

435

ORIGINAL
FILE COPY

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Florida Power Corporation for determination that its plan for curtailing purchases from Qualifying Facilities in minimum load conditions is consistent with Rule 25-17.086, F.A.C.

DOCKET NO. 941101-EQ
FILED: April 25, 1995

- ACK
- AFA _____
- ATP _____
- CAF _____
- COM _____
- CON _____
- CRS _____
- ESC *Futrell*
- LEG _____
- MA *Orig 45*
- MC _____
- MS _____
- NS _____
- OTM _____

SUPPLEMENTAL DIRECT TESTIMONY AND EXHIBITS

OF

KENNETH J. SLATER

ON BEHALF OF

ORLANDO COGEN LIMITED, L.P.

AND PASCO COGEN, LTD.

Ansley Watson
MacFarlane, Ausley, Ferguson
& McMullen
111 Madison St., Suite 2300
First Florida Tower, 23rd Fl.
Post Office Box 1531
Tampa, Florida 33601

Attorneys for Pasco CoGen,
Ltd.

Joseph A. McGlothlin
Vicki Gordon Kaufman
McWhirter, Reeves,
McGlothlin, Davidson,
Rief & Bakas
315 S. Calhoun Street
Suite 716
Tallahassee, Florida 32301
904/222-2525

Gregory A. Presnell
Akerman, Senterfitt &
Eidson, P.A.
Firststate Tower, 17th Floor
255 S. Orange Avenue
Post Office Box 231
Orlando, Florida 32802
407/843-7860

Attorneys for Orlando Cogen
Limited, L.P.

RECEIVED & FILED

[Handwritten signature]

DOCUMENT NUMBER-DATE

04106 APR 25 95

FPSC-RECORDS/REPORTING

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Florida Power)
Corporation for determination that)
its plan for curtailing purchases)
from Qualifying Facilities in)
minimum load conditions is)
consistent with Rule 25-17.086,)
F.A.C.)
_____)

DOCKET NO. 941101-EQ

FILED: April 25, 1995

SUPPLEMENTAL DIRECT TESTIMONY AND EXHIBITS

OF

KENNETH J. SLATER

ON BEHALF OF

ORLANDO COGEN LIMITED, L.P.

AND PASCO COGEN, LTD.

Ansley Watson
MacFarlane, Ausley, Ferguson
& McMullen
111 Madison St., Suite 2300
First Florida Tower, 23rd Fl.
Post Office Box 1531
Tampa, Florida 33601

Attorneys for Pasco CoGen,
Ltd.

Joseph A. McGlothlin
Vicki Gordon Kaufman
McWhirter, Reeves,
McGlothlin, Davidson,
Rief & Bakas
315 S. Calhoun Street
Suite 716
Tallahassee, Florida 32301
904/222-2525

Gregory A. Presnell
Akerman, Senterfitt &
Eidson, P.A.
Firststate Tower, 17th Floor
255 S. Orange Avenue
Post Office Box 231
Orlando, Florida 32802
407/843-7860

Attorneys for Orlando Cogen
Limited, L.P.

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **SUPPLEMENTAL DIRECT TESTIMONY AND EXHIBITS**

3 **OF**

4 **KENNETH J. SLATER**

5 **ON BEHALF OF**

6 **ORLANDO COGEN LIMITED, L.P. AND PASCO COGEN, LTD.**

7 **DOCKET NO. 941101-EQ**

8 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

9 **A. My name is Kenneth J. Slater and my business address is**
10 **3370 Habersham Road, Atlanta, Georgia 30305.**

11 **Q. ARE YOU THE SAME KENNETH J. SLATER WHO FILED TESTIMONY IN**
12 **THIS CASE ON APRIL 10, 1995?**

13 **A. Yes, I am.**

14 **Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY?**

15 **A. As I stated in the testimony that I filed on April 10, I**
16 **was unable to include there the results of my own work**
17 **with FPC's Unit Commit program. Since I filed my**
18 **testimony, I have spent many hours debugging FPC's**
19 **program on my computers. Late on Sunday, April 23, I was**
20 **finally able to achieve runs for all of FPC's analysis**
21 **cases, which matched FPC's own runs.**

22 **Q. WHY ARE YOU JUST NOW TO THE POINT OF RUNNING FPC'S UNIT**
23 **COMMIT PROGRAM?**

24 **A. As I described in my earlier testimony, I did not receive**
25 **the same Unit Commit program that FPC used in the**

1 calculations that underlie Mr. Southwick's testimony
2 until April 4, 1995. When I tried to run it on my
3 computer, I found that there were numerous aberrations in
4 the source code that FPC's IBM mainframe computer would
5 "forgive," but that my stricter PC computing environment
6 either would not accept or would not treat in the same
7 way as does FPC's computer. Only after a painstaking,
8 tedious, and time consuming process of identifying and
9 correcting problems was I able to replicate all of FPC's
10 runs and vary them with my own alternative studies.
11 That's why I indicated on April 10 that I would
12 supplement my testimony if warranted by my additional
13 work with Unit Commit.

14 **Q. DO YOU BELIEVE YOUR FINDINGS WARRANT THE SUPPLEMENTING OF**
15 **YOUR EARLIER TESTIMONY?**

16 **A.** Yes, most definitely. In fact, the purpose of my
17 supplemental testimony is to provide information that is
18 critical to the Commission's analysis of FPC's case.

19 **Q. PLEASE EXPLAIN.**

20 **A.** In my testimony of April 10, I was limited to the
21 observations I could draw from the input files and output
22 reports that FPC supplied to me. I testified, among
23 other things, that FPC used too short a period to measure
24 avoided costs, and consideration of a more appropriate
25 time frame (which we consider to be 1 week) would lead to

1 the conclusion that FPC would not have incurred negative
2 avoided costs.

3 Now, with the benefit of having run the program
4 myself, I have determined that FPC's analyses, when
5 corrected for their errors, excluding the time frame
6 error, do not show negative avoided costs existing in any
7 of the seven cases included in Mr. Southwick's testimony.

8 **Q. ON WHAT DO YOU BASE THAT STATEMENT?**

9 A. For each event, FPC's claim of negative avoided costs is
10 based on a comparison of FPC's system costs in a "base
11 case" (with curtailment) and in a corresponding "change
12 case" (without curtailment). I have discovered within
13 each FPC comparison analysis errors or other flaws,
14 including changes in the time frame, which, when
15 corrected, have the effect of reversing FPC's conclusions
16 regarding negative avoided costs. My revised runs show
17 that, with respect to each of the curtailment events to
18 date, the system costs FPC would have incurred if it had
19 accepted the curtailed firm QF energy would have been
20 lower than FPC's costs of supplying that energy through
21 its own resources.

22 **Q. PLEASE ELABORATE BY REFERENCE TO EACH SPECIFIC
23 CURTAILMENT EVENT.**

24 A. I'll begin with the curtailment of October 19, 1994.
25 FPC's run for the change case identified the excess
26 generation; shut down Crystal River 1; determined that

1 measure wasn't enough to eliminate the excess; and shut
2 down Crystal River 2. This means the avoided costs
3 associated with the "change" (no curtailment) scenario
4 included the costs to start up two units.

5 **Q. WHY IS THAT AN ERROR?**

6 **A.** The minimum operating levels of CR1 and CR2 differ.
7 CR1's minimum is 120 MW; CR2's minimum is 140 MW. The
8 amount of the excess generation was more than the minimum
9 level of CR1, but less than the minimum level of CR2. In
10 other words, had the program shut down CR2 first, the
11 imbalance would have been eliminated without the
12 necessity of shutting down a second unit. I reran the
13 "change case" with this revision (shutting down only
14 CR2), and compared the avoided costs to the costs of
15 FPC's "base case" (no curtailment). There were no
16 negative avoided costs. Again, this comparison utilized
17 FPC's own preferred time frame--a parameter with which I
18 strongly disagree. (There was also a minor discrepancy
19 in the description of the University of Florida Unit
20 between the base and change cases.)

21 **Q. PLEASE PROCEED.**

22 **A.** There are two main deficiencies in FPC's comparison for
23 the January 1, 1995 event. The first main deficiency is
24 that there was no excess generation situation on this day
25 that warranted forcing a unit shutdown at all. The

1 second results from a difference in the data between the
2 base case and change case. In the base case, a start-up
3 fuel was specified for the CR coal units, but not
4 specified in the change case. This caused considerable
5 differences in the system production costs.

6 Q. WHAT ABOUT THE JANUARY 2, 1995 EVENT?

7 A. Again, FPC compared apples and oranges. The CR coal
8 units' start-up fuel was missing in the "without
9 curtailment" change case. Once I aligned the base case
10 and the change case, the "no curtailment" scenario came
11 out cheaper, even though the program shut down a unit in
12 the change case. The cost of the subsequent unit restart
13 was lower than the energy cost savings attributable to
14 the QF generation.

15 Q. PLEASE CONTINUE.

16 A. I'll take the January 7 and 8 and January 14 events
17 together because they share the same basic FPC flaw.

18 Q. WHAT IS THE FLAW?

19 A. In each instance, FPC's base (curtailment) scenario
20 leaves the system in an excess generation condition.
21 This defect places an additional "handicap" on the change
22 (no curtailment) scenario when costs are compared.
23 Simply by allowing the shutting down of the appropriate
24 unit and removing the excess condition in the base case,
25 I determined that the "no curtailment" alternative was

1 the cheaper option in each of these episodes. The
2 January 14 event was also complicated by there being no
3 start-up fuels for the CR coal units in either the base
4 or change cases.

5 **Q. PLEASE TURN TO THE JANUARY 30, 1995 CURTAILMENT EVENT.**

6 **A.** The January 30, 1995 analyses has three problems. First,
7 the base case still had excess generation. Second, the
8 change case had no start-up fuel for the CR coal units,
9 and third, "Unit Commit" incorrectly shut down two units
10 in the change case instead of one unit, to remove the
11 excess generation. After corrections for all of these
12 problems, the analysis returned a positive avoided cost.

13 **Q. IN THE JANUARY 7-8, JANUARY 14 AND JANUARY 30 ANALYSES,**
14 **WHAT WOULD HAVE BEEN THE RESULTS IF FPC HAD IN FACT**
15 **CURTAILED SUFFICIENT QF GENERATION TO AVOID THE EXCESS**
16 **GENERATION SITUATIONS IN THE BASE CASES.**

17 **A** Using FPC's (improper) short time frame of analysis,
18 these cases would have probably produced negative avoided
19 costs. However, using a longer time frame of analysis
20 for the curtailed QF generation, avoided costs are very
21 strongly positive.

22 **Q. HAVE YOU PERFORMED SUCH LONGER TIME FRAME ANALYSES?**

23 **A.** Yes. I ran the January 7-8 case with 317 MW of QF
24 generation curtailed for 48 hours, the January 14 case
25 with 61 MW of QF generation curtailed for 72 hours, and

1 the January 30 case with 124 MW of QF generation
2 curtailed for 24 hours. The lengths of the analyses were
3 dictated by the available data. In each case the avoided
4 energy costs for the curtailed QF generation were
5 strongly positive.

6 **Q. HAVE YOU PREPARED EXHIBITS TO ACCOMPANY YOUR SUPPLEMENTAL**
7 **TESTIMONY?**

8 A. Yes. I have prepared three exhibits. Exhibit No. ____
9 (KJS-7) summarizes the problems encountered with each of
10 FPC's avoided costs analyses, and remedial actions I
11 took. Exhibit No. ____ (KJS-8) summarizes the results of
12 my corrected FPC avoided cost analyses. It is a
13 replacement for page 1 of Mr. Southwick's Exhibit No. ____
14 (HIS-3). Exhibit No. ____ (KJS-9) summarizes the results
15 of my extended time frame analyses for the January 7-8,
16 January 14 and January 30 events.

17 **Q. DOES THAT COMPLETE YOUR TESTIMONY?**

18 A. Yes. It does.

19

20

21

22

23

24

25

Problems Encountered with FPC Avoided Cost Analyses & Actions Taken

| PROBLEMS ENCOUNTERED | ACTIONS TAKEN |
|---|--|
| 10/19/94 Analysis | |
| (a) Base and Change cases different. Minimum capacity of Unifers. is 10 MW in base case & 12 MW in change case. | (a) Unifers. minimum capacity changed to 10 MW in change case. |
| (b) "Unit Commit" shut down CR1 & CR2 when CR2 was sufficient. | (b) CR2 manually shut down for 5hrs. in change case. |
| 1/1/95 Analysis | |
| (a) Base and Change cases different. Change case has no start-up fuel for CR coal units. CR1 derate different | (a) Change case corrected to match base case. |
| (b) No excess generation exists in change case to force unit shutdown. | (b) Must run designation removed from CR1 in base case as well as change case. |
| 1/2/95 Analysis | |
| (a) Base and Change cases different. Change case has no start-up fuel for CR coal units. | (a) Change case corrected to match base case. |
| 1/7/95 to 1/8/95 Analysis | |
| (a) Base case has excess generation, with all CR units as "must run". | (a) Must run designation removed from CR 1, 2 & 4 in base case. |
| 1/14/95 Analysis | |
| (a) Base case has excess generation, with CR units 1, 3, 4 & 5 as "must run". | (a) Must run designation removed from CR1 in base case. CR 2 placed on maint. to prevent erroneous start up. |
| (b) No start-up fuels for CR units in either case. | (b) Start up fuels added. |
| 1/30/95 Analysis | |
| (a) Base case has excess generation, with all CR units as "must run". | (a) Must run designation removed from CR1 and CR 4 in base case. |
| (b) Change case has no start-up fuel for CR coal units. | (b) Start up fuels added. |
| (b) "Unit Commit" shut down CR1 & CR4, in change case, when CR4 was sufficient. | (c) CR 1 made "must run" in change case. |

CORRECTIONS TO

"Summary of Unit Commit
Avoided Cost Simulations"Exhibit _____ (KJS-8)
Docket No. 941101- EQ
Orlando CoGen Limited

| | Base Case | Change Case | Difference | Simulation Notes |
|-------------------------------|-----------|-------------|--------------|---|
| 10/19/94 analysis | | | | |
| Energy \$ | 881384 | 871915 | 9469 | CR5 cycled off 5 hours in change case. |
| Start-up \$ | 0 | 8824 | -8824 | |
| Total \$ | 881384 | 880739 | 645 | |
| Avoided Cost Impact \$ | | | 645 | |
| Avoided Cost \$/MWH | | | 1.08 | |
| 1/1/95 analysis | | | | |
| Energy \$ | 526323 | 521373 | 4950 | CR2 already off. |
| Start-up \$ | 0 | 0 | 0 | |
| Total \$ | 526323 | 521373 | 4950 | |
| Avoided Cost Impact \$ | | | 4950 | |
| Avoided Cost \$/MWH | | | 14.47 | |
| 1/2/95 analysis | | | | |
| Energy \$ | 573898 | 552290 | 21608 | CR2 already off. CR1 cycled off 6 hours in change case. |
| Start-up \$ | 343 | 11235 | -10892 | |
| Total \$ | 574241 | 563525 | 10716 | |
| Avoided Cost Impact \$ | | | 10716 | |
| Avoided Cost \$/MWH | | | 7.30 | |
| 1/7/95 analysis | | | | |
| Energy \$ | 653596 | 625750 | 27846 | CR4 cycled off all day in both cases |
| Start-up \$ | 3910 | 15679 | -11969 | CR2 cycled off 5 hours in change case. |
| Total \$ | 657506 | 641429 | 15877 | |
| Avoided Cost Impact \$ | | | 15877 | |
| Avoided Cost \$/MWH | | | 8.70 | |
| 1/8/95 analysis | | | | |
| Energy \$ | 817869 | 814473 | 3396 | CR4 and Bartow 1 already off in both cases. |
| Start-up \$ | 36077 | 36077 | 0 | Both units restarted during the day. |
| Total \$ | 853946 | 850580 | 3396 | |
| Avoided Cost Impact \$ | | | 3396 | |
| Avoided Cost \$/MWH | | | 14.64 | |
| 1/14/95 analysis | | | | |
| Energy \$ | 578710 | 576824 | 1886 | CR2 already off CR1 cycled off 6 hours in both cases. |
| Start-up \$ | 11055 | 11055 | 0 | |
| Total \$ | 589765 | 587879 | 1886 | |
| Avoided Cost Impact \$ | | | 1886 | |
| Avoided Cost \$/MWH | | | 14.51 | |
| 1/20/95 analysis | | | | |
| Energy \$ | 805537 | 798240 | 7297 | CR2 already off |
| Start-up \$ | 38727 | 39759 | -1032 | CR1 cycled off 6 hours in base case. |
| Total \$ | 844264 | 837999 | 6265 | CR4 cycled off 5 hours in change case. |
| Avoided Cost Impact \$ | | | 6265 | |
| Avoided Cost \$/MWH | | | 13.62 | |

Examples Of Using Extended Time Frames For Avoided Cost Analyses

Example 1

1/7/95 to 1/8/95 Analysis

Curtailment of 317 MW for 48 hours

| | | |
|---------------------------------|-------|------------|
| System cost in curtailment case | \$ | 1689923 |
| System cost for no curtailment | \$ | 1492179 |
| Difference | \$ | 197744 |
| | or \$ | 13.00 /MWH |

Example 2

1/13/95 to 1/15/95 Analysis

Curtailment of 81 MW for 72 hours

| | | |
|---------------------------------|-------|------------|
| System cost in curtailment case | \$ | 1881763 |
| System cost for no curtailment | \$ | 1822730 |
| Difference | \$ | 59033 |
| | or \$ | 13.44 /MWH |

Example 3

1/30/96 Analysis

Curtailment of 124 MW for 24 hours

| | | |
|---------------------------------|-------|------------|
| System cost in curtailment case | \$ | 887743 |
| System cost for no curtailment | \$ | 837989 |
| Difference | \$ | 49744 |
| | or \$ | 16.72 /MWH |

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Supplemental Testimony and Exhibits of Kenneth J. Slater has been furnished by hand delivery*, facsimile transmission** or by U.S. Mail to the following parties of record, this 25th day of April, 1995.

Martha Brown*
Division of Legal Services
Florida Public Service
Commission
101 East Gaines Street
Fletcher Building, Rm. 212
Tallahassee, FL 32399

James A. McGee**
Florida Power Corporation
Post Office Box 14042
St. Petersburg, FL 33733

Gail Fels
County Attorney's Office
Aviation Division
P. O. Box 592075 AMF
Miami, FL 33159

Schef Wright*
Landers & Parsons
310 West College Avenue
Third Floor
P. O. Box 271
Tallahassee, FL 32302

Kelly A. Tomblin
Energy Initiatives, Inc.
One Upper Pond Road
Parsippany, NJ 07054

Patrick K. Wiggins*
Marsha E. Rule
Wiggins & Villacorta, P.A.
Post Office Drawer 1657
Tallahassee, FL 32302

Richard Zambo, Esquire
Richard Zambo, P.A.
598 S.W. Hidden River Avenue
Palm City, FL 34990

Michael O'Friel
Wheelabrator Environmental
Systems, Inc.
Liberty Lane
Hampton, NH 03842

Suzanne Brownless
Suzanne Brownless, P.A.
2546 Blairstone Pines Drive
Tallahassee, FL 32301

Barry Huddleston
Destec Energy Company, Inc.
2500 CityWest Boulevard
Suite 150
Houston, TX 77210-4411

Karla Stetter
Acting County Attorney
7530 Little Road
New Port Richey, FL 34654

R. Stuart Broom
Verner, Lipfert, Bernhard,
McPherson & Hand, Chartered
901 15th St., N.W., Suite 700
Washington, D.C. 20005

M. Julianne Yard
Assistant County Attorney
Pinellas County
315 Court Street
Clearwater, FL 34616

Bruce May*
Holland and Knight
Post Office Drawer 810
Tallahassee, FL 32302

Robert F. Riley
Auburndale Power Partners,
Limited Partnership
12500 Fair Lakes Circle
Suite 420
Fairfax, VA 22033

Nancy Jones
Polk Power Partners, L.P.
1125 U.S. 98 South
Suite 100
Lakeland, FL 33801

Barrett G. Johnson*
Johnson & Associates
315 S. Calhoun Street
Barnett Bank Building, 3d Floor
Tallahassee, FL 32301

Vicki Gordon Kaufman

Vicki Gordon Kaufman