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RECORDS AND REPORTING

August 16, 1999

Blanca Bayo, Director of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Docket 981890-EU
Generic Investigation into the Aggregate Electric Utility
Reserve Margins Planned for Peninsular Florida

Dear Ms. Bayo:

Enclosed, please find the original and fifteen copies of the Prefiled Testimony of Mario Villar, submitted on behalf of the Florida Reliability Coordinating Council Inc.

Sincerely,

Paul Sexton

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EAG Staff
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Enclosure

cc: Ken Wiley
Parties of Record

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FPSC-RECORDS/REPORTING

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 Submitted for filing: July 26, 1999

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Prefiled Testimony of Mario Villar has been furnished by U.S. mail to the persons listed on the attached service list on this 16th day of August, 1999.

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: Generic Investigation	)	DOCKET NO. 981890 - EI
Into the Aggregate Electric	)	
Utility Reserve Margins Planned	)	SUBMITTED FOR FILING: 8/16/99
For Peninsular Florida.	)	

PREFILED TESTIMONY OF:

MARIO VILLAR

SUBMITTED ON BEHALF OF THE FLORIDA RELIABILITY COORDINATING COUNCIL

FLORIDA RELIABILITY COORDINATING COUNCIL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

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FLORIDA RELIABILITY COORDINATING COUNCIL

PREFILED TESTIMONY OF MARIO VILLAR

Q. Please state your name and business address.

A. My name is Mario Villar and my business address is 9250 West Flagler Street, Miami, Florida 33174.

Q. By whom are you employed and what position do you hold?

A. I am employed by Florida Power & Light as Manager of Resource Planning in the Resource Assessment & Planning Department.

Q. Please describe your duties and responsibilities in that position.

A. I manage two groups in that department. One group is responsible for determining the magnitude and timing of FPL's future resource needs, analyzing supply and demand side management (DSM) options which could potentially meet these future needs, and developing FPL's integrated resource plan with which FPL intends to meet these needs. The other group is primarily responsible for the administration and oversight of interchange and firm sale and purchase contracts.

Q. Please describe your education and professional experience.

A. I have a Bachelor of Science in Electrical Engineering and a Juris Doctor degree, both from the University of Miami. I have also completed the University of Florida's/Florida Power & Light Company's Nuclear Power Engineering Program and Columbia University's Executive Program in Business Administration. I am a member of the Florida Bar, the Federal Energy Bar Association and the Institute of Electrical and Electronics Engineers. Additionally, I have completed numerous technical and management courses during my career at FPL.

I joined FPL in 1973 as an engineer in the Distribution Engineering department. Since that time I have held various positions in Nuclear Licensing, System Planning, Governmental Affairs, Regulatory Affairs, Bulk Power Markets, Power Delivery and Resource Assessment and Planning.

Q. In what capacity are you appearing in this docket?

A. I am appearing as the Chairman of the Florida Reliability Coordinating Council's (FRCC) Resource Working Group.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the FRCC's assessment of the reliability of the electric system in Peninsular Florida in order to assist the Commission in its investigation in this Docket and to address certain issues identified in Order No. PSC-99-1274-PCO-EU issued in this proceeding on July

1, 1999. To that end, my testimony describes the FRCC's reliability assessment work during 1999 and suggests a possible approach for the Commission's consideration in its evaluations of State reliability.

Q. Please describe the responsibilities of the Resource Working Group of the FRCC.

A. The Resource Working Group (RWG) is responsible for analyzing the reliability of the electric system for peninsular Florida and reporting the results of its analyses. The RWG annually prepares the FRCC's Regional Load & Resource Plan, which is provided to the Florida Public Service Commission (FPSC). This document provides details of the projected electrical demands for the next ten-year period, and of the current and planned resources with which these electrical demands will be met. A projection of both Summer and Winter reserve margins for the peninsula are included in this document.

Generally, the RWG also undertakes a Loss-of-Load-Probability (LOLP) analysis of the peninsula and reviews whether projected reserve margins for the Peninsula comply with the FRCC's standard of a minimum 15% reserves. This reliability_assessment process may also include an analysis of the reserve margin standard. In 1999, a Reserve Margin Analyses Report was prepared, since the reserve margin standard was "driving" the peninsula's need for resource additions.

Q. Could you please provide us a brief summary of your testimony?

A. Yes. First, my testimony shows that the projected reserve margins for the peninsula for the next 10 years always meet, and frequently exceed, the FRCC's generation resource adequacy standard of a 15% regional reserve margin based on firm load. Second, I explain that the FRCC's 1999 analysis of the suitability of this 15% standard shows that it still is a viable standard for resource planning. Third, I briefly discuss the results of the FRCC's 1999 LOLP analyses which show that the peninsula's composite resource plan easily meets the generally accepted LOLP criterion of a maximum of 0.1 day/year. Fourth, I address some of the issues, which have been raised in this docket. Finally, I summarize these results and conclude that the peninsula's composite resource plan is adequate for maintaining electric reliability for the next 10 years.

Q. Are you sponsoring any exhibits in this proceeding?

A. Yes, the exhibits consist of the following 7 documents:

Document No. 1: 1999 Load and Resource Plan, Florida Reliability Coordinating Council, Summary of Capacity, Demand, and Reserve Margin (Summer and Winter)

Document No. 2: Results of 1999 FRCC Analysis of Summer Reserve Margins

Document No. 3: Results of 1999 FRCC Analysis of Winter Reserve Margins

Document No. 4: Description of Cases in FRCC's 1999 Reserve Margin Analysis

Document No. 5: Results of 1999 FRCC Analysis of Summer Reserve Margins (w/Scenarios)

Document No. 6: Results of 1999 FRCC Analysis of Winter Reserve Margins (w/Scenarios)

Document No. 7: Comparison of Reliability Criteria Used by U.S. Reliability Councils

I. Projected Peninsular Reserve Margins for 1999 – 2008

Q. Please briefly describe the FRCC's work in projecting reserve margins for the peninsula for the next 10 years.

A. The FRCC, through the work of the RWG, collects data regarding projected loads, current and projected utility generation facilities, current and projected firm capacity contracts from both utility and non-utility entities, and current and projected DSM capabilities. The collected data is consistent with the information found in the annual Ten Year Power Plant Site Plan documents filed by many of the state's utilities.

Once the data is collected and compiled into the appropriate categories, it is checked by both the FRCC staff and the utilities for accuracy. Once the RWG is satisfied with the accuracy of the data, the data is used to prepare a projection of both Summer and Winter reserve margins for the peninsula for the next ten years. This information is presented in Document No. 1 which is a reprint of the projected reserve margin page (page 22) from the FRCC's 1999 Regional Load & Resource Plan.

Q. What does Document No. 1 show?

A. The key results of Document No. 1 are found in the last column, Col. (11). The values in this column show the projected annual reserve margins for the peninsula for both Summer and Winter peaks.

For Summer, the projected reserve margins are 16% or higher every year. This means that the FRCC's generation resource adequacy standard of a 15% regional reserve margin is exceeded for each of the 10 years. For Winter, the projected reserve margins are 16% or higher for every year except the 10th year of the analysis for which the projected reserve margin is 15%. This means that the FRCC's 15% generation resource adequacy standard is met every year, and exceeded in 9 of the 10 years.

Q. What can be concluded from these results?

A. These results clearly show that the projected reserve margins for the peninsula meet the FRCC's generation resource adequacy standard of a 15% reserve margin every year for both Summer and Winter, exceed the standard for Summer in <u>every</u> year, and <u>exceed</u> the standard for Winter in <u>9 of the 10</u> years. I conclude from this data that the electric system over the next 10 years for the peninsula is projected to be reliable based on the FRCC's 15% standard.

II. The FRCC's 15% Reserve Margin Standard

Q. How did the FRCC decide on a 15% reserve margin standard?

A. This standard was developed by a consensus of the FRCC members. Most, if not all, of the FRCC member utilities are either currently using a 15% reserve margin standard for their own utility's planning work or they have used such a standard in the past. Years of operating experience have shown utilities that a 15% reserve margin "works". By this I mean that such a level of reserves enables a utility to reliably maintain the ability to provide electric service to its customers while still keeping electricity prices at a reasonable level.

Q. Has the FRCC done any work to evaluate whether their 15% standard is an adequate level of reserves to maintain electric service reliability?

A. The FRCC believes that the experience gained from many years of utility system operation is the best way to evaluate what level of reserves is adequate. As previously mentioned, this experience was the basis for selecting the 15% standard in the first place.

Nevertheless, the FRCC has conducted its own analyses of the suitability of using a 15% reserve margin as a planning standard. Such an analysis was conducted in 1998 and has again been conducted in 1999. The results of the 1999 analysis are presented in the FRCC's 1999 Reserve Margin Analyses. This document was provided to the FPSC on August 1, 1999.

Q. Would you provide a brief overview of that study?

A. Yes. The study essentially applied the historical accuracy levels of recent utility projections to evaluate the current reserve margin projections for the peninsula. Each utility used data from recent years to compare forecasted values for Summer and Winter peak hours to the actual hourly values for four of the five components in a reserve margin calculation. These four components are:

1) amount of capacity (MW) available at the peak hour from the utility's own generating units;
2) amount of capacity (MW) available at the peak hour from qualifying facilities (QFs) with which the utility has a firm capacity contract;
3) amount of capacity (MW) available at the peak hour resulting from the utility's firm import capacity contracts; and,
4) peak hour load (MW) served by the utility before the effects of any DSM programs sponsored by the utility.

In regard to the fifth component of a reserve margin calculation; i.e., the effects of DSM, utilities with one or more load management programs each calculated the confidence level they had in their ability to achieve the amount of load management they were projecting. (The total demand reduction capability of DSM is made up of the effects of cumulative load management plus incremental conservation. This total DSM capability value is overwhelmingly driven by the load management amount. Consequently, the FRCC's work focused on the load management values.)

The comparisons of projected versus actual values for the first four components of a reserve margin calculation, plus the determination of the confidence levels for the fifth component (load management), led to the development of historical "Certainty Factors". Each Certainty Factor represented the recent historical level of accuracy or confidence for each of the five reserve margin calculation components. These Certainty Factors were then applied, along with an adjustment factor to the composite load forecast values for the peninsula to account for coincidence of peak loads, to the components of the reserve margin calculation for the peninsula.

This resulted in revised projections for the peninsula's reserve margins for the next 10 years. These revised reserve margin levels were generally <u>lower</u> than the current or the original projection. (This is because while the original projection assumes 100% accuracy for the components' forecasted values, the application of the historical Certainty Factors captures the historical levels of inaccuracy in the forecasts.) The difference between the original projection and the revised projection once all of the Certainty Factors have been applied provides a reserve margin level that is "needed" assuming that future accuracy levels in utility projections equal these historical accuracy levels.

Q. How would you summarize the results of that study?

A. The primary results of the study are summarized in Document Nos. 2 and 3 that were first presented in the FRCC's 1999 Reserve Margin Analyses. Document No. 2 presents the results of the analysis in regard to Summer reserve margins while Document No. 3 presents the results of the analysis in regard to Winter reserve margins.

Document No. 2 shows both the 15% planning standard used by the FRCC and the FRCC's current projection of annual Summer reserve margins in separate columns. The values in these columns are compared to the "needed" Summer reserve margin levels which were determined in the analysis. Both the 15% planning standard used by the FRCC, and their 16%-and-higher current projected reserve margins, are higher than the 6%-to-13% reserve margin levels determined to be "needed" from the analysis. Consequently, it can be concluded from this comparison that both the 15% planning standard and the FRCC's current projected reserve margins are adequate for maintaining reliable electric service during Summer peak hours.

Document No. 3 uses a similar format to compare the FRCC's 15% planning standard, their current projection of annual Winter reserve margins, and the "needed" Winter reserve margins determined from the analysis. In this case, the "needed" reserve margins for Winter are significantly lower than 15% for every year and are even negative for most of the 10 years. (The negative values are primarily due to the fact that although the projected reserve margin calculation assumes very cold Winter temperatures every year, historically Florida does not experience such temperatures every year. This fact is reflected in the Certainty Factors for the load forecast values which results in a significantly lowered projection of Winter loads.) From this analysis of Winter reserve margins, it can be concluded that both the 15% planning standard and the FRCC's current projected reserve margins are adequate for maintaining reliable electric service during Winter peak hours.

Q. Did the FRCC perform any extreme scenario analyses as part of this work?

A. Yes. In addition to the "Base Case" analysis results shown in Document Nos. 2 and 3, there were also a number of scenarios which were also analyzed. A description of those scenarios is found in Document No. 4. The results of both the "Base Case" and scenario analyses for Summer and Winter are presented in Document Nos. 5 and 6, respectively. These five documents were previously presented in the FRCC's 1999 Reserve Margin Analyses.

For the most part, the results of these scenario analyses further strengthened the finding that the FRCC's 15% planning standard and the FRCC's current projected reserve margins are adequate to maintain reliable electric service.

Only in the most extreme (and, therefore, the most unlikely) scenario cases was this finding challenged. However, even in most of these extreme cases, the 15% planning standard and/or the current projected reserve margins were still adequate for the most important time period analyzed: three-to-six years in the future. This time period is most important since it generally takes three-to-six years to add new capacity resources. Therefore, this time period is the one for which resource decisions must now be made. Results for years less than three years out are of less importance from a planning perspective since few, if any, new resources can be added in such a short time. In addition, utilities have at their disposal a number of operational measures that may be available in sufficient amounts to address such shorter term concerns. Results for years more than six years out are of less importance since no resource decisions would now be made for years so far out. Furthermore, all such longer range projections will change in the intervening years before any decision regarding this time frame will be needed.

Q. What do you conclude about the suitability of the FRCC's 15% planning criterion?

A. As I previously mentioned, the 15% planning standard has been proven to be suitable by years of utility operating experience which is the best way to judge the standard. The results of the FRCC's 1999 analyses also serve to support a 15% reserve margin as a suitable planning standard for maintaining a reliable electric system.

III. The FRCC's 1999 LOLP Analyses

Q. Did the FRCC analyze LOLP in its 1999 work?

A. Yes, the FRCC did analyze projected LOLP for peninsular Florida as part of its 1999 work. During 1998, the FRCC performed extensive LOLP analysis of the peninsula. The 1998 work showed that the peninsula's projected LOLP was significantly below the generally accepted LOLP criterion of a maximum of 0.1 day/year. This 1998 work clearly showed that LOLP was not the driving force for identifying the need for new resources in the peninsula. Based on the 1998 work, the FRCC focused its 1999 work on reserve margin analysis, not on LOLP. However, it also decided to conduct LOLP analyses in order to determine whether the LOLP criterion had either now become, or was getting closer to becoming, the "driver" of the peninsula's resource needs.

Q. What did the FRCC learn in the 1999 LOLP analyses?

A. The results of the 1999 LOLP analyses were very similar to those of the 1998 analyses. Projected LOLP levels for the peninsula are significantly lower than 0.1 day/year due primarily to high levels of reliability for the peninsula's generating units. From this perspective, the peninsula's electric system is projected to be reliable. In addition, this analysis confirmed that LOLP still is not the driving force of the peninsula's resource needs.

IV. Order PSC 99-1274-PCO-EU Issues

The following section provides the FRCC's perspective, where appropriate, for the issues raised by the referenced order.

Q. Issue 1: What is the appropriate methodology, for planning purposes, for calculating reserve margins for Peninsular Florida?

A. For Peninsular Florida reliability planning purposes, a methodology should be chosen which has been shown by utility experience to work and which utilizes reasonable principles and assumptions. The FRCC's reserve margin methodology fits this description and the FRCC's results from using this methodology should, therefore, be accepted by the Commission.

Reserve margins for Peninsular Florida should be calculated using an industry accepted reserve margin formula utilizing information which captures, without double counting, all electrical system data for the peninsula. The FRCC currently calculates firm reserve margin using this accepted reserve margin formula for projected winter and summer firm peak demands. This formula calculates the firm reserve margin as the differential of the total firm available supply-side resources and the seasonal firm peak demand and is expressed in resource capacity (MW) in excess of the projected seasonal firm peak demand, or as a percentage of the projected seasonal firm peak. The actual formula used was presented in the FRCC's <u>1999 Reserve Margin Analyses</u> document that was provided to the Commission earlier this month.

In 1999, the FRCC based the reserve margin calculation on <u>non-coincident</u> peak loads. These non-coincident peak loads are simply the sum of each utility's peak load on which the utilities base their reserve margin calculations. In its 1999 evaluation of the 15% minimum reserve margin standard, the FRCC converted this aggregate non-coincident load into an aggregate coincident load for its base case analysis and for all but one of its scenario analyses.

The FRCC coordinates the aggregation of all data necessary for calculating reserve margins for Peninsular Florida. This effort not only involves collecting data from each utility, but also includes elimination of any double counting which might occur when data from individual utilities is aggregated.

Q. Issue 2: What is the appropriate methodology, for planning purposes, for evaluating reserve margins for individual utilities and for Peninsular Florida?

A. The evaluation of reserve margins for the peninsula should be conducted by the FRCC on an annual basis as part of the region's reliability assessment process. Reserve margin can be evaluated in two ways. First, a projected reserve margin can be compared to a reserve margin standard to see if the projected reserve margin meets the standard. Second, the reserve margin standard itself can be evaluated to see if its use results in sufficient reserves to provide reliable electrical service.

The FRCC has utilized this approach to examine reserve margins for Peninsular

Florida. The FRCC compares its projected reserve margins to its 15% minimum standard each year. This is discussed above in Section I of my testimony.

The FRCC has also evaluated the suitability of its reserve margin standard in each of the last two years. The results of the 1999 evaluation are discussed in Section II of my testimony.

In addition to the FRCC evaluation, the Commission has an existing process, the Ten Year Site Plan Process, to utilize the information provided by the FRCC in its evaluation or review of individual utility plans, if it deems it necessary.

Q. Issue 3: How should the individual components of an individual or peninsular Florida percent reserve margin planning criterion be defined:

A. The following definitions should be utilized:

A) The value to use for "capacity available at the time of peak" should be the aggregated firm supply side resources of the Peninsular utilities at the time of peak. This value should include: utilities' installed generation, firm capacity contracts with qualifying facilities, and net firm import capability. The FRCC uses this definition which is reasonable and appropriate. Equipment delays should be considered by the individual utilities involved in determining the seasonal capacity values of new generation facilities being added.

B) The value to use for the "seasonal firm peak demand" should be an <u>hourly</u> peak value for firm load served by the region. The FRCC uses this definition which is reasonable and appropriate. The FRCC has accounted for the diversity of demand in its 1999 assessment work of its planning standard through the coincidence adjustment. The amount of DSM, including the non-firm load programs which should be included is the amount of DSM which is projected by each utility for all DSM programs which have been approved by the Commission. These projections should properly account for non-firm loads, which may have participants who are near the end of their tariff/contract period.

C) A reserve margin planning standard should be based on the hourly seasonal peak for peninsular Florida.

Q. Issue 4: How should generating units be rated (MW) for inclusion in a percent reserve margin planning criterion calculation?

A. For peninsular Florida reserve margin calculations, the rating for each generating unit should be the rating given by the utility and used in its Ten Year Site Plan calculations. The FRCC uses these ratings in its calculations, which is both reasonable and appropriate.

Q. Issue 5: How should individual utility's reserve margins be integrated into the aggregated reserve margin for Peninsular Florida?

A. Individual reserve margins themselves should not get integrated into the aggregated reserve margin for Peninsular Florida. However, the data for each component of a reserve margin calculation that is used by a utility in calculating its reserve margin should be used by the FRCC (after ensuring that all relevant data is captured and that no double counting has taken place) in calculating an aggregate reserve margin for Peninsular Florida.

Q. Issue 6: Should there be a limit on the ratio of non-firm load to MW reserves? If so, what should that ratio be?

A. No. The amount of non-firm load that should be in the projected reserves for peninsular Florida is the aggregated amount of projected non-firm load from each utility's Commission-approved non-firm load programs.

Q. Issue 7: Should there be a minimum of supply-side resources when determining reserve margins? If so, what is the appropriate minimum level?

A. The FRCC believes that this issue should be addressed only on a case-by-case basis by the Commission for each utility.

Q. Issue 8: What, if any, planning criteria should be used to assess the generation adequacy of individual utilities?

A. The FRCC believes that each utility should decide what the appropriate criteria are for its system, subject to Commission oversight.

Q. Issue 9: Should the import capability of Peninsular Florida be accounted for in measuring and evaluating reserve margins and other reliability criteria, both for individual utilities and for Peninsular Florida?

A. Yes. However, only firm imported purchases and exported sales should be accounted for in reserve margin analyses.

In regard to LOLP analyses, firm imported purchases and exported sales should be included. Potential non-firm purchases of an amount up to the difference between the import capability total and the total of firm imports can be included depending upon the projected likelihood of such assistance capacity being available. This is the same treatment that should be accorded to all non-firm generation resources.

Q. Issue 10: Do the following utilities appropriately account for historical winter and summer temperatures when forecasting seasonal peak loads for purposes of establishing seasonal peak loads for purposes of establishing a percent reserve margin planning criterion?

A. The FRCC believes this issue is solely a utility-specific issue.

Q. Issue 11: Has the Florida Reliability Coordinating Council's 15% reserve margin planning criterion, or any other proposed reserve margin criterion, been adequately tested to warrant using it as a planning criterion for the review of generation adequacy on a Peninsular Florida basis? If the answer is no, what planning criterion should be used?

A. Yes. The FRCC's 15% reserve margin standard has been adequately tested. The results of the testing have shown that the current reserve margin standard is appropriate as previously discussed in Section II of my testimony.

Q. Issue 12: What percent reserve margin is currently planned for each of the following utilities and is it sufficient to provide an adequate and reliable source of energy for operational and emergency purposes in Florida?

A. The FRCC believes that this issue is solely a utility-specific issue.

Q. Issue 13: How does the reliability criteria adopted by the FRCC compare to the reliability criteria adopted by other reliability councils?

A. Document No. 7 presents a comparison of the reliability criteria utilized by the other nine reliability councils in North America.

As shown in this Document, some reliability councils utilize reserve margins, some utilize capacity margins, and some use other criteria. In regard to reserve margins and capacity margins, the definitions of each are provided on Document No. 7. It is of interest to note that the SPP region's capacity margin of 12% translates into a reserve margin of 15%. SPP and the FRCC are approximately the same size from a peak load perspective.

ERCOT is also very similar to the FRCC. It is an electrical peninsula, just as the FRCC is. ERCOT also has similar characteristics to the FRCC in terms of the number of units, the amount of DSM, and peak load.

In summary, the FRCC standard of 15% is in line with four other reliability councils in North America and exactly matches that of ERCOT which is a region similar to the FRCC in many respects.

Q. Issue 14: Should the Commission adopt a reserve margin standard for individual utilities in Florida? If so, what should be the appropriate reserve margin criteria for individual utilities in Florida? Should there be a transition period for utilities to meet that standard?

A. The FRCC believes this issue is solely a utility-specific issue.

Q. Issue 15: Should the Commission adopt a reserve margin standard for Peninsular Florida? If so, what should be the appropriate reserve margin criteria for Peninsular Florida?

A. No, there is no need to do so. The FRCC 's methodology and standard for generation adequacy are reasonable and the Commission should rely upon the FRCC's reports as a basis for reviewing the adequacy of individual utilities' resource plans.

However, if the Commission does adopt a reserve margin standard, it should accept the FRCC's 15% reserve margin standard.

Q. Issue 16: Should the Commission adopt a maximum reserve margin criterion or other reliability criterion for planning purposes; e.g., the level of reserves necessary to avoid interrupting firm load during weather conditions like those experienced on the following dates: 01/08/70, 01/17/77, 01/13/81, 01/18/81, 12/19/81, 12/25/83, 01/21/85, 01/21/86, 12/23/89?

A. No. The FRCC believes that the Commission need not adopt any standard, but should review the FRCC's work for reasonableness and address the merits of that work. However, if the Commission does decide to adopt a standard, it should recognize that a <u>maximum</u> reserve margin standard would not provide additional reliability in case of extreme weather conditions. A <u>maximum</u> reserve margin does the opposite; it <u>limits</u> the amount of reserves that a utility could plan for.

Q. Issue 17: What percent reserve margin is currently planned for Peninsula Florida and is it sufficient to provide an adequate and reliable source of energy for operational and emergency purposes in Peninsula

Florida?

A. The projected reserve margins, Summer and Winter, are presented in Document No. 1. As previously discussed in Sections I and II of my testimony, these projected reserve margins are sufficient to provide an adequate and reliable source of electricity for Peninsular Florida.

Q. Issue 18: Can out-of-Peninsular Florida power sales interfere with the availability of Peninsular Florida reserve capacity to serve Peninsular Florida consumers during a capacity shortage? If so, how should such sales be accounted for in establishing a reserve margin standard?

A. No. Firm capacity sales outside of the Florida peninsula are already accounted for in reliability planning and, therefore, pose no unforeseen problem during a capacity shortage. Non-firm sales can, by definition, be stopped during capacity emergencies.

Q. Issue 19: Based on the resolution of Issues 1 through 18, what follow-up action, if any, should the Commission pursue?

A. The FRCC believes that no follow-up action is necessary since the FRCC has presented analyses which show that the composite electric system for peninsular Florida is projected to be reliable over the 10-year planning period. However, if the Commission decides that concerns exist which justify remedial action, the FRCC believes that the Commission should proceed to rulemaking on those concerns and strive to ensure that the specific circumstances of each individual utility are considered. The affected utilities should be granted an appropriate transition period to meet any revised standard which may result.

V. Summary and Conclusions

Q. Would you please summarize the 1999 work performed by the FRCC, and the results of that work, in regard to the reliability of the peninsula's electric system?

A. Yes. First, the FRCC projected composite annual reserve margins for the peninsula using 1999 data from each utility. These projected reserve margins always meet, and usually exceed, the FRCC's 15% reserve margin planning standard.

Second, the FRCC conducted an analysis of the continued suitability of the FRCC's 15% reserve margin standard. This analysis found that the 15% planning standard, and the FRCC's projected reserve margins, are suitable for maintaining reliable electric service for the peninsula during Summer and Winter peak hours.

Third, the FRCC also conducted an analysis of the peninsula's projected LOLP during 1999. Similar to what was found from the 1998 work, the 1999 LOLP analysis demonstrated that the peninsula's electric system is projected to be very reliable from an LOLP perspective. It also demonstrated that LOLP is not the driving force of the peninsula's resource needs; reserve margin is the driving force.

Q. What do you conclude from the results of these analyses?

A. The results of these analyses clearly indicate that the electric system of peninsular Florida is projected to be reliable. This conclusion holds true regardless of whether one judges the system from a reserve margin perspective or an LOLP perspective.

Q. What do you conclude from the discussion of the issues raised in this docket?

A. A careful examination of these issues should result in the conclusion that the electric system for the peninsula is projected to be reliable for the next decade. However, if the Commission decides that remedial action is needed to address concerns, then the Commission should proceed to rulemaking on those concerns and strive to ensure that the specific circumstances of each individual utility are considered. If planning standards are revised as a result of this rulemaking, then the affected utilities should be given an appropriate transition period to meet the revised standard.

Q. Does this conclude your testimony?

A. Yes it does.

Document No. 1

1999
LOAD AND RESOURCE PLAN
FLORIDA RELIABILITY COORDINATING COUNCIL

SUMMARY OF CAPACITY, DEMAND, AND RESERVE MARGIN AT TIME OF SUMMER PEAK

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	INSTALLED CAPACITY	NET CONTRACTED FIRM INTERCHANGE	PROJECTED FIRM NET TO GRID FROM NUG	TOTAL AVAILABLE CAPACITY	TOTAL PEAK DEMAND	RESERVE MARGIN W/O EXERCISING LOAD MANAGEMENT & INT.		FIRM PEAK DEMAND	RESERVE MARGIN WITH EXERCISING LOAD MANAGEMENT & INT.	
YEAR	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	% OF PEAK	(MW)	(MW)	% OF PEAK
1999	36,125	1,640	2,076	39,841	36,788	3,053	8%	34,023	5,818	17%
2000	36,518	1,755	2,076	40,349	37,541	2,808	7%	34,703	5,646	16%
2001	38,065	1,682	2,076	41,823	38,223	3,600	9%	35,380	6,443	18%
2002	39,675	1,658	2,055	43,387	38,959	4,428	11%	36,157	7,230	20%
2003	40,864	1,566	2,055	44,484	39,781	4,703	12%	36,988	7,496	20%
2004	41,301	1,566	2,055	44,921	40,593	4,328	11%	37,804	7,117	19%
2005	42,162	1,566	2,045	45,772	41,433	4,339	10%	38,638	7,134	18%
2006	42,731	1,566	1,912	46,208	42,398	3,810	9%	39,597	6,611	17%
2007	44,179	1,566	1,906	47,651	43,252	4,399	10%	40,443	7,208	18%
2008	44,893	1,566	1,891	48,350	44,066	4,284	10%	41,266	7,084	17%

SUMMARY OF CAPACITY, DEMAND, AND RESERVE MARGIN AT TIME OF WINTER PEAK

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	INSTALLED CAPACITY	NET CONTRACTED FIRM INTERCHANGE	PROJECTED FIRM NET TO GRID FROM NUG	TOTAL AVAILABLE CAPACITY	TOTAL PEAK DEMAND	RESERVE MARGIN W/O EXERCISING LOAD MANAGEMENT & INT.		FIRM PEAK DEMAND	RESERVE MARGIN WITH EXERCISING LOAD MANAGEMENT & INT.	
YEAR	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	% OF PEAK	(MW)	(MW)	% OF PEAK
1999 / 00	37,803	1,772	2,129	41,704	39,989	1,715	4%	35,977	5,727	16%
2000 / 01	39,497	1,694	2,129	43,320	40,928	2,392	6%	36,819	6,501	18%
2001 / 02	41,549	1,671	2,129	45,349	41,865	3,484	8%	37,793	7,556	20%
2002 / 03	43,225	1,566	2,108	46,899	42,808	4,091	10%	38,749	8,150	21%
2003 / 04	43,539	1,566	2,108	47,213	43,726	3,487	8%	39,663	7,550	19%
2004 / 05	44,461	1,566	2,098	48,125	44,651	3,474	8%	40,566	7,559	19%
2005 / 06	45,245	1,566	1,965	48,776	45,553	3,223	7%	41,450	7,326	18%
2006 / 07	46,670	1,566	1,959	50,195	46,600	3,595	8%	42,476	7,719	18%
2007 / 08	47,634	1,566	1,944	51,144	47,502	3,642	8%	43,374	7,770	18%
2008 / 09	47,624	1,566	1,944	51,134	48,441	2,693	6%	44,286	6,848	15%

NOTE: COLUMN 9: "FIRM PEAK DEMAND" = TOTAL PEAK DEMAND - INTERRUPTIBLE LOAD - LOAD MANAGEMENT.

Document No. 2

Results of 1999 FRCC Analysis of Summer Reserve Margins

Year	FRCC's Reserve Margin (%) Planning Standard	FRCC's Current Projected Reserve Margin (%)	"Needed" Reserve Margin (%) for: Base Case
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1999	15	17	6
2000	15	16	8
2001	15	18	9
2002	15	20	10
2003	15	20	11
2004	15	19	10
2005	15	18	12
2006	15	17	13
2007	15	18	13
2008	15	17	13

Document No. 3

Results of 1999 FRCC Analysis of Winter Reserve Margins

Year	FRCC's Reserve Margin (%) Planning Standard	FRCC's Current Projected Reserve Margin (%)	"Needed" Reserve Margin (%) for: Base Case
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1999/00	15	16	5
2000/01	15	18	-2
2001/02	15	20	-2
2002/03	15	21	-2
2003/04	15	19	-3
2004/05	15	19	-3
2005/06	15	18	0
2006/07	15	18	-1
2007/08	15	18	-1
2008/09	15	15	-1

Document No. 4

Description of Cases in FRCC's 1999 Reserve Margin Analysis

Name of Case	Description of Cases
Base Case	Most meaningful case. Contains 1998 actuals and projections added to last year's database, the new 1999 Load Management Certainty Factor, and 2 improvements to last year's approach: (1) addition of a non-coincidence adjustment factor for load forecasts, and (2) removal of Winter 1993 actual and projected data for utility installed generation.
Scenario 1	For comparison with last year's work only. Contains 1998 actuals added to last year's database, and the new 1999 Load Management Certainty Factor, with no changes/improvements to last year's approach.
Scenario 2	Base Case with worst value for utility installed generation availability applied every year.
Scenario 3	Base Case with worst values for load forecast accuracy applied to each corresponding forecast year (i.e., worst value for 5-year out forecast applied to current 5-year out forecast, etc.).
Scenario 4	Base Case with combination of worst values for utility installed generation availability and load forecast accuracy applied.

Document No. 5

Results of 1999 FRCC Analysis of Summer Reserve Margins (w/Scenarios)

Year	FRCC's Reserve Margin (%) Planning Standard	FRCC's Current Projected Reserve Margin (%)	"Needed" Reserve Margin (%) for : Base Case	Scenario 1	Scenario 2	Scenario 3	Scenario 4
1999	15	17	6	8	9	6	9
2000	15	16	8	9	11	12	15
2001	15	18	9	11	12	13	16
2002	15	20	10	12	13	12	15
2003	15	20	11	13	14	18	20
2004	15	19	10	12	13	16	19
2005	15	18	12	14	15	18	20
2006	15	17	13	15	16	18	21
2007	15	18	13	15	16	18	21
2008	15	17	13	15	16	18	21

	Base Case	Scenario 1	Scenario 2	Scenario 3	Scenario 4
(1) Does 15% planning standard meet/ exceed "needed" reserve margins?	Yes	Yes	No for last 3 yrs	No for last 6 yrs	No for 7 of 10 yrs
(2) Do current projected reserve margins meet/exceed "needed" reserve margins?	Yes	Yes	Yes	No for 8th& 10th yr.	No for last 4 yrs

Document No. 6

Results of 1999 FRCC Analysis of Winter Reserve Margins (w/Scenarios)

Year	FRCC's Reserve Margin (%) Planning Standard	FRCC's Current Projected Reserve Margin (%)	"Needed" Reserve Margin (%) for : Base Case	Scenario 1	Scenario 2	Scenario 3	Scenario 4
1999/00	15	16	5	9	10	5	10
2000/01	15	18	-2	1	3	20	24
2001/02	15	20	-2	1	2	20	24
2002/03	15	21	-2	1	3	18	22
2003/04	15	19	-3	0	2	15	19
2004/05	15	19	-3	1	2	15	19
2005/06	15	18	0	4	5	16	20
2006/07	15	18	-1	2	4	18	22
2007/08	15	18	-1	2	4	18	22
2008/09	15	15	-1	2	4	18	22

	Base Case	Scenario 1	Scenario 2	Scenario 3	Scenario 4
(1) Does 15% planning standard meet/ exceed "needed" reserve margins?	Yes	Yes	Yes	No for 7 of 10 yrs	No for 9 of 10 yrs
(2) Do current projected reserve margins meet/exceed "needed" reserve margins?	Yes	Yes	Yes	No for 2nd & 10th yrs	No for 7 of 10 yrs

Document No. 7

Comparison of Reliability Criteria Used by U.S. Reliability Councils	
Region	**Threshold of Adequacy**
ECAR	Dependence on Supplemental Capacity Resources (DSCR), maximum of 10 days/year
ERCOT	15% Reserve Margin
MAAC	1 day in 10 years
MAIN	1 day in 10 years
MAPP	15% Reserve Margin
NPCC	1 day in 10 years
SERC	15% Capacity Margin
SPP	12% Capacity Margin
WSCC	Not provided

Where: $\text{Reserve margin} = \dfrac{\text{Total available capacity} - \text{Firm peak demand}}{\text{Firm peak demand}}$

$\text{Capacity margin} = \dfrac{\text{Total available capacity} - \text{Firm peak demand}}{\text{Total available capacity}}$