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August 16, 1999

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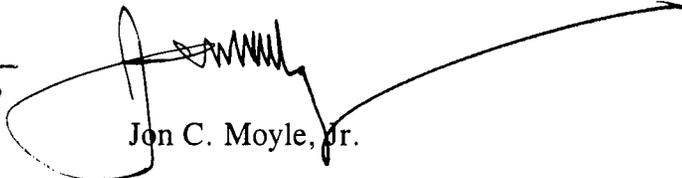
**Re: Generic Investigation into the Aggregate Electric Utility Reserve  
Margins Planned for Peninsular Florida, Docket No. 981890-EU**

Dear Ms. Bayo:

Enclosed is the original and fifteen (15) copies of the Direct Testimony of Stephen S. Greene which is provided on behalf of PG&E Generating for filing in the above-referenced matter.

Sincerely,

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*Notice*  
DOCUMENT NUMBER-DATE  
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*Testimony*  
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09717 AUG 16 99

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

ORIGINAL

In Re: GENERIC INVESTIGATION INTO  
THE AGGREGATE ELECTRIC UTILITY  
RESERVE MARGINS PLANNED FOR  
PENINSULAR FLORIDA

Docket Number: 981890-EU  
Filed: August 16, 1999

DIRECT TESTIMONY OF STEPHEN S. GREENE  
ON BEHALF OF PG&E GENERATING

- 1 Q. Please state your name, title and business address.
- 2 A. My name is Stephen S. Greene. I am Vice President, Market & Strategic Assessment, for  
3 PG&E Generating Company ("PG&E Gen"). The Company's headquarters business  
4 address is 7500 Old Georgetown Road, Bethesda, Maryland 20814-6161. In Florida,  
5 PG&E Gen's regional office is located at One Independent Drive, Suite 3232, Jacksonville,  
6 Florida 32202.
- 7 Q. What is your background in the electric industry?
- 8 A. I have more than fifteen years in the energy industry, with principal interests in economic  
9 and environmental policy. Currently, I direct the assessment of market conditions  
10 underlying PG&E Gen's development and acquisition investment decisions. I also provide  
11 senior management coordination of regional power pool and wholesale electricity market  
12 restructuring activities, providing strategic insights to PG&E Corporation and its other  
13 competitive business units on restructured energy market trends and evolving market  
14 conditions. Prior to joining PG&E Gen, I consulted on electric power and environmental  
15 issues with PHB Hagler Bailly, Inc. I have a master's degree in public policy from  
16 Harvard University and a bachelor's degree from Princeton University.
- 17 Q. Who is PG&E Gen?

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1 A. PG&E Gen is one of the leading competitive power generation companies in the United  
2 States. PG&E Gen, which was formerly known as U.S. Generating, or USGen, is the  
3 competitive generation unit of PG&E Corporation, a nationwide energy services holding  
4 company. PG&E Corporation is also the parent of PG&E Gas Transmission (natural gas  
5 pipelines), PG&E Energy Trading (wholesale natural gas and electricity trading, and risk  
6 management), PG&E Energy Services (retail energy services) and Pacific Gas and Electric  
7 Company, the regulated utility serving northern and central California.

8 Q. What generating assets does PG&E Gen currently own and operate?

9 A. PG&E Gen owns, manages, operates or controls more than 7,300 megawatts of electricity  
10 generation across the United States, including 580 megawatts of generation originating  
11 from facilities located in the State of Florida. The Company has more than 1,150  
12 megawatts under construction and 7,000 in active development. Approximately 4,000  
13 megawatts of PG&E Gen's total operating capacity is merchant power, in which the  
14 electricity is sold into a regional competitive wholesale market to many customers and is  
15 not part of a long-term (greater than 15-20 years) firm contractual regime.

16 Q. Please describe the focus of your testimony.

17 A. I will provide testimony relating to a number of issues in this docket. However, the bulk  
18 of my testimony is prompted by Issues 1, 2, 13 and 15 as identified in the Commission's  
19 clarifying order issued on July 1, 1999. The main point of my testimony is that  
20 uncommitted capacity and energy must be appropriately considered in any methodology  
21 for determining reserve margins, or for otherwise evaluating electric system reliability.

22 Q. What is a reserve margin?

1           A.     A reserve margin is a measurement of generation capacity above some identified load  
2                   requirement after prudent consideration of appropriate contingencies. The goal of  
3                   maintaining a reserve margin is to ensure that load is served, even if unforeseen  
4                   consequences occur, and that reliability is maintained. This calculation is intended to be  
5                   a "floor" for reliability purposes and not a "ceiling." Once the established reserve margin  
6                   in a region is attained, there is little need to monitor, regulate, or classify additional  
7                   reserves (from a narrow ownership prospective), especially when those reserves are from  
8                   facilities not included in regulated utility rate bases. In fact, as long as the additional  
9                   reserves above an established reserve margin are constructed and operated at the expense  
10                  and risk of the power plant developer, and not the utility ratepayer, these additional  
11                  reserves simply add to the reliability within the region they serve. Further, they can help  
12                  minimize price volatility in the wholesale market.

13          Q.     How are other jurisdictions and other reliability councils addressing reserve margins?

14          A.     As most everyone is aware, a great deal of uncertainty and change exists in electricity  
15                  supply markets in certain areas. This uncertainty can be exacerbated by the long lead  
16                  times generally required to plan and build generating facilities in response to increases in  
17                  demand due to fluctuations in weather, scheduled and unscheduled outages, fuel supply  
18                  constraints, labor issues or unexpectedly rapid (growing economy) load growth. Utilities  
19                  have usually had to demonstrate that they are ready to meet these contingencies at least two  
20                  years out. One key industry standard dictates that utilities calculate reserve margins based  
21                  on a "one day in ten year" outage rate. With this industry standard, each North American  
22                  Electric Reliability Council ("NERC") region tailors its reserve requirement to meet its  
23                  own system requirements. In regions like the Pennsylvania-New Jersey-Maryland

1 Interconnection Association ("PJM"), the nation's largest centrally dispatched power pool,  
2 implementation of the standard has resulted in roughly a 20% reserve margin requirement.  
3 In both the New England Power Pool ("NEPOOL") and PJM, where PG&E Gen is a  
4 participating member, all entities have responsibility for providing load and meeting  
5 reserve margin requirements. In these systems, the obligation to ensure that an adequate  
6 reserve margin exists is appropriately shifted from the original member utilities to the  
7 broader group of Load Serving Entities ("LSE") now serving the region. LSEs include all  
8 entities that serve retail customers, including utilities (to the extent they retain load  
9 obligations), retail energy service companies, and aggregators. These entities must  
10 demonstrate to the NEPOOL Independent System Operator and the PJM Independent  
11 System Operator that they are able to meet their capacity obligations on a daily basis.

12 Q. How have other jurisdictions addressed reserve margins in light of wholesale competition?

13 A. Other jurisdictions have established a competitive process to meet reserve margins. In  
14 establishing this competitive protocol, a number of jurisdictions have done the following:  
15 The first step in establishing a competitive methodology is to separate load from  
16 generation. One reasonable approach is functional separation whereby the generation  
17 function of the utility remains with the utility, but is functionally split from the  
18 transmission/distribution functions of the utility and run as a separate business unit. The  
19 second step is to enable all generation to compete to supply load. By functionally  
20 separating generation from load, a structure will be in place to allow all generating units,  
21 utility and non-utility, to compete to serve load. Other regions have created independent  
22 power exchanges to facilitate this competition. Still others, like PJM, have created  
23 independent system operators with responsibility for operating the competitive generation

1 market in addition to their technical transmission operation and reliability responsibilities.  
2 While different jurisdictions have pursued slightly different paths to realize a robust  
3 competitive wholesale market, all have come to the conclusion that competition among  
4 generating sources works to assure that retail customers are getting the least-cost power  
5 from a reliable source.

6 Q. What does separating generation from load achieve?

7 A. It assures customers that reliability of supply will be maintained in the most economically  
8 efficient way possible. When the responsibility of serving retail load is separated from  
9 the responsibility of generation — that is, when separate entities with different financial  
10 incentives produce electricity, transmit electricity, and deliver electricity to consumers, the  
11 competitive wholesale market serves to optimize the supply-demand balance in a reliable,  
12 efficient manner, while minimizing costs. This is especially true when these generation  
13 entities compete to supply load at the wholesale level under established market rules that  
14 ensure non-discriminatory open access. Encouraging an organized competitive wholesale  
15 market to satisfy general demand and meet Florida's specific reserve margin requirements  
16 in a systematic manner will provide an incentive to ensure that the necessary investment  
17 is made in the cleanest, most efficient, and most reliable generation facilities. This process  
18 will enable customers to see lower electricity prices. Further, market signals are much  
19 faster than regulatory processes, so market incentives are a more efficient means of  
20 ensuring that sufficient capacity exists to meet demand on the system.

21 Q. Please describe how the PJM reserve margin is established.

22 A. The PJM reserve margin setting process is not complex and is one example of an open and  
23 competitive process for setting reserve margins efficiently, ensuring system reliability.

1 LSEs operating in the PJM market area have signed a Reliability Assurance Agreement  
2 ("RAA"), which obligates them to ensure that generating capacity is available to supply  
3 their load. The RAA Reliability Committee, which is made up of all market participants,  
4 conducts a study every year to forecast reserve margin requirements for the planning  
5 period beginning two years from the date of the study. The PJM Operating Committee,  
6 composed of utilities, marketers, generators, trading companies and others, reviews that  
7 study and makes a recommendation to the RAA Committee on what it believes the  
8 appropriate reserve margin should be for PJM. All signatories to the RAA then vote on  
9 the proposed reserve margin. Voting is conducted in two ways. First, a load-weighted  
10 vote is taken. Load-serving entities' votes are weighted to take into account the percent  
11 of load served out of the total PJM load. A two-thirds margin is required to approve a  
12 reserve margin. Second, a hand count is conducted. All members of the RAA Committee,  
13 including non-load-serving entities, are counted equally. Again, a two-thirds vote is  
14 required to approve a proposed reserve margin. If the votes are not the same, the PJM  
15 Operating Committee proposes another reserve margin level and the voting process repeats  
16 itself until a two-thirds vote is achieved under both the load-weighted and hand count  
17 voting methods.

18 Q. What should the Commission consider as it contemplates whether to adopt a reserve  
19 margin standard for individual utilities in Florida?

20 A. As the Commission contemplates setting a reserve margin for individual utilities in Florida,  
21 it should consider the role of uncommitted capacity and energy in Florida's wholesale  
22 market. Establishing a reserve margin purely on an administrative basis inevitably results  
23 in some market distortion. A reserve margin that is set too high will result in artificially

1 inflated capacity prices. On the contrary, a reserve margin that is set too low will provide  
2 insufficient incentive for the construction of new capacity, leading to a capacity squeeze  
3 and a rush to inefficiently construct new capacity to meet demand that has outpaced the  
4 supply of capacity. This market response to the administratively determined reserve  
5 margin highlights the difficulty in prescribing a reserve margin and is another reason to  
6 allow the market to determine what is the most appropriate level of reserves necessary to  
7 preserve system reliability and to economically meet demand.

8 Q. How should uncommitted capacity and energy be considered in establishing reserve  
9 margins in Florida?

10 A. Everyone should remember that the goal of maintaining a reserve margin is to ensure that  
11 load is served and that reliability is maintained. This goal can be readily achieved, as has  
12 been the case in a number of other jurisdictions, without marginalizing the participation  
13 of entities who have uncommitted capacity and energy to provide when the Commission  
14 considers setting reserve margins. Any limitations on entities that have uncommitted  
15 capacity and energy to provide to the Florida market will discourage those entities from  
16 establishing additional uncommitted capacity and energy resources in the Florida market.  
17 This would have a negative effect on Florida utility customers by limiting the flexibility  
18 Florida needs to meet its growing energy demand in a reliable, cost-effective manner. The  
19 Commission should be cautious in taking any action that would harm Florida consumers  
20 and that could lose the cost advantages associated with competition, which would be  
21 created if providers of uncommitted capacity and energy had the opportunity to compete  
22 on a comparable basis in the State.

23 Q. What role should demand side management play in meeting reserve margins?

1           A.     Demand side management should be treated on a similar market-oriented basis, whereby  
2                   energy service providers are competing to supply energy-saving and energy management  
3                   products and services to consumers and businesses. The Commission can assess the impact  
4                   on aggregate demand of these measures and apply the results accordingly in the reserve  
5                   margin calculations. While no one questions that there is an essential role for demand side  
6                   management and conservation programs, the Commission should carefully scrutinize any  
7                   plan to meet reserve margin requirements that is top-heavy with voluntary conservation  
8                   measures. Recently, a major Florida utility made extensive use of certain demand side  
9                   management arrangements with its customers. Shortly afterwards, a surprisingly large  
10                  number of the utility's customers opted to discontinue using the utility's demand side  
11                  management program. Some utilities in Florida have projected up to 76 percent of their  
12                  reported reserve margin based on non-firm resources, such as customer participation in  
13                  voluntary conservation programs, and as little as 3 percent (3%) based on firm supply-side  
14                  resources. As we saw last year, this is a dangerous approach with the reliability of the  
15                  electric system in Florida. Reserve margins, should the Commission choose to establish  
16                  them, should rely on market forces to ensure that the most cost-effective resources are used  
17                  to meet the required reserves. Market forces will ensure that a mix of firm and non-firm  
18                  resources are efficiently balanced to efficiently meet these reserve requirements and  
19                  maintain system reliability.

20          Q.     Why can uncommitted capacity and energy be counted on to help Florida meet its energy  
21                  needs and, correspondingly, its reserve margins if these are established?

1           A.     The owners of uncommitted capacity and energy, such as PG&E Gen, have a strong  
2                  incentive to make available that uncommitted capacity and energy so as to defray the cost

1 of power plant development, construction, operation, fuel and financing, as well as other  
2 risks. The ability of owners of uncommitted capacity and energy to succeed in a  
3 competitive market is a result of the performance of the power plant assets of these  
4 owners. Because providers of uncommitted capacity and energy sell into a competitive  
5 market, a market in which cost and reliability considerations are paramount, this  
6 uncommitted capacity and energy can be reasonably relied upon as an essential tool in  
7 meeting reserve margin requirements. The key point, however, is that this uncommitted  
8 capacity and energy is not simply a marginal tool, serving to assist incumbent utilities in  
9 meeting their reserve requirements. Rather, this source of electricity will ultimately be a  
10 key supply source in Florida, gradually becoming an integral part of the State's electricity  
11 supply infrastructure. Uncommitted capacity and energy, whether it is owned by PG&E  
12 Gen, a competing merchant generator, or an affiliate of an existing investor-owned utility,  
13 can and should be viewed as a readily available resource to serve electricity load in Florida  
14 when needed.

15 Q. Does this conclude your testimony?

16 A. Yes.