Docket No. 91-216-E

STATE OF SOUTH CAROLINA
BEFORE THE
SOUTH CAROLINA PUBLIC SERVICE COMMISSION

In Re:

DUKE POWER COMPANY

SURREBUTTAL TESTIMONY OF

PAUL CHERNICK
Resource Insight, Inc.

ON BEHALF OF THE

DEPARTMENT OF CONSUMER AFFAIRS

Re:

Demand-Side Management

October 2, 1991

1   Q: Are you the same Paul Chernick who provided direct testimony

2   in this proceeding?

3   A: Yes.

4   Q: What is the purpose of this testimony?

5   A: I will respond to the rebuttal testimony of Mr. Denton on the

6   prudence of Duke Power's demand-side management (DSM) program.

7   Q: Please summarize your reaction to Mr. Denton's rebuttal

8   testimony.

9   A: We have now seen three views of Duke Power Company in this

10   case:

11   Duke #1:   This is the Duke Power of the Short-term Action Plan

12   (STAP), which promotes inefficient heat pumps, low

13   levels of insulation, and inefficient replacement

14   of off-peak gas with electricity; and selects DSM

15   programs without regard for cream skimming and lost

16   opportunities.

17   Duke #2:   This is the Duke Power described in Mr. Denton's

18   rebuttal. This Duke requires somewhat higher

19   efficiency levels, provides higher incentives for

20   efficiency above minimum levels, is interested in

21   avoiding cream-skimming and lost opportunities, and

22   does not want to encourage socially inefficient

23   usage of electricity.

1 Duke #3: This is the Duke Power which would result if Duke

2   adopted true least-cost planning, as I described in

3   my direct testimony, and as is required by the new

4   IRP procedures.

5 I hope the Company has transformed from Duke #1 to Duke #2.

6 In that case, at least some of the Company's 1991 DSM

7 expenditures may be prudent and may be properly recovered

8 following a future comprehensive review.

9   Unfortunately, Mr. Denton did not provide any information

10 to support his assertions about the cost-effectiveness of the

11 Company's DSM programs. He does not even purport to provide

12 comparisons of the total costs and benefits of any programs

13 except the load-management programs, whose comparisons are

14 misleading and do not represent total costs and benefits. He

15 fails to provide detailed descriptions of Duke's existing and

16 proposed DSM activities to support his contentions. In short,

17 Mr. Denton's testimony indicates that even the "new" Duke

18 Power is not yet comfortable with least-cost planning and

19 regulatory oversight of its planning.

20 Q: Does Mr. Denton establish the cost-effectiveness of Duke's DSM

21 programs?

22 A: No. He attempts to do so, but fails to justify at least four

23 aspects of the Duke plan:

24   ● load-building programs,

1   •   promotional aspects of "conservation" programs,

2   •   insufficient efficiency levels in the programs, and

3   •   the load management programs.

4   Q: How does Mr. Denton fail to establish the cost-effectiveness

5   of Duke's load-building programs?

6   A: First, the Company does not even claim the programs are cost-

7   effective in reducing total costs. On page 4, he asserts that

8   the load-building programs are cost-effective because the

9   marginal revenues exceed the marginal costs. In other words,

10   Mr. Denton relies on the rate impact measure (RIM) to justify

11   the programs.   The IRP procedures clearly state that the

12   objective of least-cost planning is to minimize total costs.

13   The RIM is a secondary test, which may be used in some

14   circumstances. Hence, Mr. Denton has not even asserted that

15   the load-building programs pass the basic test of least-cost

16   planning.

17   Second, while Mr. Denton asserts that the programs pass

18   the RIM, he offers no evidence to support this claim.

19   Q: How does Mr. Denton fail to establish the cost-effectiveness

20   of promotional aspects of Duke's "conservation" programs?

21   A: Mr. Denton does not show any cost-effectiveness tests for the

22   increased loads due to heat pump promotion in the MAX and

23   Dual-Fuel programs.   In the case of the MAX program, Mr.

24   Denton does not respond to my criticism. In the case of the

25   Dual-Fuel program, Mr. Denton claims that it "targets" oil-

1   heated homes,[1] but provides no documentation to demonstrate

2   that the service:

3   ●   is not marketed or provided to gas-heated homes,

4   ●   is cost-effective in oil-heated homes, or

5   ●   is cost-effective in gas-heated homes.

6   Q: How does Mr. Denton fail to establish the cost-effectiveness

7   of the efficiency levels in Duke's programs?

8   A: Mr. Denton does not dispute my characterization of the 1991

9   heat-pump efficiency target (SEER 9) as inefficient.   He

10   simply says that the 1992 target will be higher (SEER 11).[2]

11   He provides no justification for the lower level in 1991.   It

12   thus appears that all of Duke's 1991 expenditures for heat-

13   pump incentives are imprudent, since even Duke admits that

14   SEERs over 11 are cost-effective.

15   Mr. Denton also provides no justification for using SEER

16   11 rather than SEER 12 or 13 as the cut-off for 1992.   While

17   he states that a "sliding scale rebate that directly provides

18   the economic incentive to purchase the most energy efficient

19   heating and cooling equipment available,"[3] he does not specify

20   the rebate levels to be offered or the efficiency level Duke

21   [1]This would be an improvement over the program described in
22   the STAP, which is marketed to all "fossil fuel" heated homes, most
23   of which will be gas-heated.

24   [2]This is an improvement over the current program.

25   [3]This would be an improvement over the existing program.

1   considers "most efficient." Thus, the prudence of the 1992

2   program cannot be assessed due to Duke's failure to provide

3   any justification.

4   Mr. Denton indicates he believes that the "MAX package

5   maximizes the principle [of avoiding lost opportunities] by

6   requiring high insulation levels, double glass or storm

7   windows, . . . high efficiency heat pumps," and other

8   measures. He provides no comparison of the cost-

9   effectiveness of the required levels to that of higher levels.

10   He does not respond to my criticism of Duke's failure to

11   require the clearly cost-effective R-19 wall insulation, but

12   admits the current R-12 standard is inefficient and will be

13   raised to R-16.[4] He does not respond to my criticism of

14   Duke's failure to require high thermal-performance glass,

15   which is particularly important in warm climates.

16 Q: How does Mr. Denton fail to establish the cost-effectiveness

17   of Duke's load management programs?

18 A: It is only in the area of load management that Mr. Denton even

19   attempts to demonstrate the cost-effectiveness of any

20   expenditure. He claims the costs of the load-control programs

21   (interruptible contracts, residential load control, and

22   standby generators) are less than the cost of combustion

23   turbine (CT) capacity. However, he fails to make this

24   demonstration, for four reasons.

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25   [4]This will be an improvement over the existing program.

1   First, Mr. Denton provides contract payments (the

2   compensation to customers for their loss of service due to

3   participation in the program) but does not provide either the

4   costs of communications and control equipment for any of the

5   programs or the energy incentives to the standby generators.

6   Hence, the cost per MW of contract control is understated.

7   Second, Mr. Denton states the costs in $/MW of contract

8   reduction, not $/MW of peak load reduction. The peak load

9   reduction is much less than the contract reduction, since not

10   all loads are operating on peak. This is quite obvious from

11   Duke's data. Mr. Denton reports 243 MW of interruptible

12   contract load in South Carolina alone, while the STAP

13   (Exhibits 4-1 and 4-4) report only 215 MW of peak-load

14   reduction from interruptibles system-wide in 1991. As pointed

15   out in the testimony of Mr. Lanzalotta, Duke reports 1,110 MW

16   of system-side interruptible loads (including contracts and

17   the residential program), while the STAP shows only a 818 MW

18   peak-load reduction, or 74% of the contract load.[5]

19   Third, as explained by Mr. Reinke (Rebuttal, pp 8-9),

20   Duke does not count a MW of DSM load peak reduction as being

21   [5]The difference is also probably responsible for the fact that
22   Mr. Denton reports lower payments per MW-month than are reported
23   in the STAP ($3,250 for residential air conditioning, $3,500 for
24   interruptible contracts, and $2,750 for standby generation). Mr.
25   Denton may count more MW for each contract than does the STAP.
26   Additionally, it is not clear from Duke's response to SCDCA request
27   number 5.59.1 (Hearing Ex. 38 (PJL-8)) in Mr. Lanzalotta's
28   testimony) whether the 1,110 MW reduction refers to 1,110 MW of
29   peak load reduction, or 1,110 MW of contract load reduction. If
30   indeed it does refer to peak reduction, then the ratio of peak load
31   reduction to summer contract interruptible load is lower than 74%.

6

1 the same as a MW of CT capacity. CTs can operate more often

2 and for more hours at a time than can load control. Thus,

3 the 851 MW of DSM (mostly load control) peak load reduction

4 reported in the STAP for 1991 are credited with backing out

5 only 598 MW of CTs, or 70% of the peak reduction. The 123.7

6 MW of (mostly load control) DSM added in 1993 replaces only

7 77 MW of CT, or 62% of the peak reduction.

8   Fourth, Mr. Denton does not consider the effects of load

9 control on the transmission and distribution system. These

10 effects can be beneficial if peak T&D loads are reduced, or

11 adverse if the rebound after the period of interruption

12 creates new peaks on the T&D equipment serving areas with

13 significant amount of control.

14   Exhibit PLC-1 computes the ratios of CT reduction to what

15 is thought to be the expected contract load control. The

16 ratio appears to be about 52%. Exhibit PLC-2 shows the costs

17 provided in Mr. Denton's testimony, indicates the uncertain

18 additional costs, and shows the effect of correcting from MW

19 of control to MW of CT equivalent.

20   The cost-effectiveness of the residential load control

21 program is quite questionable. If the costs of the rewiring,

22 controls,   communication   equipment,   installation,

23 administration, operation, and maintenance exceed $873/MW-

24 month of CT equivalent, the program is not cost-effective

1   compared to CT capacity.[6]   In addition, Duke has not

2   demonstrated that it has ever compared the control option to

3   conservation. It is quite likely that conservation (high SEER

4   air conditioners, heat-pump water heaters with tank and pipe

5   wraps and low-flow fixtures) would be more cost-effective than

6   load control.

7   The status of the standby and interruptible-rate programs

8   are more difficult to access without more information about

9   their implementation costs and, in the case of the standby

10   program, the net cost of the energy payments.

11 Q: Does the fact that the load control programs operate under

12   Commission-approved tariffs affect the determination of

13   prudence?

14 A: No. The Company has chosen to continue offering and marketing

15   the programs through 1991, including the extensive advertising

16   described by Mr. Denton.   That choice was a resource

17   acquisition decision that is subject to prudence review.   In

18   the same way, the Company's prudence in making short-term

19   wholesale power purchases is subject to Commission review,

20   even though the rates for the purchases were approved by the

21   FERC.   Hence, the Commission has never investigated the

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22   [6]This analysis can be supplemented in several ways.   T&D
23   effects may either improve or degrade the cost-effectiveness of the
24   program. Energy usage may rise in controlled homes as the threat
25   of load control may cause customers to keep their homes cooler and
26   their water hotter to carry them over periods of disconnection.
27   Some of the central air conditioning load reduced through
28   interruptions may be recaptured by window units.

8

1 prudence of Duke's load control programs in 1991, and has

2 never determined that the Company's expenditures were prudent.

3 Q: Does Mr. Denton demonstrate the prudence of Duke's evaluation

4 and pilot programs?

5 A: No. He does not even attempt to do so. He states the general

6 case for this type of activity but provides no detail on what

7 Duke is doing or planning, how Duke intends to do it, and what

8 Duke hopes to learn from the evaluation and pilot programs.

9 Q: Does Mr. Denton demonstrate the prudence of Duke's

10 advertising?

11 A: No. He asserts that the advertising all supports the load

12 management programs but provides no evidence to support that

13 claim. In any case, the prudence of the load management

14 programs has not been established.

15 Q: Has Duke verified and documented the amounts it claims to be

16 related to incremental 1991 load management and advertising?

17 A: Not that I have seen. Duke's budgets do not appear to be

18 derived from any previously provided documentation. It is

19 unclear whether the amounts claimed have been spent, committed

20 by contract, or otherwise committed.

21 Q: What are your recommendations?

22 A: My recommendations remain unchanged from my direct testimony.

23 Mr. Denton has offered the Commission a pig in a poke. He

24 asserts that Duke will do good things with the DSM funds its

25 has requested, but fails to adequately describe what it will

26 do with the funds and fails to provide any information

1   supporting the claim that the (usually poorly described)

2   activities are prudent or cost-effective.

3   Therefore, I recommend the Commission deny all recovery

4   of the incremental DSM expenditures at this time but allow

5   deferral of the costs until Duke documents its expenditures

6   and programs and demonstrates their prudence and cost-

7   effectiveness.

8   In the meantime, I strongly recommend to Duke that it

9   immediately correct some of the glaring errors in its current

10   programs, including:

11   •   increasing the required heat-pump efficiency at

12   least to 11, as Mr. Denton says Duke will do in

13   1992;

14   •   increasing the wall insulation standards at least

15   to R-19;

16   •   restricting the dual-fuel program to oil-heated

17   homes, as Mr. Denton says Duke intends; and

18   •   allowing the MAX incentives for air conditioners in

19   fossil-heated homes, to remove the promotional

20   incentives for heat pumps.

21   Q: Does this conclude your testimony?

22   A: Yes.

Exhibit ___PLC-1

Comparison of Equivalent Contract Interruptible MW, Total Demand-Side Load Reductions, and CT Equivalent Reductions.

	Equivalent Contract MW [a]	Peak load reduction [b]	CT MW equivalent [c]
[1]: 1991 summer interruptible load:	1110	818	?
[2]: 1991 total Demand-Side load reductions:	?	851	598

Ratio of peak load reduction to summer equivalent contract interruptible load:	74%	[d]
Ratio of combustion turbine equivalent reduction to total DSM reductions:	70%	[e]
DSM equivalent MW factor:	52%	[f]

Sources:

[1a]: From testimony of Peter Lanzalotta, p. 20; it is not clear from Mr. Lanzalotta's source (see Exh ___(PJL-8) to Mr. Lanzalota's testimony) that Duke identified 1,110 MW of contract of or peak reductions. If indeed the 1,110 MW were coincident peak reduction figures and not contract figures, then the first ratio (74%) would be lower, leading to a lower ratio of CT equivalent reduction to equivalent contract reduction.

[1b]: Short Term Action Plan, exhibits 4-1 and 4-4 (load reduction from interruptible programs only).

[2b]: Short Term Action Plan, exhibits 4-1 and 4-4 (Load reductions from all DSM).

[2c]: Short Term Action Plan, Exhibit 6-1.

[d]: [1b]/[1a]

[e]: [2c]/[2b]

[f]: [d]*[e]

Exhibit ___PLC-2
Duke Estimates of Cost per Contract MW-Month

	Interruptible power service	Residential load control	Standby generation	Combustion turbine avoided cost
MW Capacity	243	132	7.8	
Energy Incentives ($/MW-mn)			?	
Communications and Control ($/MW-mn)	?	?	?	
Contract payment ($/MW-mn)	$1,829 +	$2,214 +	$1,549 +	
Total cost per contract MW-month	$1,829 +	$2,214 +	$1,549 +	
[1] Total cost per CT equivalent MW-mn	$3,533 +	$4,277 +	$2,992 +	$5,100

Notes:

Source: Rebuttal testimony of Donald H. Denton, Jr. for Duke Power Company, SCPSC Docket No. 91-216-E; pp 13-14.

[1]: total cost/DSM equivalent MW factor (52%, calculated in Exhibit ___PLC-1).

Note that in the Short Term Action Plan, p. 6, Duke writes that the TOTAL systemwide interruptible service MW accomplishments through 1990 are only 177.2 MW. It is not clear how this figure relates to the figures cited in the table.

Also see note [1a] on Exhibit PCL-1; if indeed the contract MW figure is understated, then the DSM equivalent MW factor will be lower, resulting in an even higher total cost per CT equivalent MW-mn.