

ORIGINAL



BEFORE THE ARIZONA CORPORATION COMMISSION

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JEFF HATCH-MILLER
Commissioner
MIKE GLEASON
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Commissioner

Arizona Corporation Commission
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IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY FOR A HEARING TO DETERMINE THE FAIR VALUE OF THE UTILITY PROPERTY OF THE COMPANY FOR RATEMAKING PURPOSES, TO FIX A JUST AND REASONABLE RATE OF RETURN THEREON, TO APPROVE RATE SCHEDULES DESIGNED TO DEVELOP SUCH RETURN, AND FOR APPROVAL OF PURCHASED POWER CONTRACT.

DOCKET NO. E-01345A-03-0437

**NOTICE OF FILING
RESPONSIVE/CLARIFYING
TESTIMONY AND EXHIBIT OF
KEVIN C. HIGGINS**

Arizonans for Electric Choice & Competition, Phelps Dodge Mining Company, Federal Executive Agencies, and The Kroger Co. hereby provide notice of filing the Responsive/Clarifying Testimony and Exhibit of their witness, Kevin C. Higgins, in the above-captioned docket in connection with the Proposed Settlement Agreement.

RESPECTFULLY SUBMITTED this 25th day of October 2004.

FENNEMORE CRAIG, P.C.

By *[Signature]*
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1 The **ORIGINAL** and **13 copies** of
2 the foregoing were filed this 25th day
of October 2004 with:

3 Docket Control
4 Arizona Corporation Commission
5 1200 West Washington
6 Phoenix, Arizona 85007

7 **COPY** of the foregoing **hand-delivered**
8 this 25th day of October 2004 to:

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COPIES of the foregoing
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this 25th day of October 2004 to all parties of record.


A handwritten signature in cursive script, reading "Mary Bollington", is written over a solid horizontal line.

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**RESPONSIVE / CLARIFYING TESTIMONY
AND EXHIBIT
OF KEVIN C. HIGGINS**

**On Behalf of Arizonans for Electric Choice and Competition,
Phelps Dodge Mining Corp., Federal Executive Agencies, and The Kroger Co.**

Docket No. E-01345A-03-0437

October 25, 2004

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1 A. The AzCA witnesses are advocating for policies that promote distributed
2 generation. To that end, Mr. Chamberlain proposes rate design changes that
3 would: (1) lower the cost of partial requirements service, which self-generators
4 typically require for meeting their standby and supplemental energy needs; and
5 (2) *raise* the power rates to the higher-load-factor retail customers who constitute
6 the likely market for the cogeneration products AzCA is promoting.

7 A significant portion of Mr. Chamberlain's testimony is a critique of Rate
8 E-32, and the companion Rate E-32R, which is an *optional* rate for partial
9 requirements service. Mr. Chamberlain's testimony mischaracterizes the
10 economic basis of Rate E-32, and the related Rates E-32R and E-32-TOU.
11 Remarkably, Mr. Chamberlain's testimony contains no substantive discussion of
12 Rate E-52, which is designed exclusively for partial requirements service. In
13 addition, Mr. Chamberlain's testimony contains serious factual errors, as well as a
14 number of irrelevant comparisons.

15 The rate components proposed for Rate E-32 are an integral part of the
16 Settlement Agreement. Altering the E-32 rate design as suggested by Mr.
17 Chamberlain would constitute an adverse material change for several parties to
18 the Agreement. Furthermore, as a matter of public policy, it makes no sense to re-
19 design a rate intended for thousands of *full* requirements customers in an attempt
20 to address special design needs for a relative handful of *partial* requirements
21 customers – when a rate designed specifically for partial requirements service is
22 already available.

1 Mr. Chamberlain's recommendations to modify Rate E-32 should be
2 rejected in their entirety.

3 **APS rates for partial requirements service**

4 **Q. What is the basic criticism asserted by Mr. Chamberlain regarding APS**
5 **rates for partial requirements service?**

6 A. Mr. Chamberlain focuses his attention on rates for partial requirements
7 service applicable to customers with demands below 3000 kW. In Table KCH-
8 SR1 below, I list the rate schedules that are relevant to this discussion.

9 **Table KCH-SR1**
10 **Selected APS Rate Schedules for General Service Customers below 3000 kW**

<u>Full Requirements Service</u>	<u>Partial Requirements Service</u>
E-32	E-32R w/ E-32 basis
E-32-TOU	E-32R w/ E-32-TOU basis
	E-52

16 Note that APS customers actually have a *choice* of partial requirements
17 rates under which they can take service. Despite this fact, Mr. Chamberlain
18 chooses to focus on only one of these options: E-32R, with an E-32 basis. He
19 appears to be unaware that partial requirements customers have the full range of
20 choices shown in Table KCH-SR1.

21 Mr. Chamberlain testifies that Rate E-32R is not appropriate for partial
22 requirements service. His criticism is centered primarily on the demand charge, a
23 rate component that Mr. Chamberlain appears to oppose generally, but most
24 particularly in the context of partial requirements service. A major theme in Mr.
25 Chamberlain's testimony is his assertion that a customer taking service under
26 Rate E-32 (or E-32R) has no economic incentive to shift load from peak to off-

1 peak periods. He uses this conclusion to argue for dramatic changes to Rate E-32.
2 While his recommendations are not very specific, it is clear that he supports a
3 drastic reduction (or indeed elimination) of the demand-related rate elements in
4 Rates E-32 (and E-32R), as well as an increase in the energy charges in the
5 tailblock of Rate E-32.

6 **Q. Is Mr. Chamberlain's critique valid?**

7 A. No. Mr. Chamberlain's testimony mischaracterizes the economic basis of
8 Rate E-32, as well as related Rates E-32R and E-32-TOU. He completely ignores
9 certain options available to partial requirements customers, such as Rate E-32R
10 with a time-of-use ("TOU") basis, and makes only a passing reference to Rate E-
11 52, which is designed specifically for partial requirements service. In addition,
12 Mr. Chamberlain's testimony contains a number of serious factual errors.

13 **Q. How does Mr. Chamberlain mischaracterize the economic basis of Rates E-
14 32, E-32-TOU, and E-32R?**

15 A. Mr. Chamberlain states that "the rates developed for partial requirements
16 customers are not based on the cost of providing the service to customers they
17 purport to serve."¹ In making this claim, Mr. Chamberlain focuses solely on Rate
18 E-32R, which is derived from Rate E-32. He launches an attack on the design of
19 Rate E-32, a *full* requirements rate, but never addresses the rates or costs of the
20 rate schedule designed exclusively for *partial* requirements service, Rate E-52.
21

¹ Direct testimony of Peter F. Chamberlain, p. 2, lines 23-24.

1 Mr. Chamberlain argues that the E-32 demand charge overstates the cost
2 to serve partial requirements customers. By focusing on Rate E-32 in the context
3 of partial requirements service, Mr. Chamberlain mischaracterizes the economic
4 basis of the rate. Rate E-32 has over 78,000 full requirements customers on it. The
5 demand-related charges in Rate E-32 are necessary for properly pricing the
6 capacity-related costs of the APS system for these full requirements customers.
7 These charges are critical for properly assigning fixed distribution, transmission,
8 and generation costs to these thousands of customers, to ensure that they are
9 appropriately charged for the costs they cause to be incurred. Indeed, the demand
10 charge is a fundamental pricing component for non-residential electricity sales
11 throughout the United States, with virtually universal application.

12 Mr. Chamberlain would turn rate design on its head by subordinating the
13 design needs of Rate E-32 – and its 78,000 *full* requirements customers – in order
14 to satisfy his objectives for *partial* requirements service. Meanwhile, he provides
15 no substantive analysis of Rate E-52, which is designed exclusively for partial
16 requirements service – and which has a lower demand charge than Rate E-32R for
17 customers with reliable generating equipment.

18 **Q. Are there other ways in which Mr. Chamberlain mischaracterizes the**
19 **economics of taking service under Rates E-32, E-32-TOU, and E-32R?**

20 Yes. Mr. Chamberlain also states that the “rate structures proposed for
21 partial requirements customers produce perverse incentives to increase on peak

1 energy usage and do nothing to encourage (and may, in fact, penalize) load
2 management efforts to shift load to off peak periods.”²

3 This statement is simply incorrect. Mr. Chamberlain fails to consider that
4 a partial requirements customer has the option of receiving service under Rate
5 32R with a time-of-use basis. Under this option, off-peak demand charges are
6 significantly lower than on-peak charges. Moreover, off-peak demand charges do
7 not have a ratchet provision; that is, if the customer incurs off-peak demand
8 charges in a given month, it does not create a cost obligation to the customer for
9 subsequent months, unlike demand charges incurred for on-peak periods. This is
10 a significant incentive for a partial requirements customer to use the APS system
11 during off-peak, rather than on-peak, periods.

12 It appears to me that Mr. Chamberlain is simply unaware of the TOU
13 option for E-32R. This is revealed in his response to APS Data request 4-15, in
14 which Mr. Chamberlain states: “Consider a 500 kw partial requirements customer
15 taking service under E-32R. Should that customer experience an unplanned
16 outage of its generation at 3 a.m. on a Sunday morning, he will be forced to pay
17 charges as if he needed service at the hour of the system’s monthly coincident
18 peaks.” For an E-32R customer taking service on a TOU basis, this statement is
19 simply incorrect. The off-peak residual demand charge is \$7.14 cheaper than the
20 on-peak demand charge, and has no ratchet. Indeed, the off-peak generation
21 component for E-32-TOU is only \$0.25 per kW-month. In addition, the off-peak

² *Ibid.*, p. 2, lines 25-28.

1 charges for the energy required by this customer are \$.01 per kWh less than
2 during the on-peak period.

3 Mr. Chamberlain's characterization of the incentives and disincentives
4 facing a partial requirements customer with respect to on-peak and off-peak usage
5 is simply wrong. His recommendations pertaining to Rate E-32 should be
6 rejected in their entirety.

7 **Other design issues pertaining to Rate E-32**

8 **Q. On page 6 of his direct testimony, Mr. Chamberlain states that "an E-32**
9 **customer operating solely during off-peak hours with a peak load of 500 kw**
10 **would pay the same total demand and non-fuel energy charges as a customer**
11 **operating during only on-peak hours." Can you respond to this statement?**

12 **A.** Mr. Chamberlain's reference to "non-fuel energy charges" is not entirely
13 clear, as APS has no such charge. But the gist of Mr. Chamberlain's statement is
14 an assertion that an E-32 customer with a peak demand of 500 kW, who operated
15 solely during off-peak hours, would not see any rate savings relative to operating
16 exclusively during on-peak hours.

17 Such an assertion is wrong. Under the terms of the Settlement Agreement,
18 an E-32 customer is free to take service under E-32-TOU.³ An E-32-TOU
19 customer with a peak demand of 500 kW, who operated solely during off-peak
20 hours, would save 40 percent on rates during the winter and 36 percent during the
21 summer, relative to operating solely during on-peak hours under Rate E-32. This
22 analysis is shown in Settlement Attachment KCH-SR1.

³ Obviously, for an E-32 customer who does not elect TOU option, there is no difference between peak and off-peak pricing, as by definition the non-TOU version of Rate E-32 has no time-of-use features.

1 **Q. On page 11 of his direct testimony. Mr. Chamberlain states that it is likely**
2 **that the tailblock energy rate for Rate E-32 will not recover the actual**
3 **variable fuel costs of generation. Can you respond to this statement?**

4 A. Mr. Chamberlain's assertion is incorrect. The proposed energy tailblock
5 rate for Rate E-32 is \$.03182 per kWh during the winter and \$.04175 during the
6 summer. The base cost of APS fuel and purchased power established in the
7 Settlement Agreement is \$.020743 per kWh.⁴ The winter tailblock rate for Rate
8 E-32 is over 50 percent higher than APS' base energy cost, and the summer
9 tailblock rate is more than double APS' base energy cost.

10 Mr. Chamberlain buttresses his argument with references to natural gas
11 prices – in essence arguing that retail customers should pay the marginal cost of
12 energy, as opposed to the traditional regulatory approach of average cost pricing.
13 The issue of marginal versus average cost pricing in regulated monopolies has
14 been extensively discussed in the regulatory literature. The upshot is that charging
15 marginal cost for energy is almost certain to result in a mismatch between utility
16 costs and revenues, and for this reason is seldom adopted by regulatory
17 authorities.

18 Adopting Mr. Chamberlain's recommendation to raise the tailblock rate
19 for E-32 customers would result in a significant increase in APS rates for higher-
20 load factor customers, who incidentally, constitute the likely market for the
21 cogeneration products AzCA is promoting. The economic harm to these
22 customers is not inconsequential to the interests of cogeneration equipment
23 vendors, as higher energy rates make gas-fired cogeneration equipment more

1 competitive. The Commission should reject AzCA's attempt to create an undue
2 pricing advantage for distributed generation by means of raising the APS rates of
3 higher-load-factor customers.

4 **Q. On page 6 of his direct testimony, Mr. Chamberlain states that Rate E-32 has**
5 **been designed to take costs that have been “functionalized” as energy and**
6 **make them “demand-based.” Is this a correct characterization?**

7 A. No. Generation costs have a significant demand (or capacity) component
8 to them. But an examination of the unbundled components of proposed Rate E-32
9 shows that there is no separate demand charge for generation for this rate
10 schedule. Instead, demand-related generation costs are collected in the initial
11 energy block as a function of load factor, i.e., the first 200 kWh per kW. These
12 costs are not being “re-functionalized” (or more properly, “re-classified”) – they
13 are demand-related at the outset, and they are being collected via a demand-
14 related pricing mechanism. Ironically, it is Mr. Chamberlain who proposes to de-
15 link cost classification from rate design: he wants costs that are properly classified
16 as demand-related to be ignored in the design of the rate.

17 **Q. On page 9 of his direct testimony, Mr. Chamberlain states that Rate E-32**
18 **collects transmission costs through a kW charge. Is this correct?**

19 A. No. An examination of the unbundled rate for Schedule E-32 shows that
20 under the Settlement Agreement, it is proposed that transmission costs be
21 collected on a per-kWh basis, the opposite of what Mr. Chamberlain contends.
22 Mr. Chamberlain's detailed depiction of how the APS retail tariff supposedly

⁴ Settlement Agreement, paragraph 31.

1 assigns transmission cost responsibility based on the highest fifteen minute period
2 any time during the month is entirely incorrect.⁵

3 I also note that as part of Mr. Chamberlain's discussion of transmission
4 costs, he makes numerous references to the proposed rate design for
5 WestConnect, the proposed RTO. These references are not terribly relevant.
6 WestConnect has not yet been implemented, and it is likely to be years before any
7 WestConnect transmission rate design is ever in use. In addition, the
8 WestConnect tariff is intended for wholesale transactions, whereas Rate E-32 is
9 designed for retail service, and there are analytical hazards in attempting the kind
10 of direct comparisons made by Mr. Chamberlain.

11 **Clarification pertaining to Rate E-32-TOU residual demand charge**

12 **Q. Do you wish to make any clarifications with respect to the Rate E-32-TOU**
13 **rate components in the proposed Settlement Agreement?**

14 A. Yes. There is an omission in the rate table for Rate E-32-TOU, attached to
15 the Settlement Agreement. The table should show a reduction in the delivery-
16 related demand charge after the first 100 kW of load for residual off-peak
17 demand. However, this reduction was inadvertently omitted. Instead of remaining
18 at the initial level of \$7.722 per kW-month (e.g., for secondary), the residual off-
19 peak demand charge for delivery should step down exactly as occurs for on-peak
20 hours, and for E-32 generally. Note also that the initial rate block for residual off-
21 peak delivery will only apply to the first 100 kW of *combined* on-peak and
22 residual off-peak load.

⁵ Direct testimony of Peter F. Chamberlain, p. 10, lines 9-19.

1 Q. Does this conclude your responsive / clarifying testimony?

2 A. Yes, it does.

E-32 versus E-32 TOU Bill Comparison for a 500kW customer under two different load characteristics

Scenario 1 - All usage on-peak @ E-32 rate

Usage Block	Value	Rate
Summer:		
1) <=200 kWh per kW	75,833	0.07938 \$/kWh
2) All Additional kWh	0	0.04175 \$/kWh
Total Avg Summer	75,833	
Winter:		
1) <=200 kWh per kW	74,667	0.06945 \$/kWh
2) All Additional kWh	0	0.03182 \$/kWh
Total Avg Winter	74,667	

Demand Blocks	Rate
1) <=100 kW	7.722 \$/kW
2) 100 < kW <500	3.497 \$/kW
3) >500 kW	3.497 \$/kW
Total	500

Basic Service Charge - Instrument-Rated Meter 1,134 \$/day

(B) Base	(C) CRCC kWh=50,000338	(D) E-32 Bundled Franchise (IBH-C)pd,0.144	(E) Total
\$34			
\$2,171			
\$6,020	\$26	\$119	\$6,369
\$8,225			
\$34			
\$2,171			
\$5,186	\$25	\$107	\$7,523
\$7,391			

(A)

Avg. Summer	Basic Service Charge	
	Demand Charges	
	Energy Charges	
	Total @ Secondary Voltage	
Avg. Winter	Basic Service Charge	
	Demand Charges	
	Energy Charges	
	Total @ Secondary Voltage	

Billing Summary:

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Scenario 2 - All usage off-peak @ E-32 TOU rate

Energy Usage	Value	Rate
Summer:		
Avg On-Peak kWh	0	0.04815 \$/kWh
Avg Off-Peak kWh	75,833	0.03815 \$/kWh
Winter:		
Avg On-Peak kWh	0	0.03822 \$/kWh
Avg Off-Peak kWh	74,667	0.02822 \$/kWh

TOU Demand Blocks	Value	Rate1
1) <=100 kW On-Peak	0	15.112 \$/kW
2) 100 < kW <500 On-Peak	0	10.887 \$/kW
3) >500 kW On-Peak	0	10.887 \$/kW
Total	0	
First 100 Residual kW Off-Peak, if applicable	100	7.972 \$/kW
Over 100 Residual kW Off-Peak, if applicable	400	3.747 \$/kW
Total	500	

Basic Service Charge - Instrument-Rated Meter 1,134 \$/day

(B) Base	(C) CRCC kWh=50,000338	(D) E-32 TOU Franchise (IBH-C)pd,0.144	(E) Total
\$34			
\$2,296			
\$2,893	\$26	\$76	\$5,324
\$5,223			
\$34			
\$2,296			
\$2,107	\$25	\$64	\$4,527
\$4,437			

(A)

Avg. Summer	Basic Service Charge	
	Demand Charges	
	Energy Charges	
	Total @ Secondary Voltage	
Avg. Winter	Basic Service Charge	
	Demand Charges	
	Energy Charges	
	Total @ Secondary Voltage	

Billing Summary:

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E-32 TOU Savings compared to E-32

(F) Avg. Summer Amt (\$)	(G) Percent (%)
\$3,045	36%

Avg. Winter Amt (\$)	Percent (%)
\$2,986	40%

Note 1: E-32 TOU rates reflect a reduction in the delivery-related demand charge after the first 100 kW of combined on-peak and residual off-peak load as noted in testimony.