold is.

At least California's 20 kW threshold has some relation to pre-existing utility customer class divisions. However, while the tariffs of Arizona utilities mention 200 kW, 3,000 kW, and 30 MW class divisions, the 40 kW threshold does not appear to correspond to any existing division between major customer classes in the state.[3]

2.1.4 The new phase-in rules are inconsistent with the ACC staff's stated desire to make its own retail access rules consistent with HB 2663.

In the June 25, 1998, letter that accompanied the first draft of the new, proposed rules, the ACC indicated it had changed some of the consumer protection language in the existing rules "in order to be more consistent with HB 2663." This desire for consistency is reasonable, given that considerable confusion could result from two very different sets of retail access rules. However, the ACC staff has drafted phase-in rules that are much different from and more restrictive than those that had already been made law by HB 2663. To please the incumbent utilities, the staff appears willing not only to sacrifice its own consistency principles, but also to introduce the confusion, discontent, and resentment that such different phase-in schedules will likely produce.

2.1.5 *The ACC staff is discarding rules that resulted from extensive deliberations involving a broad range of stakeholders, and replacing them with unjustified suggestions from utilities with minimal time allowed for public debate on the changes.*

The existing retail access rules were the product of four years of public hearings, more intense and specialized work group meetings and reports, and other discussions involving a broad range of Arizona electric customers and other stakeholders. The existing rules were thus created under the conditions that are necessary for good regulation – long, careful deliberation involving a broad representation of the affected parties.

The ACC staff now proposes to discard these carefully crafted rules with hastily drafted, unjustified suggestions from the incumbent utilities. As noted, the ACC admits that it changed the phase-in schedule because "[s]everal incumbent electric providers have expressed concerns that the original rules create an unworkable schedule for the phase-in to competition."[4] Section 2.1.3 demonstrates that the staff never explained why the existing schedule was "unworkable," despite a number of opportunities to do so.

2.1.6 *The affected parties have been given little time to respond to these major changes in the rules.*

The hasty manner in which the ACC is seeking to adopt these proposed rule changes is as inappropriate as their undemocratic origins. As Section 2.1 explains, the new rule changes would drastically limit the number of residential and smaller commercial customers that could participate in the first phase of retail choice. Despite the radical nature of these proposed rule changes, however, the intervenors have been given only one week to respond to the final draft of the proposed changes.

2.2 ARIZONA'S BARRIERS TO SMALL CUSTOMER PARTICIPATION ARE CHARACTERISTIC OF A "BIG DOGS EAT FIRST" APPROACH TO RETAIL ACCESS THAT THE LARGE MAJORITY OF RESTRUCTURING STATES HAVE REJECTED.

Table 2-1 shows the mandated phase-in schedules for retail choice in a dozen states where electric restructuring has become law. The table shows that eight of the twelve states have allowed smaller customers to choose their energy suppliers at the same time, and in the same customer class share, as the larger customers. These states include California, Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, and Pennsylvania.

Table 2-1
States That Give Small Customers
Equal Access to Retail Choice

State	Electricity Sales* (Thousands of MWh)	Small Customers Get Equal Access to Retail Choice?
California	218,812	√
New York	131,527	In most service territories
Pennsylvania	127,623	√
Illinois	126,231	?
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New Jersey	66,889	√
Massachusetts	47,294	√
Connecticut	28,417	√
Montana	13,820	
Maine	11,726	√
New Hampshire	9,127	√
Rhode Island	6,604	

* Source: U.S. Energy Information, *Electric Power Annual 1996* (published February 1998).

In terms of electric consumption, Arizona, with 52,085 (in units of thousands of megawatt hours), would be in the middle of this list of states. This means that many states with many more electric consumers than Arizona, and therefore implicitly more complicated implementation logistics, have chosen to give small customers equal access.

Only two states – Montana and Rhode Island – unambiguously give larger customers preferential retail access over smaller ones. These states account for only about 2 percent of the total electricity consumed in the twelve restructuring states.[5] Illinois is difficult to categorize. It does allow one-third of the customers in each non-residential retail customer class to participate in the first phase of retail access. However, it allows all customers with peak demand above 4 MW to participate in the first phase of restructuring. It also delays retail access for residential customers until a later phase.

New York lets each of its six major utilities propose their own retail choice schedule. Four of these New York utilities – Consolidated Edison, Rochester Gas & Electric , Central Hudson, and

Orange & Rockland – will allow smaller customers equal access to retail choice. Niagara Mohawk gives large industrial customers a head start. New York State Electric & Gas has a unique phase-in approach where small industrial customers actually get retail access before large industrial customers and most residential customers. This was done to console the small industrials partly for not receiving a rate reduction.

Most states have chosen to give small customers equal access to the first phase of retail choice because they firmly believe that all electric customers should have the same right to seek a better deal in the marketplace. These "equal access" principles are explicitly stated in the statutes and plans of many states undergoing electric restructuring. For example, in its April 1997 restructuring plan, the New Jersey Board of Public Utilities proclaims that:

> To provide only one group the ability to negotiate power supply arrangements with third party suppliers, for instance large industrials, while other groups such as small commercial and residential customers remain obligated to purchase power from the utility, would be fundamentally unfair and possibly discriminatory. Moreover, such an arrangement would be violative, we believe, of one of the fundamental goals of restructuring, that is to provide electric rate relief to all consumers in the State."[6]

In its most important electric restructuring opinion, the New York Public Service claimed it was necessary to seek this equal treatment, even if it complicated the implementation process:

> Some have suggested that all customer classes should have access to retail competition at the same time in order to avoid favoring one class over another. Simultaneous access helps avoid the concern held by some that those who go first will get most of the benefits. Although giving all classes retail access at the same time may be more complicated than a structured phase-in, simultaneous retail access is still the preferable approach ....[7]

California's Public Utility Commission (CPUC) used equity principles to justify its decision to scrap its initial plan to limit retail access eligibility to loads of 8 MW or greater. "Such a requirement," the CPUC argued, "would ... unnecessarily discriminate against the smaller electric service providers seeking to serve smaller customers, as well as small commercial and residential customers."[8]

The fact that small customers must pay heavy stranded costs provides further justification for this "equal access" principle. It is a reasonable argument that since all customer classes must bear the costs of electric restructuring, all customers should reap its benefits in an equitable manner.

2.3 THE 40 KW THRESHOLD WILL PRODUCE LENGTHY COMPETITIVE INEQUITIES BETWEEN SIMILARLY SIZED COMMERCIAL CUSTOMERS.

Arizona's proposed 40 kW threshold denies equal participation to any non-residential customer with peak power below this threshold. It would also deny equal participation to any customer over 40 kW that is unable to find an aggregator or is unable to form an aggregation at least 1 MW in size (which could require as many as 24 other customers). As noted, this limit is inconsistent with the ACC staff's stated principle that the ACC must "provide the benefits of competition to all ratepayers in a timely manner."

Arizona's 40 kW threshold will also have the dangerous effect of creating competitive inequities between customers of similar size and category of business. In the California restructuring regulations, customers with maximum demands of between 20 and 50 kW were treated as a distinct class of middle-sized commercial customers. Arizona's 40 kW threshold would create "haves" and "have nots" in this class of fairly similar customers.

For example, a recent *Los Angeles Times* article noted that the "average corner convenience store" with "all of its refrigerators, coffee percolators and Slurpee machines running," would peak at about 40 kilowatts of electricity.[9] It is thus not difficult to imagine two convenience stores in the same Phoenix or Tucson neighborhood, one peaking at 45 kW, the other at 35 kW. The first store could, through an aggregator, find a better deal and begin receiving cheaper electricity by January 1, 1999. Its slightly smaller rival would have to wait two years.

The irony of this 40 kW threshold is that it could be punishing electric customers who have engaged in activities – such as improving energy efficiency and shaving peak loads – that the state should be encouraging. For instance, the 35 kW convenience stores from the previous example could be the same size as the 45 kW store, but its peak could be lower because it had recently installed more efficient lighting and refrigeration equipment. The proposed 40 kW standard would punish the more efficient store.

Arizona's long "small customer waiting period" would exacerbate the effects of these competitive inequities. Of the states and utilities that make most residential and small commercial customers wait for retail choice, the proposed Arizona rules would make small customers wait the longest. Table 2-2 shows that the Arizona plan would have the longest waiting period.

Table 2-2
Small Customer Waiting Periods for States/Utilities That Do Not Give Small Customers Equal Initial Access to Retail

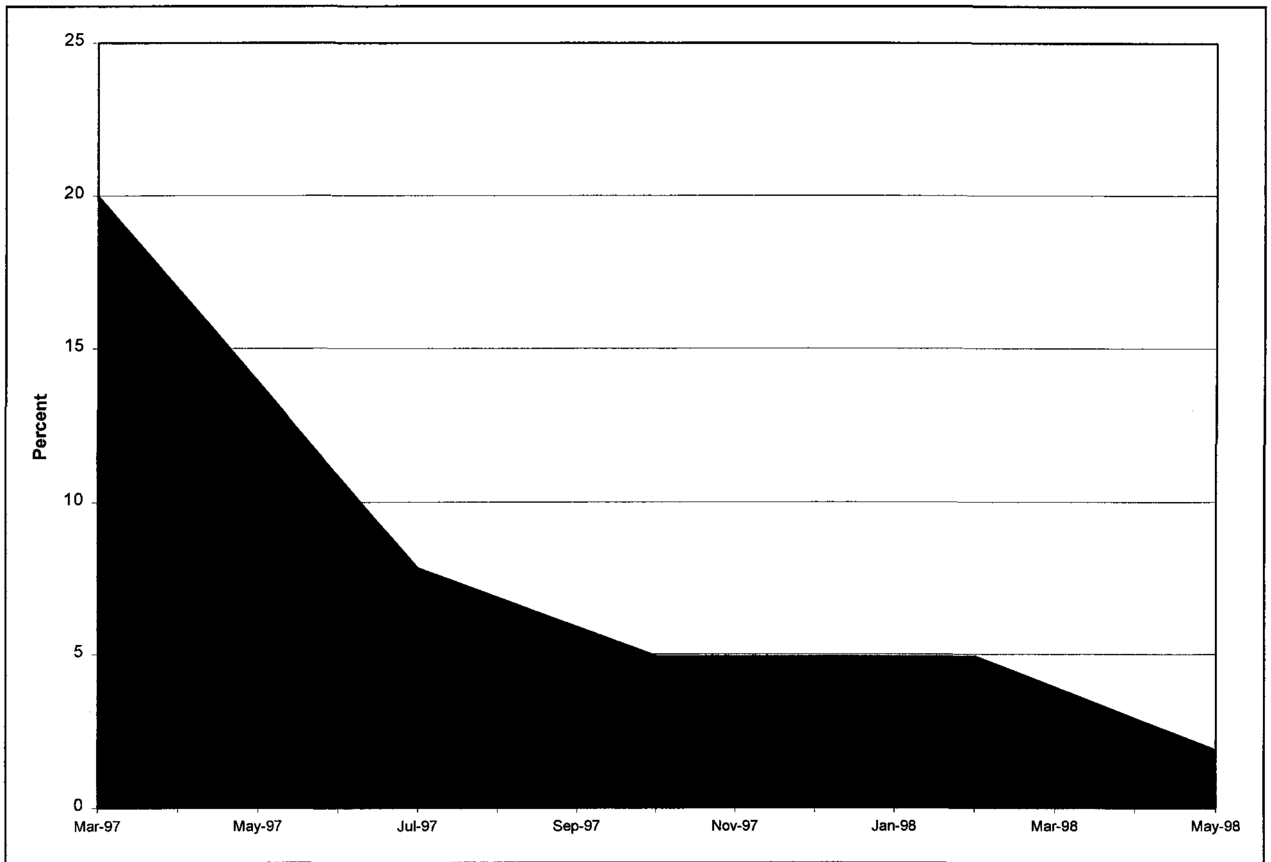
State/Utility	Mandatory Eligibility Date for Larger Customers	Mandatory Eligibility Date for Most Smaller Customers	Small Customer Waiting Period
Rhode Island	7/97	1/98	6 months
New York (Niagara Mohawk)	11/98	4/99	6 months
New York (NYSEG)	8/98	8/99	12 months
Montana (MPC)	7/98	12/99	17 months*
Arizona	1/99	1/01	**24 months**

*Montana regulations give MPC some flexibility in implementing retail access. This schedule is the regulatory recommendation and assumes that there are no problems with the initial phase of retail access

The long waiting period would hurt non-participants not only because they would have to wait longer to seek a better price for their power. Rather, there is also a high likelihood that few good deals would be available by the time the smaller customers become eligible. If the early participants were able to sign long-term contracts, it is possible that their competitive advantages would extend beyond two years.

The restructured California electric market has shown that the best deals are often available early on. Figure 2-1 shows the discounts from the California Power Exchange (PX) price that were available from March 1997 to May 1998 (competition officially began in California at the end of March 1998). Discounts from the PX declined from 20 percent in the initial stages to less than 2 percent in the later months.

Figure 2-1
Discounts (from PX-price) Offered to California Customers



Source: *Public Utilities Fortnightly*, July 15, 1998.

This decline in discounts over time is partly due to the fact that, as time passes, the most attractive customers, usually larger customers, are no longer available. However, there are a number of good reasons why even smaller customers have a better chance of getting good deals earlier rather than later.

The first reason why suppliers might seek smaller customers early in the process, but not later, is to get a foothold in the new marketplace and get some name recognition. It is widely acknowledged that the electricity markets in California, Rhode Island, and Massachusetts, although officially open to competition, will not be truly competitive until stranded costs are paid off. Yet as one expert on the California market noted, suppliers may still deal with customers "for the increased visibility and the hope that years in the future the customer will feel loyalty and stay with the supplier once the California market becomes truly deregulated."[10] "We're not going to make any money for three years," said one California supplier, but he also noted that he was "a big believer in building a brand name."[11]

However, since suppliers are losing money on each of these small customers, the size of their market foothold is inherently constrained. Once a supplier's quota of these small customers is reached, they are not likely to seek any additional ones until the "real" competition starts.

A second reason why smaller customers will have a better chance to get good deals earlier rather than later is that some smaller suppliers may purposely limit the number of customers they take on. This can be due to the fact that the small suppliers have limited generating or transmission capacity. It also may be because they are still refining their billing, metering, and other services and do not want to overwhelm themselves. Under the proposed Arizona rules, these smaller suppliers, and the price competition they provide, may not be around when the smaller customers would get phased-in.

A third reason why smaller customers may lose by waiting is the fact that even some of the larger suppliers may not be around when the smaller customers are finally phased-in. The most famous example of this is when the giant electric supplier Enron pulled out of the California residential market, about a month after retail competition had officially begun. It is reasonable to assume that other large suppliers, in other electric markets, might take similar actions. Even the most sophisticated companies can succumb to unrealistic optimism when markets first open. Since these companies must generally honor their existing contracts, small customers who joined them early on can still receive their discounts for the length of these contracts.

There are a number of other reasons why suppliers of all sizes may take small customers earlier rather than later. In states that have limited opportunities for pilot programs, some suppliers may take on a quota of smaller customers to learn how the market works. Some market observers have also pointed to "the press release" effect.[12] Companies may market very aggressively soon after announcing their market entry, but then reduce these marketing efforts not long after the press releases have been sent out.

2.4 WIDE PARTICIPATION BY SMALLER CUSTOMERS EARLY IN THE RETAIL ACCESS PROCESS WILL NOT HARM ARIZONA ELECTRIC SYSTEM RELIABILITY.

Because the ACC never explained why it imposed the 40 kW threshold and the related "aggregators only" requirement (for customers below 1 MW), it is possible only to speculate about the Commission's reasons. At one point California did consider a similar "aggregators only" scheme because policymakers thought this restriction might simplify and improve load forecasting and scheduling for generation dispatch. California rejected this scheme, partly for the equity reasons noted above, and partly because there was no evidence that it would improve forecasting and scheduling.[13] However, it is possible that the ACC might have adopted the "aggregator's only" on the basis of the same assumptions that California eventually rejected.

In the Interim Report of the Arizona Electric System Reliability and Safety Work Group, there is also mention of the fact that with direct access, "[a]ggregation of load forecasts becomes difficult," both for long-range and short-term load forecasting.[14] It is possible that this report might have also influenced the ACC to adopt an "aggregators only" scheme, even though the Work Group report never recommended any such scheme.

The argument that small customer participation should be restricted because it will make forecasting loads less complicated for the ISO has little merit. As Table 2-1 above demonstrates, almost all the states involved in restructuring have rejected this argument. The California Public Utility Commission (CPUC) rejected the "aggregators only" scheme because it realized that there was no danger that the ISO would be overwhelmed by too many separate load forecasts. The CPUC noted:

> The SC [schedule coordinator] will reduce the burden on the ISO because the SCs will perform a second level aggregation of various direct access transactions prior to submitting the schedules to the ISO. The first level of aggregation will occur when retail marketers and aggregators combine and consolidate the loads of their end use customers.[15]

This assessment should hold true for Arizona, since the state will also be using schedule coordinators.

The schedule coordinators should improve the accuracy of these load forecasts. By aggregating loads, they greatly reduce the chance that their forecasts will be inaccurate due to unexpected behavior by a few customers. It is also reasonable to assume that schedule coordinators, because load forecasting will be their primary activity, will reach a high level of forecasting expertise. By utilizing sophisticated forecasting techniques, which model for dynamic effects such as temperature and humidity, their forecasts should be all the more accurate.

If the ACC wants to further improve the accuracy of load forecasts there are other policies it might consider. First it might try to ensure that the new Desert Star ISO certifies schedule coordinators for creditworthiness and technical competence, as is done in California. The ACC might also push to have the new ISO perform "top-down" forecasting as the PJM-ISO, for example, currently does. This "top-down" forecasting can serve as a check or even a substitution for the "bottom-up" forecasting being done by the schedule coordinators. The ACC could even support the imposition of penalties on schedule coordinators that submit forecasts that are not within a certain range of accuracy. Although these policies impose some costs on market participants, they certainly would do more to improve load forecasting than the ACC's "aggregators only" scheme.

It is likely that Arizona distribution companies are overcautious about load forecasting and scheduling not because they fear for the reliability of the electric system, but because they are concerned about their cash flows. They realize that as suppliers of last resort, they will have to incur the temporary costs of emergency supply if retail suppliers underschedule or default. Although market settlement rules, the bi-directional nature of energy imbalances, and rate-relief options (in cases of supplier default) will allow the distribution companies eventually to recover these costs, the companies may still wish to minimize these occurrences.

While there is nothing wrong with the distribution companies seeking to protect their own cash flows, small customers should not be sacrificed due to the mistaken belief that this will improve load forecasting. ISO procedures that allow for day-after settlement would be a more targeted solution for the cash flow problems of the distribution companies. In addition, as explained above, policies such as schedule coordinator certification, top-down forecasting, and penalties for bad forecasting could improve forecasting accuracy. Making strict bonding requirements part of the certification procedures for both retail suppliers and Schedule Coordinators should also reduce the likelihood of these companies defaulting. ISA or ISO requirements that all suppliers have capacity reserves and other ancillary services would provide additional security for the system.

The advent of direct access may also cause some to fear for system reliability because there will be a piece of local electric supply that is no longer controlled by the distribution companies. However, the proposed Arizona rules already limit the size of this piece to 20 percent of retail load for the first few years of retail access. It should make no difference whether this 20 percent is controlled by retail suppliers and aggregators supplying only large customers, or by suppliers representing a broader range of customers.

Finally, while the ACC should take every reasonable action to ensure that retail access in Arizona does not threaten state power supplies or reliability, the Commission must put these efforts in proper perspective. In the brave new world of deregulated wholesale power and open transmission tariffs, threats to Arizona's electric supply will increasingly come from far outside the state borders.

The June 1998 supply crisis in the Midwest is a good example of these possible domino effects. An extended regional heat wave, generation plant outages in Illinois and Ohio, and the default of a key Ohio energy trading company all combined to drive power prices up as high as $4,900 per MWh in Ohio and $1,500 per MWh in other Midwestern states (compare to typical prices of $30-$60 per MWH).[16] One Illinois utility spent more for its power in June than it had spent the whole previous year.[17] There were also supply interruptions and mandatory power rationing. The fact that none of these Midwestern states had active retail access programs was also further evidence that supply crises can occur irrespective of direct access policies.

Of course, the increased likelihood of power crises originating from outside the state does not mean that the ACC should throw up its hands and ignore local threats to system reliability. However, this reality should discourage the ACC from taking draconian local measures under the false pretenses that these actions will protect Arizona consumers from supply crises. Instead the ACC should concentrate its efforts on helping to develop a strong and independent ISO. This would do more to protect the reliability of the Arizona grid than will attempts to deny direct access to small customers.

2.5 THE CLAIM THAT SMALL CUSTOMER PARTICIPATION IN DIRECT ACCESS MUST BE DELAYED TO PREPARE THE MARKET INFRASTRUCTURE IS UNFOUNDED.

Although the ACC staff never explained why the existing phase-in schedule is "unworkable," it is possible that the incumbent utilities argued that their billing, metering, and data exchange systems could not be ready by January 1, 1999. This argument has little merit.

Under the new, proposed phase-in schedule, the utilities will still have to develop their metering, billing, and data exchange systems to accommodate at least ½ of 1 percent of the residential customers by July 1, 1999. Therefore the biggest logistical challenge, the development and implementation of these systems, will still have to be met under the proposed rules. Even to serve a small fraction of the load, the data and software systems will have to handle each possible type of transaction and address all logical possibilities, however rare. Expanding these systems to larger numbers of customers does not require changes to information flow or system logic, only to storage capacity.

The expansion of metering, billing, load profiling, and data exchange systems poses some additional logistical challenges beyond those of system development and implementation. However, it is very unlikely that early demand for retail choice will overwhelm the systems of the Arizona utilities. Early restructuring experiences in California, Massachusetts, and Rhode Island indicate that very few small customers have yet taken advantage of retail choice. For example, after three months of restructuring in California, only 0.7 percent of the residential load, 2.3 percent of the small commercial load, and 6.6 percent of the medium to large commercial load had adopted new suppliers.[18] The widely accepted reasons for this slow market development in these states – high stranded cost charges that cut potential savings, reasonably priced standard offers, fear of unfamiliar suppliers, inexperience with shopping for electricity, and general inertia – are likely to be present in Arizona as well. Arizona's proposed 20 percent cap on the amount of retail load that can be competitive should also further guard against the utilities' being overwhelmed by the challenges of retail choice customers.

As Table 2-1 clearly shows, almost all the restructuring states have allowed small customers equal access to retail choice in the first phases. Many of these states, like California and Pennsylvania, have many more utilities and electric customers than Arizona, and therefore face more complicated metering, billing, and data exchange logistics. California and the service territory of the Pennsylvania utility PECO have also had to deal with the additional complication of competitive metering and billing. Yet the Public Utility Commissions in these states have not viewed these complications as sufficient cause to delay small customer participation.

Arizona utilities also have an advantage over utilities in states such as California, Massachusetts, and Rhode Island because they have been able to observe the practices, innovations, and mistakes of those that have gone before. The early restructuring experiences of these states have been widely discussed and analyzed in Arizona's own work groups. This information should significantly reduce the learning curves of the Arizona utilities.

The Arizona utilities have known about the phase-in date for nearly two years, and thus have had adequate time to prepare their systems. The existing phase-in rules were part of Decision No. 59943, which dates back to December 1996. The utilities have also had the work group process and the pilot programs to further develop and refine their systems. Neither the ACC staff nor the utilities have provided any explanation why this long lead time would be insufficient for the utilities to prepare their systems. The Rhode Island utilities were able to prepare their systems for direct access without any problems, even after a surprise decision from their Commission to speed up the phase-in of small customers.[19]

Finally, as one former Pacific Gas & Electric (PG&E) executive acknowledged, utilities have long-established cultures and practices that are difficult to change. This inertia often causes them to delay the implementation of significant changes in procedures until deadlines are fast approaching.[20] There is no guarantee that extending the deadlines for the Arizona utilities would not simply allow them to delay further any meaningful progress to establishing mechanisms for retail competition, and request another delay as the new deadlines come near.

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1 Scott T. Jones and Matthew B. Kreps, "Market Share in Generation: The Impact of Retail Competition on Investor-Owned Utilities," *Public Utilities Fortnightly*, July 1, 1998.

2 "Finding of Fact" #4, from the transmittal memorandum of the ACC staff for the proposed order on the proposed emergency rulemaking regarding the Retail Electric Competition Rules (R14-2-1601, *et al.*).

3 Based on a review of the Arizona utility tariffs by Lori H. Hoover of the Arizona Corporation Commerce.

4 "Finding of Fact" #4, from the transmittal memorandum of the ACC staff for the proposed order on the proposed emergency rulemaking regarding the Retail Electric Competition Rules (R14-2-1601, *et al.*).

5 This percentage is based on electricity consumption figures from the Energy Information Administration's estimates of 1996 "U.S. Electric Utility Sales to Ultimate Consumers" for "All Sectors." Because some municipal utilities and electric cooperatives are exempt from state restructuring mandates, the number of customers affected by restructuring in a given state is a subset of the total number of electric customers in that state. If the ratio between affected and non-affected customers in Illinois, Montana, and Rhode Island was much larger or smaller than the ratio for the other restructuring states, this 17 percent figure could be unrepresentative.

6 *Restructuring the Electric Power Industry in New Jersey*, The New Jersey Board of Public Utilities, April 30, 1997.

7 *Opinion No. 96-12 - Cases 94-E-0952, et al. - In The Matter Of Competitive Opportunities Regarding Electric Service,* The New York Public Service Commission, May 20, 1996.

8 Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, Decision 97-05-040, California Public Utilities Commission, May 6, 1997.

9 Marla Dickerson, "Power Overload; Entrepreneurs Take A Wait-And-See Attitude On Deregulation Byline," *Los Angeles Times*, 12/31/97.

10 Robert McCullough, "California's Electricity Market: Are Customers Necessary?" *Public Utilities Fortnightly*, July 15, 1998.

11 Rebecca Smith, "Nineteen Electricity Suppliers Still in California Market," *San Jose Mercury News*, April 28, 1998.

[12] Robert McCullough, "California's Electricity Market: Are Customers Necessary?" *Public Utilities Fortnightly*, July 15, 1998.

[13] Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, Decision 97-05-040, California Public Utilities Commission, May 6, 1997 (Section on "Threshold Eligibility").

[14] "Interim Report of the Electric System Reliability and Safety Work Group," Electric System Reliability and Safety Work Group, December 1996 (Section III)

[15] Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, Decision 97-05-040, California Public Utilities Commission, May 6, 1997 (Section on "Threshold Eligibility").

[16] Agis Salpukas, "Demand Surge Costs Utilities Huge Losses on Open Market, *The New York Times*, July 8, 1998; Mark Golden, "Power Marketers Now Lightning Rod For Scrutiny," *Dow Jones Newswires*, July 13, 1998; Marsha Burton and Loren Fox, "POWER SHOCK: Electric Trading Crisis May Reach Retail Mkts," *Dow Jones Newswire*.

[17] Marsha Burton and Loren Fox, "POWER SHOCK: Electric Trading Crisis May Reach Retail Mkts," *Dow Jones Newswire.*

[18] "Supplemental Direct Access Implementation Activities Report - Statewide Summary," prepared by the California Public Utility Commission energy division, July 15, 1998.

[19] July 1998 conversation between Christopher Dyson of XENERGY Consulting Inc. and Robert Bowcock of Narragansett Electric.

[20] July 1998 conversation between Christopher Dyson of XENERGY Consulting Inc. and anonymous former PG&E official.

3 INTERVAL METER REQUIREMENTS

3.1 IT IS NOT COST-EFFECTIVE TO REQUIRE ARIZONA CUSTOMERS OVER 20 KW TO PURCHASE AN INTERVAL METER.

3.1.1 The interval meter requirement is a form of "reregulation" that would prevent customers from choosing the level of the metering they need.

In the latest version of the proposed rules, section J of R14-2-1613 contains the following requirements:

> 6. Minimum metering requirements for competitive customers over 20 kW, or 100,000 kWh annually, should consist of hourly consumption measurement meters or meter systems.
>
> 7. Competitive customers with hourly loads of 20 kW (or 100,000 kWh annually) or less, will be permitted to use load profiling to satisfy the requirements for hourly consumption data.

Unlike the 40 kW participation threshold, the origins of this 20 kW interval (hourly) meter requirement are fairly certain. California originally proposed a similar requirement as part of its electric restructuring rules. However, when concerns were raised about both the costs and availability of the interval meters, the California Public Utilities Commission (CPUC) chose to temporarily exempt customers in the 20-50 kW from the interval meter requirement.[1] These customers were allowed to participate in direct access using load profiles, at least until September 1998. The CPUC promised to revisit the issue during the summer of 1998 and decide whether to end this exemption, extend it, or make it permanent. The CPUC has yet to make this decision. California is been the only state that has mandated interval meters for customers with peak demand of less than 100 kW.

Most of Arizona's retail access rules are designed to give electric customers more freedom to seek the electric services that best suit their needs. This is the guiding principle behind Arizona's decision to make metering services competitive. <u>It is therefore surprising that at a time when the ACC is trying to stimulate choice and innovation in metering services, it is also introducing a regulation that would dictate the type of meters that customers must use for retail choice.</u>

As the following two sections explain, interval meter requirements are not cost-effective for many medium-sized customers and would deter many of these customers from participating in retail choice. The societal costs of broad interval meter mandates are also much larger than their benefits.

Besides being misguided, the proposed interval meter mandate is written so broadly that many customers would have to install expensive meters for loads with extremely predictable load profiles. For example, under the proposed rules, street lights and traffic lights would have to be interval metered.

3.1.2 Interval meters are uneconomic for many customers who peak above 20 kW and this could deter them from participating in retail choice.

There are a number of ways to analyze the costs and benefits of an interval meter requirement. A method used by Southern California Edison (SCE) for the California restructuring debate simply examined whether the customer could afford the meter.[2] The SCE method declared a meter to be affordable when the monthly savings from retail choice exceeded the monthly cost of the meter.

For example, the SCE analysis assumed that interval meter costs would be $15 per month and that the retail choice savings would be 10 percent of a California Power Exchange price. SCE used these assumptions to examine how many of its 70,000 customer below the 50 kW peak level could afford an interval meter. It found that only 18,000 of the 70,000 customers fell below the affordability line.

The first problem with this analysis is the high savings assumption that SCE uses. SCE took the 10 percent estimate from comments by a California state official, but conceded that this same official had suggested that a "lower savings percentage would be more realistic." Certainly Figure 2-1 in the previous section shows that 10 percent savings from the California Power Exchange price is no longer available. Obviously with only a 3-5 percent retail choice savings, many more of these 20-50 kW customers would no longer find the interval meter "affordable" in SCE's terms.

A more general problem is that the savings estimates in this SCE analysis, and in many other California meter benefit-cost analyses, are all dependent on the availability of the California billing option called Real Time Pricing (RTP). This RTP option allows California customers with interval meters to pay for their electric energy based on the hourly market clearing prices in the California Power Exchange (PX). Even customers that stay with the incumbent utilities have this option.

This RTP option is useful for customers that consume much more of their energy during off-peak hours (when power is cheaper) than do others in their customer class. By getting an interval meter and using the RTP option, these customers can pay for their electric energy based on their actual consumption pattern. This will be cheaper than if they had been billed based on the typical consumption pattern of their customer class (their class load profile). The RTP option can also be attractive to customers who can shift a lot of their consumption from on-peak to off-peak hours. Of course, in both cases, the long-term savings on the electric bill have to exceed the cost of the meter to make the interval meter purchase worthwhile. A 1996 study by the Tellus

Institute and the Wisconsin Energy Conservation Corporation found that only a narrow category of customers would realize any significant savings from these RTP options.[3]

There is a possibility that Arizona customers may have more difficulty obtaining these RTP options than California customers. In November 1997, Arizona's ISO & Spot Market Development Working Group issued a report that concluded "that no formal power exchange was needed for the southwest region, and creation of one would unnecessarily add to the cost of the ISO infrastructure without much benefit."[4] Of course, a southwestern power exchange may still be developed despite the working group recommendations. In addition, marketers could still offer RTP options that were based on the California PX or some other power exchange. However, the absence of a southwestern power exchange would certainly make RTP options more difficult to offer.

The SCE study also made the suggestion that since 82 percent of the under-50 kW customers could "afford" an interval meter, it made sense for policy makers to require such interval meters as a condition for retail access. The SCE analysis fails to acknowledge that these meter requirements would still deter many customers from participating in direct access, even though interval meters were "affordable," according to SCE's narrow definition. This is an important consideration for policymakers who wish to stimulate competition in their electric markets.

The problem is that although many customers may still be experiencing a net benefit after the purchase of the meter (retail choice savings exceed meter costs), the size of this benefit may be so small that retail access is not worth bothering with. According to the SCE definition, customers that save $16 per month for retail access and pay $15 a month in meter cost can "afford" a meter. However, the $1 a month savings is not likely to cause many of these customers to seek retail choice.

In a 1998 analysis for the Electric Power Research Institute (EPRI), XENERGY explored the implications of this deterrent effect for the Salt River Project (SRP). Table 3-1 shows one of the results of this analysis. The analysis assumed that the mean "switching threshold" (the savings level at which customers switch to other suppliers) is 10 percent expected energy savings. The analysis further assumed that this switching threshold is normally distributed with a standard deviation of 5 percent savings and that meter costs were $10 per month. (The true distribution of switching thresholds specific to Arizona can be derived from appropriately designed survey results, using "double-bounded" maximum likelihood methods.)

The table shows that when customers must pay for interval metering as a condition for participating in retail choice the effective reduction in net savings reduces the number of customers that would otherwise switch to another supplier. Without the metering requirement with a 10 percent savings, 50 percent of customers with loads above 25 kW would be expected to switch. With the interval meter requirement, only 32 percent switch under the high-price scenario and only 20 percent switch under the low-price scenario. That is, as shown in Table 3-2, 37 percent of those who otherwise would switch are deferred from doing so by the metering requirement in the high-price scenario, and nearly 60 percent are deferred in the low-price scenario. When the retail choice savings are only 1 percent, over 60 percent of would-be switchers are deferred from participating in retail choice even in the high-price scenario, and over 80 percent are deferred in the low-price scenario.

Table 3-1
Expected Percent Switching with and without Interval Metering Required

Metering Required?	Expected Percent Savings with Direct Access	Energy Price ($/kWh)	kW floor	Expected Percent Switching by kW Threshold for Interval Metering 250	75	25	5	0
No	10%			50.0	50.0	50.0	50.0	50.0
Yes	10%	$0.018		44.4	30.9	20.3	2.4	0.2
Yes	10%	$0.036		46.5	39.1	31.7	8.8	0.8
No	1%			3.6	3.6	3.6	3.6	3.6
Yes	1%	$0.018		2.7	1.3	0.6	0.0	0.0
Yes	1%	$0.036		3.1	2.1	1.4	0.2	0.0

Table 3-2
Fraction of Would-Be Switchers Who Would Be Deferred from Switching by Interval Metering Requirements

Expected Percent Savings with Direct Access	Energy Price ($/kWh)	kW floor	Fraction Deferred by kW Threshold for Interval Metering 250	75	25	5	0
10%	$0.018		11%	38%	59%	95%	100%
10%	$0.036		7%	22%	37%	82%	98%
1%	$0.018		24%	63%	82%	99%	100%
1%	$0.036		14%	42%	62%	95%	99%

3.1.3 From a societal perspective, load profiling is much more cost-effective than interval meter requirements.

A more fundamental problem with the SCE analysis, however, is the limited way it frames the cost and benefit question. The question should not be whether customers in the 20-50 kW range can afford an interval meter, but whether society will benefit from requiring such meters.

XENERGY also analyzed this question for EPRI using actual SRP customer data.[5] Table 3-3 summarizes some of the results. The analysis shows that the costs of interval metering requirements far outweigh their benefits. This is true no matter what the "cut-off level" (the peak demand level above which customers must purchase interval meters).

Interval metering use has two primary benefits for society – reduced carrying costs and reduced deadweight losses. The carrying cost is the added liquidity or line of credit that suppliers must carry because of price uncertainty. Less price uncertainty occurs when interval meters are used than when load profiles are used. However, as the table indicates, the societal value of this reduced price uncertainty is relatively small.

The deadweight loss is the economic cost of prices being systematically different from the true cost of supply for different customers. This is a cost that society bears but that benefits nobody. The table shows that interval metering reduces deadweight loss, but, once again, the value of this benefit is very small. Even when combined, the carrying cost and deadweight benefits of interval metering are only a small fraction of the societal cost of such metering.

Table 3-3
Benefits and Costs of Interval Metering

	1,000	250	75	25	5	0
BENEFITS						
Monthly carrying cost	$1,728	$1,478	$1,340	$1,304	$1,287	$1,264
Carrying cost reduction if interval metered		**$250**	**$139**	**$36**	**$17**	**$23**
Monthly deadweight loss	$8,608	$8,078	$7,576	$7,021	$6,095	$5,694
Deadweight loss reduction if interval metered		**$531**	**$501**	**$555**	**$926**	**$401**
Total Monthly Benefit of required interval metering		**$781**	**$640**	**$591**	**$943**	**$424**
COSTS						
Number of meters with nonhost supplier		1,388	3,846	8,282	23,510	25,298
Monthly cost per new interval meter		$12.69	$12.69	$6.64	$6.64	$6.64
Monthly added metering cost		**$17,616**	**$48,809**	**$54,991**	**$156,109**	**$167,981**
BENEFIT/COST RATIO		**0.044**	**0.013**	**0.011**	**0.006**	**0.003**

3.1.4 Errors due to load profiling may be small compared to other errors and uncertainties in the system.

Underlying the suggested interval metering requirement is apparently a concern that load profiling methods are too inaccurate. However, uncertainties and errors in load scheduling and settlement come from several sources besides load profiling. These sources include

- inaccurate or inappropriate assignment of loss factors to customers in different voltage classes
- load forecast model estimation error for a given set of weather conditions
- day-ahead weather forecast error
- market price volatility

- generation supply availability.

From the perspective of a retailer, the total amount the retailer must pay for a given amount of energy served at a given load shape may be subject to systematic error because of mis-assignment of loss factors. The cost is also subject to uncertainty because of variations in market prices. Related to the market price uncertainty is uncertainty as to the availability of supply in the desired amounts on a day-ahead, hour-ahead, or spot basis. In addition, the amount of load the retailer will need the next day is subject to uncertainty, both because the supplier's ability to estimate load even if weather conditions are known is imperfect, and because the next day's weather is unknown.

The system operator faces similar uncertainties. Scheduled loads may correspond poorly to the total system load, because of suppliers' inability to forecast loads accurately for given conditions combined with the unpredictability of weather conditions. Generation supply may not be available or may be available only at extreme costs because of market conditions. Retailers may be assigned inappropriate costs for their customers' loads as a result of inappropriate loss factor assumptions.

System losses, including line losses, meter reading error, and theft, can be on the order of 10 to 15 percent of the load at the customers' meters. For many utilities, the loss factors developed by the utility as adjustments to metered loads do not fully account for the difference between system sendout and loads as delivered to customers. The residual unaccounted for losses can be on the order of a few percent, a significant difference in markets where the margins are much lower than that.

All of these errors and uncertainties in the system would be present even if all customers had hourly metering. At the same time, load profiling methods are available that can provide estimates with essentially no systematic error in the assignment of energy responsibility to suppliers, no systematic error at the system level in the estimation of load shapes, and small variability on a monthly basis. Thus, the emphasis on load profiling error as the problem, and interval metering as the solution, is misplaced.

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[1] "Opinion Regarding The Load Profiling Workshop Report And Its Supplements," Decision 97-10-086, The California Public Utilities Commission, October 30, 1997.

[2] "Comments of Southern California Edison Company (U 338-E) On the Supplemental Load Profiling Report of July 25, 1997," Southern California Edison, August 8, 1997.

[3] "Can We Get There from Here: The Challenge of Restructuring the Electricity Industry So That We All Can Benefit," the Tellus Institute and the Wisconsin Energy Conservation Corp., April 1996.

[4] "The ISO & Spot Market Development Working Group Report," The Arizona ISO & Spot Market Development Working Group, November 18, 1997.

[5] "The Multiplier Method for Load Profiling, an EPRI Study," presentation to the ACC Working Group on Load Profiling, Phoenix, Arizona, May 18, 1998.