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Tallahassee

August 16, 1999

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Florida Public Service Commission
2540 Shumard Oak Boulevard
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Re: Generic investigation into the aggregate electric utility reserve margins planned for Peninsular Florida - Docket #981890-EU

Dear Ms. Bayo:

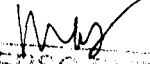
Enclosed find an original and 15 copies of the testimony of Robert G. Miller, Kissimmee Utility Authority, together with a Certificate of Service, to be filed in the above-captioned docket. We are also enclosing a diskette.

Very truly yours,


Roy C. Young

RCY:swp
Enclosures

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Generic investigation into the
aggregate electric utility reserve margins
planned for Peninsular Florida

DOCKET NO. 981890-EU

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that the a copy of the Testimony of Robert G. Miller, Kissimmee
Utility Authority, to the Issues raised in this matter have been furnished via U.S. Mail this 16th day
of August, 1999, to the following:

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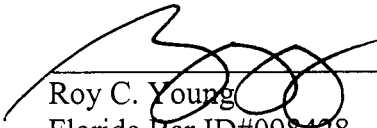
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1 BEFORE THE PUBLIC SERVICE COMMISSION

2 KISSIMMEE UTILITY AUTHORITY

3 TESTIMONY OF ROBERT G. MILLER

4 DOCKET NO. 981890-EU

5 AUGUST 16, 1999
6

7 **Q. Please state your name and address.**

8 A. My name is Robert G. Miller and my business address is 1701 West Carroll
9 Street, Kissimmee, Florida 34741.
10

11 **Q. By whom are you employed and in what capacity?**

12 A. I am employed by Kissimmee Utility Authority (KUA) as Manager of Bulk
13 System Planning.
14

15 **Q. Please describe your responsibilities in that position.**

16 A. As Manager of Bulk System Planning, I have overall responsibility for generation
17 and purchase power planning, transmission planning, and demand side planning.
18 As part of my responsibilities, I develop transmission wheeling rates and
19 associated cost support schedules, perform production costing of the utility's
20 resources, evaluate reliability, and evaluate power purchase options. I established
21 the system planning division of KUA during 1992. As Manager of Bulk System
22 Planning, I am accountable to the Director of Power Supply on all matters
23 concerning utility planning. I have held the Bulk System Planning manager
24 position for over 7 years.
25

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UTILITY REGULATORY DIVISION

1 **Q. Please state your professional experience and educational background.**

2 A. I have over 26 years of experience as an electrical engineer with 22 years
3 experience in the electric utility industry. My primary area of experience has
4 been in electric utility planning and includes generation expansion planning,
5 distribution system planning, transmission planning, load forecasting and
6 economic analysis. I served nine years as Manager of System Planning for the
7 Jamaica Public Service Company where I was actively involved in least cost
8 generation expansion planning, load forecasting, transmission and distribution
9 planning, and involvement with national energy policy issues. I was subsequently
10 employed as a project manager by the national consulting firm R. W. Beck and
11 Associates where I participated in transmission analyses and power supply studies
12 for several Florida municipal utilities and several Caribbean countries.

13

14 I received a Master's degree in Electrical Engineering from the Technical
15 University of Nova Scotia, Canada as well as a Bachelor of Science degree in
16 Electrical Engineering from the University of the West Indies in the Caribbean. I
17 have attended numerous training courses including an intensive nine-week course
18 in nuclear power planning and generation optimization at the Argonne National
19 Laboratory as well as a similar program in energy policy planning at the
20 Brookhaven National Laboratory.

21

22 **Q. What is the purpose of your testimony in this proceeding?**

23 A. The purpose of my testimony is to present KUA's position regarding the issues in
24 this Docket.

25

1

2 **Q. Did any outside consultants assist you in the development of your testimony?**

3 A. Yes. Black & Veatch assisted me in the development of my testimony. Black &
4 Veatch has provided consulting services to KUA in the area of power supply
5 planning since 1983.

6

7 **Q. Have you prepared any exhibits as part of your direct testimony?**

8 A. No.

9

10 **Q. Please describe Kissimmee Utility Authority's KUA's reserve margin**
11 **planning criteria.**

12 A. KUA uses a minimum reserve margin of approximately 15 percent applied to the
13 hourly integrated annual peak demand. The use of a minimum reserve margin
14 planning criterion directly infers that there may well be circumstances in which
15 KUA may deem a higher planning reserve margin prudent. Likewise, there may
16 be some rare short-term instances in which KUA deems it prudent to allow its
17 minimum planning criterion to dip slightly below 15 percent. Ultimately, KUA's
18 management is responsible for determining the adequacy of KUA's resources to
19 meet KUA's customer's needs and for balancing the cost of reserves versus their
20 benefits.

21

22 **Q. Why does KUA use a minimum reserve criterion of approximately 15**
23 **percent?**

24 A. There are a number of reasons KUA uses a minimum reserve criterion of 15
25 percent. One reason is that the Florida Public Service Commission (FPSC) has

1 established a minimum planned reserve margin criterion of 15 percent in Section
2 25-6.035(1) Fla. Admin. Code for the purposes of sharing responsibility for grid
3 reliability. The Florida Reliability Coordinating Council (FRCC) of which KUA
4 is a member, has also set a minimum planning reserve margin criterion of 15
5 percent. In addition to the FPSC and FRCC requirements, the minimum 15
6 percent reserve margin criterion appears appropriate for KUA at this time when
7 all things are considered.

8 **Q. What additional things are considered by KUA in determining their**
9 **minimum reserve margin criterion?**

10 A. There are a number of considerations. One consideration is the cost of capacity
11 related to supplying reserves. KUA desires to keep costs to KUA's customers as
12 low as possible consistent with reliability. With a municipal utility, all costs are
13 passed through to the customers. Generally the higher the reserves, the higher the
14 cost. The concern over cost is compounded by the potential for retail
15 deregulation. With retail deregulation, excess reserves may place KUA in a
16 noncompetitive situation. Another consideration is to provide reliable service to
17 customers. Inadequate generating capacity is only one component contributing to
18 customer outages. In fact, lack of generation is one of the smallest components
19 contributing to customer outages. The distribution system generally is the largest
20 component contributing to customer outages.

21
22 **Q. Are there load considerations that contribute to the selection of the reserve**
23 **criterion?**

24 A. Yes. The customers' load shape and the availability of demand side management
25 and interruptible or curtailable loads have an influence on the selection of the

1 reserve criterion. Winter peaks are generally more spiked in nature, while summer
2 peaks are broader. Generally the broader the peak, the greater the requirement for
3 reserves. KUA is generally a summer peaking utility which contributes to the
4 need for a 15 percent reserve margin. Load management and interruptible or
5 curtailable customers also contribute to the determination of the minimum reserve
6 margin criterion. KUA has a significant residential direct load control program in
7 place, and although KUA has interruptible and curtailable tariffs in place, KUA
8 has no customers that have availed themselves to the tariffs. One advantage of
9 residential direct load control is that additional load reductions are possible in
10 emergency situations using the scram function.

11
12 **Q. Are there generating unit and purchase power contract considerations**
13 **related to the selection of a minimum reserve margin criterion?**

14 A. Yes. There are a number of considerations. The higher the availability of
15 generating units, the less reserves are required. This factor is generally not
16 considered in reserve margin calculations. There are also generating unit
17 considerations associated with the season during which the peak occurs. For
18 instance in the winter, as it gets colder, generally the generating capability of units
19 increases. On the other hand, in summer, as the temperature gets higher the
20 capability of the generating units decreases. Specific aspects of power purchase
21 contracts also have an impact on reserve requirements. Some of these aspects
22 include the firmness of the purchase power and any options for additional power.

23
24 **Q. Are there reserve sharing characteristics that impact the reserve margin**
25 **criterion determination?**

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A. Yes. KUA is a member of the Florida Municipal Power Pool (FMPP). Each member is responsible for their own planning reserves, FMPP is not a capacity sharing pool. While each member of FMPP is responsible for providing their own reserve, there are provisions for obtaining capacity from the other members through FMPP if KUA's units are unavailable due to forced outage or maintenance. KUA also has agreements with most if not all of the utilities in Florida to provide Schedule A and B capacity in the case of forced outages or maintenance. KUA is able to access this capacity through its numerous interconnections with the other utilities in the state.

Q. Does KUA have any Qualifying Facilities (QF's) in their service area that impact reserve margin requirements?

A. KUA does not have any QF's in its service area.

Q Can you summarize why KUA uses the minimum reserve criterion of approximately 15 percent?

A. Yes. As indicated by the above discussions, KUA considers many things in determining a planning reserve criterion. The impact from each of the individual considerations is difficult, if not impossible to quantify, but when taken altogether, KUA believes the selected reserve margin criterion appropriately balances cost and reliability for KUA's system and is an appropriate criterion to use for KUA at this time.

1 **Q. Does KUA use Loss of Load Probability (LOLP) or Expected Unserved**
2 **Energy (EUE) to determine reliability requirements?**

3 A. No.

4
5 **Q. Why?**

6 A. LOLP and EUE are not particularly appropriate for small heavily interconnected
7 systems such as KUA's. It is difficult to determine what the LOLP or EUE
8 criteria should be on an unassisted basis. The criteria would be unique to each
9 individual system and would vary widely from system to system. On an assisted
10 basis, the difficulty is attempting to model the assistance from the
11 interconnections. For small heavily interconnected systems such as KUA's, the
12 reliability stemming from the interconnections completely outweighs the
13 reliability from the generating units. The inability to obtain detailed data for
14 neighboring systems necessary to properly model contributions from those
15 systems precludes any meaningful evaluation.

16
17 **Q. Is LOLP an appropriate reliability methodology for Peninsular Florida?**

18 A. Yes. For large systems that are relatively weakly interconnected to the outside
19 world such as Peninsular Florida, LOLP can be an appropriate methodology.

20
21 **Q. What is the appropriate period for seasonal peak demand?**

22 A. One hour integrated demand is the appropriate period because that is the most
23 standard period for reporting and modeling. If shorter periods are considered,
24 then the percent reserve margin should change to reflect the same reliability.

25

1 **Q. Please discuss load uncertainty.**

2

3 A. Load uncertainty due to winter temperature is by far the greatest factor
4 contributing to variation in reserve margins. As the temperature decreases more
5 and more resistance heating is reflected in the load. As the temperature decreases,
6 the diversity in resistance heating decreases resulting in the increased load.

7

8 **Q. Is KUA's reserve criterion adequate to cover such an uncertainty in load?**

9 A. Yes, KUA believes that the 15 percent reserve margin criterion is adequate to
10 cover existing load uncertainty. Even if the 15 percent reserve margin criterion
11 would be inadequate to cover uncertainty in load due to extreme temperature,
12 KUA does not believe that it is economical to further increase reserves.
13 Extremely low temperature causing large increases in loads above projected levels
14 is an extremely low probability event. Because of its rare occurrence, empirical
15 data is not available to determine accurately the load uncertainty. Direct load
16 control also becomes relatively more effective as temperatures decrease. Also
17 emergency load reduction capability under the scram function increases greatly as
18 the temperature decreases.

19

20 **Q. Does KUA have any interruptible or curtailable loads?**

21 A. No as stated earlier.

22

23 **Q. Does KUA have any wholesale loads?**

24 A. KUA does not have any firm wholesale loads.

25

- 1 **Q. Does KUA have an expiration date on their direct load control tariff?**
- 2 A. KUA’s direct load control tariff does not have an expiration date.
- 3 **Q. Does KUA believe it is appropriate to incorporate planned impacts of its**
4 **direct load control program?**
- 5 A. Yes. The direct load control program represents a customer choice program.
6 Customers opting to receive billing credit for participating in the direct load
7 control program should well expect it to be utilized. Since the program represents
8 actual load reduction capability, it is appropriate for KUA to include that
9 capability in its planning process. The direct load control program has the added
10 benefit of the emergency scram feature, which can further reduce loads in
11 emergency situations.
- 12
- 13 **Q. What is the appropriate time frame for a percent reserve margin planning**
14 **criterion?**
- 15 A. The reserve margin criterion should be on an annual basis. The criterion should
16 consider seasonal, monthly, daily, and hourly variations on resources and loads.
- 17
- 18 **Q. How should KUA’s generating units be rated for inclusion on the percent**
19 **reserve margin planning criterion.**
- 20 A. FMPP is developing standard rating criteria. As a member of FMPP, KUA will
21 use FMPP’s standard criteria. Until those standards are in place, KUA should rate
22 their units consistent with the planning reserve criterion used. In other words,
23 units are normally rated at something less than their absolute maximum rating.
24 For instance combustion turbines are rated at their base firing rating rather than
25 their peak firing rating. If the units were rated at their peak firing rating, then the

1 percent reserve margin criterion should be increased to provide the same level of
2 reliability.

3 **Q. How should individual utility’s reserve margins be integrated into the**
4 **aggregated reserve margin for Peninsular Florida?**

5 A. The individual utilities need to develop reserve margin criterion that are
6 appropriate for their unique systems. The simple aggregation of the loads and
7 resources resulting from the individual utility criteria results in an aggregated
8 reserve margin for Peninsular Florida; however, the individual utilities will likely
9 be considering their loads and resources differently.

10
11 **Q. Should there be a limit on the ratio of non-firm load to MW reserves?**

12 A. Yes. The ratio of non-firm load to MW reserves needs to be determined on a
13 case-by-case basis for each utility based on the unique characteristics of each
14 utility.

15
16 **Q. Should there be a minimum of supply-side resources when determining**
17 **reserve margins?**

18 A. The level of supply-side resources required in determining reserve margins should
19 be determined on a case-by-case basis based on the unique characteristics of each
20 utility.

21
22 **Q. Should the import capability of Peninsular Florida be accounted for in**
23 **measuring and evaluating reserve margins and other reliability criteria, both**
24 **for individual utilities and for Peninsular Florida.**

1 A. Import capability should be considered in determining reserve margins for
2 individual utilities and Peninsular Florida as a whole. Both the physical
3 transmission import capability and the generating resources available should be
4 considered.

5

6 **Q. Has the Florida Reliability Coordinating Council's 15 percent resource**
7 **margin planning criterion been adequately tested to warrant using it as a**
8 **planning criterion for the review of generation adequacy on a Peninsular**
9 **Florida basis?**

10 A. Yes. With a 15 percent reserve margin planning criterion, Peninsular Florida
11 appears to have demonstrated a reasonable balance between economics and
12 reliability.

13

14 **Q. Should the Commission adopt a reserve margin standard to individual**
15 **utilities in Florida?**

16 A. Municipal utilities should be allowed to determine their reserve margin criteria on
17 a case-by-case basis incorporating the unique aspects of each system. Municipal
18 utilities should also be allowed to change their reserve margin criteria as
19 conditions change. When reserve margin criteria change, a transition period is
20 often necessary to effect the change.

21

22 **Q. Should a reserve margin criteria be set such that all load is served during the**
23 **most extreme conditions?**

24 A. Reliability is very important to all customers, but a reasonable balance must be

25

1 struck between the reliability level and the cost of achieving the reliability level.
2 It is unlikely that the cost of serving all loads under the most extreme conditions
3 can be justified, nor is it desired by the customers. Under extreme conditions,
4 such as extremely cold temperatures, problems besides lack of generation often
5 contribute to customer interruptions such as problems in the distribution system.
6 Expenditures for increased reliability need to be properly balanced between
7 distribution, transmission, and generation.

8
9 **Q. Please summarize your overall views on planning reserve margins.**

10 A. The overall objective is to provide reliable service to the customer in an economic
11 manner. There are many things that contribute to providing reliable service.
12 Reserve margins merely measure one of the things contributing to providing that
13 reliable service. In different systems the same reserve margin can provide very
14 different levels of customer reliability. Thus, reserve margins must be dealt with
15 on a case-by-case basis as one component of providing reliable service to
16 customers.

17
18 **Q. Does this complete your prefiled testimony?**

19 A. Yes, it does.
20
21