ORIGINAL

One Energy Place
Pensacola, Florida 32520

850.444.6111

GULF POWER
A SOUTHERN COMPANY

May 26, 1999

Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee FL 32399-0870

Dear Ms. Bayo:

RE: Docket No. 990325-EI

Enclosed for filing are an original and fifteen copies of Gulf Power Company's Late-Filed Exhibit No. 3 to the deposition of William F. Pope and the Late-Filed Exhibit No. 1 to the deposition of Michael J. Marker in the above docket.

Sincerely,

Susan D. Ritenour

Susan D. Ritenour
Assistant Secretary and Assistant Treasurer

AFA 3 lw
APP
CAF
CMU
CTR
EAG
LEG 2
MAS
OPC
RRR
SEC 1
WAW
OTH

Enclosures

cc: Beggs and Lane
Jeffrey A. Stone, Esquire
Hopping Green Sams & Smith
Richard D. Melson, Esquire

99 MAY 27 AM 9:01

DOCUMENT NUMBER-DATE
06643 MAY 27 99
FPSC-RECORDS/REPORTING

Florida Public Service Commission
Docket No. 990325-EI
GULF POWER COMPANY
Witness: William F. Pope
Deposition Exhibit No. 3

HISTORY AND FORECAST OF SOUTHERN EQUIVALENT AVAILABILITY FACTOR 1994 THROUGH 2004

YEAR	ACTUAL HISTORY	FUTURE PROJECTION
1994	84.87%	
1995	87.08%	
1996	85.75%	
1997	86.39%	
1998	83.69%	
1999		(1)
2000		(1)
2001		(1)
2002		(1)
2003		(1)
2004		(1)

(1) The Southern electric system does not project Equivalent Availability Factors (EAF) for its units. Southern uses Equivalent Forced Outage Rate (EFOR) in consideration of reliability.

Late Filed Exhibit No. 1

To the deposition of
Michael J. Marler

Parameter Coefficients

Index

```
;
;AM1: Appliance Model: COOK
;
; Technology Definitions
;           size        eff         use         sale        fuel        number of
;Name       units       units       units       units       price       specifics
"Elec"      ""          "Btu/Wh"    "kWh"       "kWh"       "AVG_E"     0
"Gas"       ""          "Btu/Btu"   "kBtu"      "kBtu"      "PGAS"      0
"Oil"       ""          "Btu/Btu"   "kBtu"      "kBtu"      "POIL"      0

;
;Vintage Blocks
;
;Label  LastYear
"PRE76"     1975
"76-84"     1984
"85+"       1987

;
;Base Year Data
;
;Base Year Shares
;     Elec        Gas        Oil
     79.7       19.2        1.1 ;SF
     87.3       10.3        2.5 ;MF
     38.1       60.6        1.4 ;MH

;Size & Efficiency Data
;  share        size        eff
     32.4          1      3.412 ;Elec PRE76
       49          1      3.412 ;Elec 76-84
     18.6          1      3.412 ;Elec 85+
     41.6          1          1 ;Gas PRE76
     42.7          1          1 ;Gas 76-84
     15.7          1          1 ;Gas 85+
       42          1          1 ;Oil PRE76
       42          1          1 ;Oil 76-84
       16          1          1 ;Oil 85+

;UEC Values
;     Elec        Gas        Oil
     1011     101653      11578 ;SF
     1011     101653      11578 ;MF
     1011     101653      11578 ;MH

;Use Formula
;Elec
"(1.0 * HHSIZE  ** 0.60) * (CALINDEX/100);"


;Gas
"(1.0 * HHSIZE  ** 0.60) * (GASINDEX/100);"


;Oil
" 1.0 * HHSIZE  ** 0.60;"


;
;Marginal Data
;
;New Home Shares
;     Elec        Gas        Oil
     87.3       12.7          0 ;SF
      100          0          0 ;MF
     77.3       22.7          0 ;MH


;New Home Model
;Elec
"0.0 - 5.00 * LCC/1000;"


;Gas
"0.0 - 5.00 * LCC/1000;"


;Oil
"0.0 - 5.00 * LCC/1000;"


;Efficiency Models
;Elec
"Max(1.0 * AVG_E ** .10,3.39);"


;Gas
"1.0 * PGAS ** .20;"


;Oil
"1.0 * POIL ** .20;"
```

```
;
;Calibration Constants
;
;
;Appliance Size Constants
;
;There must be 10 constants for this equation

;    Elec       Gas       Oil
        1         1         1         0         0         0         0         0         0         0
;
;Appliance Efficiency Constants
;
;There must be 10 constants for this equation

;    Elec       Gas       Oil
  1.00649   3.05085   4.92616         0         0         0         0         0         0         0
;
;Appliance UEC Constants
;
;    Elec       Gas       Oil
  1867.81   55041.9   6269.12 ;SF
  2060.69   60725.8    6916.5 ;MF
  2005.13   59088.4      6730 ;MH

;
;Specific Efficiency Constants
;
;There must be 10 constants for each option.

        0         0         0         0         0         0         0         0         0         0 ;Elec
        0         0         0         0         0         0         0         0         0         0 ;Gas
        0         0         0         0         0         0         0         0         0         0 ;Oil

;
;New Home Choice Constants
;
;    Elec       Gas       Oil
-0.147886   6.19561      -100 ;SF
        0      -100      -100 ;MF
-0.303476   6.85774      -100 ;MH

;
;Replacement Choice Constants
;
;    Elec       Gas       Oil
        0         0         0 ;Elec
        0         0         0 ;Gas
        0         0         0 ;Oil

;
;Non-Owner Acquisition Constants
;
;    Elec       Gas       Oil
        0         0         0 ;SF
        0         0         0 ;MF
        0         0         0 ;MH

;
;Conversion Choice Constants
;
;    Elec       Gas       Oil
        0         0         0 ;Elec
        0         0         0 ;Gas
        0         0         0 ;Oil

;end of file
```

```
;
;AM1: Appliance Model: WASHER
;
;
; Technology Definitions
;
;          size        eff         use         sale        fuel        number of
;Name      units       units       units       units       price       specifics
"OWN"      ""          "Lds/kWh"   "Loads"     "kWh"       "AVG_E"     0
"NONE"

;
;Vintage Blocks
;
;Label  LastYear
"PRE76"     1975
"76-84"     1984
"85+"       1987

;
;Base Year Data
;
;Base Year Shares
;      OWN       NONE
      89.5       10.5 ;SF
      51.8       48.2 ;MF
        69         31 ;MH

;Size & Efficiency Data
;  share        size        eff
      11.7          1       4.16 ;OWN PRE76
        62          1       4.16 ;OWN 76-84
      26.3          1       4.16 ;OWN 85+

;UEC Values
;      OWN
        95 ;SF
        95 ;MF
        95 ;MH

;Use Formula
;OWN
"1.0 * INCOME **  0.10"
"    * HHSIZE **  0.70"
"    * AVG_E  ** -0.10"
"* (CALINDEX/100);"



;
;Marginal Data
;
;New Home Shares
;      OWN       NONE
      99.2        0.8 ;SF
      85.7       14.3 ;MF
      91.3        8.7 ;MH

;Acquisition Shares
;      OWN       NONE
         9         91 ;SF
         1         99 ;MF
         8         92 ;MH

;Generic Control Totals
;     Size        Eff
         1       4.16 ;OWN

;
;Cost Data
;
;Generic Cost Data
;     size       cost     slope mult           elas
         1        400          0 "CONST"            0 ;OWN

;
;Choice Models
;
;Discount Rates
"discnt2"  ;NewHome Choice
"discnt2"  ;Replacement Choice
"discnt2"  ;Acquisition Choice

;New Home Model
;OWN
" 0.0  + 0.040 * INCOME"
"      + 0.262 * HHSIZE"
"      + 0.041 * (YEAR-1987);"


;NONE
"0.0;"

;Acquisition Model
```

```
;OWN
" 0.0  + 0.040 * INCOME"
"      + 0.262 * HHSIZE;"


;NONE
"0.0;"


;Efficiency Models
;OWN
"Max(1.0 * AVG_E ** 0.20,4.1);"
;
;
;Appliance Size Constants
;
;There must be 10 constants for this equation

;     OWN       NONE
        1          0         0         0         0         0         0         0         0         0
;
;Appliance Efficiency Constants
;
;There must be 10 constants for this equation

;     OWN       NONE
  9.41918          0         0         0         0         0         0         0         0         0
;
;Appliance UEC Constants
;
;     OWN       NONE
  90.7951          0 ;SF
  101.825          0 ;MF
  98.6292          0 ;MH

;
;Specific Efficiency Constants
;
;There must be 10 constants for each option.

        0          0         0         0         0         0         0         0         0         0 ;OWN
        0          0         0         0         0         0         0         0         0         0 ;NONE

;
;New Home Choice Constants
;
;     OWN       NONE
 0.109425  -2.62848 ;SF
-0.0241014  0.158052 ;MF
0.0357348 -0.313633 ;MH

;
;Replacement Choice Constants
;
;     OWN       NONE
        0          0 ;OWN
        0          0 ;NONE

;
;Non-Owner Acquisition Constants
;
;     OWN       NONE
 -2.28106   2.03295 ;SF
 -4.46457   2.02129 ;MF
 -2.38885   1.97295 ;MH

;
;Conversion Choice Constants
;
;     OWN       NONE
        0          0 ;OWN
        0          0 ;NONE

;end of file
```

```
;
;AM1: Appliance Model: DRYER
;
;
; Technology Definitions
;
;          size        eff         use         sale        fuel        number of
;Name      units       units       units       units       price       specifics
"ELEC"     ""          "Lds/kWh"   "Loads"     "kWh"       "AVG_E"     0
"GAS"      " "         "Lds/kBtu"  "Loads"     "kBtu"      "PGAS"      0
"NONE"

;
;Vintage Blocks
;
;Label  LastYear
"PRE76"     1975
"76-84"     1984
"85+"       1987

;
;Base Year Data
;
;Base Year Shares
;    ELEC       GAS       NONE
     74.8       5.3       19.9 ;SF
     47.2       1.2       51.6 ;MF
     53.5       3.6       42.9 ;MH

;Size & Efficiency Data
;  share       size        eff
     13.6          1        0.4 ;ELEC PRE76
     61.6          1        0.4 ;ELEC 76-84
     24.8          1        0.4 ;ELEC 85+
     14.3          1      0.104 ;GAS PRE76
     60.4          1      0.104 ;GAS 76-84
     25.2          1      0.104 ;GAS 85+

;UEC Values
;    ELEC       GAS
      900      3750 ;SF
      825      3750 ;MF
      833      3750 ;MH

;Use Formula
;ELEC
" 1.0 * INCOME  **  0.10"
"     * HHSIZE  **  0.80"
"     * ( (OPTION = ELEC) * AVG_E ** -.10 +"
"         (OPTION = GAS ) * PGAS  ** -.10 )"
"* (CALINDEX/100);"


;GAS
" 1.0 * INCOME  **  0.10"
"     * HHSIZE  **  0.80"
"     * ( (OPTION = ELEC) * AVG_E ** -.10 +"
"         (OPTION = GAS ) * PGAS  ** -.10 );"



;
;Marginal Data
;
;New Home Shares
;    ELEC       GAS       NONE
     93.5       4.9        1.6 ;SF
     85.7         0       14.3 ;MF
     81.8       4.5       13.6 ;MH

;Acquisition Shares
;    ELEC       GAS       NONE
        7       0.5       92.5 ;SF
      1.5       0.3       98.2 ;MF
        3       0.5       96.5 ;MH

;Generic Control Totals
;    Size       Eff
        1      0.44 ;ELEC
        1      0.12 ;GAS

;
;Cost Data
;
;Generic Cost Data
;    size      cost     slope mult           elas
        1       400         0 "CONST"            0 ;ELEC
        1       430         0 "CONST"            0 ;GAS

;Generic Availability
;NewHome   Existing   Market
"CONST"    "CONST"    "CONST"    ;ELEC
"GASN"     "GASX"     "CONST"    ;GAS

;
```

```
;Choice Models
;
;Discount Rates
"discnt2"  ;NewHome Choice
"discnt2"  ;Replacement Choice
"discnt2"  ;Acquisition Choice

;New Home Model
;ELEC
" 0.0  - 5.00 * LCC/1000"
"      +  .05 * INCOME"
"      +  .14 * HHSIZE;"


;GAS
" 0.0  - 5.00 * LCC/1000"
"      +  .05 * INCOME"
"      +  .18 * HHSIZE;"


;NONE
" 0.0;"


;Acquisition Model
;ELEC
" 0.0  - 5.00 * LCC/1000"
"      +  .05 * INCOME"
"      +  .14 * HHSIZE;"


;GAS
" 0.0  - 5.00 * LCC/1000"
"      +  .05 * INCOME"
"      +  .18 * HHSIZE;"


;NONE
" 0.0;"


;Efficiency Models
;ELEC
"Max( 1.0 * AVG_E ** 0.10, 0.66);"


;GAS
" 1.0 * PGAS  ** 0.10;"



;
;Calibration Constants
;
;
;Appliance Size Constants
;
;There must be 10 constants for this equation

;    ELEC       GAS      NONE
       1         1         0         0         0         0         0         0         0         0
;
;Appliance Efficiency Constants
;
;There must be 10 constants for this equation

;    ELEC       GAS      NONE
 0.662083  0.195453         0         0         0         0         0         0         0         0
;
;Appliance UEC Constants
;
;    ELEC       GAS      NONE
  74.6695   74.6609         0 ;SF
  78.0299   85.1137         0 ;MF
  75.9668   82.0676         0 ;MH

;
;Specific Efficiency Constants
;
;There must be 10 constants for each option.

        0         0         0         0         0         0         0         0         0         0 ;ELEC
        0         0         0         0         0         0         0         0         0         0 ;GAS
        0         0         0         0         0         0         0         0         0         0 ;NONE

;
;New Home Choice Constants
;
;    ELEC       GAS      NONE
  1.18863  -1.45733  -3.48864 ;SF
 0.895275      -100    -1.514 ;MF
  1.04604  -1.49815  -1.35676 ;MH
;
```

```
;Replacement Choice Constants
;
;     ELEC        GAS       NONE
         0          0          0 ;ELEC
         0          0          0 ;GAS
         0          0          0 ;NONE

;
;Non-Owner Acquisition Constants
;
;     ELEC        GAS       NONE
 -1.40995   -3.77822   0.562034 ;SF
 -2.95545   -4.22869   0.607404 ;MF
 -2.26639   -3.73105   0.595949 ;MH

;
;Conversion Choice Constants
;
;     ELEC        GAS       NONE
         0          0          0 ;ELEC
         0          0          0 ;GAS
         0          0          0 ;NONE

;end of file
```

```
;
;AM1: Appliance Model: REFRIGE1
;
; Technology Definitions
;
;          size       eff        use        sale       fuel       number of
;Name      units      units      units      units      price      specifics
"OWN"      "CUBICFT"  "CF/KWH/D" "DAYS"     "KWH"      "AVG_E"    8

;
;Vintage Blocks
;
;Label  LastYear
"PRE76"     1975
"76-84"     1984
"85+"       1987

;
;Base Year Data
;
;Base Year Shares
;      OWN
       100 ;SF
       100 ;MF
       100 ;MH

;Size & Efficiency Data
;  share       size       eff
     30.4      18.08      3.89 ;OWN PRE76
     50.7      19.75      5.49 ;OWN 76-84
     18.9      19.82      7.02 ;OWN 85+

;Size Formula
;OWN
"(21.0 + 0.10 * (YEAR-1987))"
"* INCOME ** 0.15"
"* REFCOST ** -0.15;"


;UEC Values
;      OWN
      1440 ;SF
      1096 ;MF
      1354 ;MH

;Use Formula
;OWN
"(1.0 * AVG_E ** -0.10"
"* INCOME ** 0.10"
"* HHSIZE ** 0.10)"
"* (CALINDEX/100);"


;
;Marginal Data
;
;New Home Shares
;      OWN
       100 ;SF
       100 ;MF
       100 ;MH

;Conversion Shares
;      OWN
         1 ;OWN

;Generic Control Totals
;    Size       Eff
       21         7 ;OWN

;Specific Efficiency Data
;Label          Share       Eff Mult
"EF6"             10          6 "CONST"     ;OWN EF6
"EF7"             30          7 "CONST"     ;OWN EF7
"EF8"             40          8 "CONST"     ;OWN EF8
"EF9"             20          9 "CONST"     ;OWN EF9
"EF10"             0         10 "CONST"     ;OWN EF10
"EF11"             0         11 "CONST"     ;OWN EF11
"EF12"             0         12 "CONST"     ;OWN EF12
"EF15"             0         15 "CONST"     ;OWN EF15

;

;Specific Cost Data
;    Size       Cost      Slope Mult
     20.5        490          0 "CONST"     ;OWN EF6
     20.5        500          0 "CONST"     ;OWN EF7
     20.5        510          0 "CONST"     ;OWN EF8
     20.5        520          0 "CONST"     ;OWN EF9
     20.5        550          0 "CONST"     ;OWN EF10
     20.5        590          0 "CONST"     ;OWN EF11
     20.5        625          0 "CONST"     ;OWN EF12
     20.5        660          0 "CONST"     ;OWN EF15

;Specific Technology Availability
```

```
;Legal    Market
"RF90"     "CONST"    ;OWN EF6
"RF91"     "CONST"    ;OWN EF7
"RF93"     "CONST"    ;OWN EF8
"RF93"     "CONST"    ;OWN EF9
"RF93"     "RNEW10"   ;OWN EF10
"CONST"    "RNEW11"   ;OWN EF11
"CONST"    "RNEW12"   ;OWN EF12
"CONST"    "RNEW15"   ;OWN EF15

;
;Choice Models
;

;Conversion Model
;OWN
"LOG( 0.01);"


;Efficiency Models
;OWN : EF6
"-10.0 * LCC/1000;"


;OWN : EF7
"-10.0 * LCC/1000;"


;OWN : EF8
"-10.0 * LCC/1000;"


;OWN : EF9
"-10.0 * LCC/1000;"


;OWN : EF10
"-10.0 * LCC/1000;"


;OWN : EF11
"-10.0 • LCC/1000;"


;OWN : EF12
"-10.0 * LCC/1000;"


;OWN : EF15
"-10.0 * LCC/1000;"



;
;Calibration Constants
;
;
;Appliance Size Constants
;
;There must be 10 constants for this equation

;     OWN
   1.5009         0         0         0         0         0         0         0         0         0
;
;Appliance Efficiency Constants
;
;There must be 10 constants for this equation

;     OWN
        0         0         0         0         0         0         0         0         0         0
;
;Appliance UEC Constants
;
;     OWN
  162.585 ;SF
  125.788 ;MF
  154.693 ;MH

;
;Specific Efficiency Constants
;
;There must be 10 constants for each option.

-0.732316  0.208939  0.403047  -0.34098         0         0         0         0         0         0 ;OWN

;
;New Home Choice Constants
;
;     OWN
        0 ;SF
        0 ;MF
        0 ;MH

;
;Replacement Choice Constants
```

```
;
;      OWN
         0 ;OWN

;
;Non-Owner Acquisition Constants
;
;      OWN
         0 ;SF
         0 ;MF
         0 ;MH

;
;Conversion Choice Constants
;
;      OWN
0.00995032 ;OWN

;end of file
```

```
;
;AM1: Appliance Model: W_HEAT
;
;
; Technology Definitions
;
;          size        eff         use         sale        fuel        number of
;Name      units       units       units       units       price       specifics
"ELEC"     ""          "BTU/WH"    "KWH"       "KWH"       "AVG_E"     0
"GAS"      ""          "BTU/BTU"   "KBTU"      "KBTU"      "PGAS"      0
"OIL"      ""          "BTU/BTU"   "KBTU"      "KBTU"      "POIL"      0

;
;Vintage Blocks
;
;Label  LastYear
"PRE76"     1975
"76-84"     1984
"85+"       1988

;
;Base Year Data
;
;Base Year Shares
;    ELEC       GAS       OIL
     60.6      36.9       1.8 ;SF
     84.7      13.7       0.2 ;MF
     85.6      13.4         0 ;MH

;Size & Efficiency Data
;  share       size       eff
    25.23          1      2.73 ;ELEC PRE76
    26.75          1      2.79 ;ELEC 76-84
    47.57          1      2.89 ;ELEC 85+
    29.93          1     0.475 ;GAS PRE76
    26.91          1     0.486 ;GAS 76-84
    42.88          1     0.498 ;GAS 85+
    31.65          1     0.475 ;OIL PRE76
    26.58          1     0.486 ;OIL 76-84
    41.77          1     0.498 ;OIL 85+

;UEC Values
;    ELEC       GAS       OIL
     3097     20296     43983 ;SF
     2551     20296     43983 ;MF
     2848     20296     43983 ;MH

;Use Formula
;ELEC
"((( (365/1000) * 8.25 • (133-60) ) *"
"( (30 * (1-(.4*lowflow))) + (20 * (1-(.2*aerator)))"
"+ (10*share(washer,own)) + (2*share(dish,own))))"
"* (avg_e ** -0.2) * (income ** 0.1) * (hhsize **0.6))"
"* (calindex/100);"


;GAS
"((( (365/1000) * 8.25 * (133-60) ) *"
"( (30 * (1-(.4*lowflow))) + (20 * (1-(.2*aerator)))"
"+ (10*share(washer,own)) + (2*share(dish,own))))"
"* (pgas ** -0.2) * (income ** 0.1) * (hhsize ** 0.6))"
"* (gasindex/100);"


;OIL
"((( (365/1000) * 8.25 * (133-60) ) *"
"( (30 * (1-(.4*lowflow))) + (20 * (1-(.2*aerator)))"
"+ (10*share(washer,own)) + (2*share(dish,own))))"
"* (poil ** -0.2) * (income ** 0.1) * (hhsize ** 0.6));"


;
;Marginal Data
;
;New Home Shares
;    ELEC       GAS       OIL
     67.7      32.3         0 ;SF
     93.3       6.7         0 ;MF
      100         0         0 ;MH

;Generic Control Totals
;    Size       Eff
        1      2.93 ;ELEC
        1       0.5 ;GAS
        1       0.5 ;OIL

;
;Cost Data
;
;Generic Cost Data
;    size      cost     slope mult           elas
        1       300         0 "CONST"           0 ;ELEC
        1       350         0 "CONST"           0 ;GAS
        1      1000         0 "CONST"           0 ;OIL
```

```
;Generic Availability
;NewHome    Existing    Market
"CONST"     "CONST"     "CONST"     ;ELEC
"GASN"      "GASX"      "CONST"     ;GAS
"CONST"     "CONST"     "CONST"     ;OIL

;
;Choice Models
;
;Discount Rates
"discnt1"  ;NewHome Choice
"discnt1"  ;Replacement Choice

;New Home Model
;ELEC
"0.0 - 3.00 * LCC/1000;"


;GAS
"0.0 - 3.00 * LCC/1000;"


;OIL
"0.0 - 3.0 * LCC/1000;"


;Efficiency Models
;ELEC
"MAX ((WHESTD * 0.0341), 1.0 * ((AVG_E/0.0731) **0.10 )"
"* (WHESTD * 0.0341));"


;GAS
"MAX ((WHGSTD * 0.01), 1.0 * ((PGAS/0.5182) ** 0.20 )"
"* (WHGSTD * 0.01));"


;OIL
"1.0 * POIL ** 0.30;"
;
;
;Appliance Size Constants
;
;There must be 10 constants for this equation

;    ELEC       GAS       OIL
        1         1         1         0         0         0         0         0         0         0
;
;Appliance Efficiency Constants
;
;There must be 10 constants for this equation

;    ELEC       GAS       OIL
 0.976406  0.909091   4.43287         0         0         0         0         0         0         0
;
;Appliance UEC Constants
;
;    ELEC       GAS       OIL
 0.115552    0.1115  0.150819 ;SF
 0.111895   0.13108  0.177305 ;MF
 0.119904  0.125815  0.170183 ;MH

;
;Specific Efficiency Constants
;
;There must be 10 constants for each option.

        0         0         0         0         0         0         0         0         0         0 ;ELEC
        0         0         0         0         0         0         0         0         0         0 ;GAS
        0         0         0         0         0         0         0         0         0         0 ;OIL

;
;New Home Choice Constants
;
;    ELEC       GAS       OIL
0.0431929 -0.0986443      -100 ;SF
 0.257968  -1.85112      -100 ;MF
        0      -100      -100 ;MH

;
;Replacement Choice Constants
;
;    ELEC       GAS       OIL
        0         0         0 ;ELEC
        0         0         0 ;GAS
        0         0         0 ;OIL

;
;Non-Owner Acquisition Constants
;
;    ELEC       GAS       OIL
        0         0         0 ;SF
        0         0         0 ;MF
        0         0         0 ;MH
```

```
;
;Conversion Choice Constants
;
;     ELEC        GAS        OIL
         0          0          0 ;ELEC
         0          0          0 ;GAS
         0          0          0 ;OIL

;end of file
```

```
;
; HV1: HVAC Model
;
;
;Vintage Blocks
;
;Label  LastYear
"PRE76"     1975
"76-84"     1984
"85+"       1988

;
;Heating Definitions
;
;Component List
;Short                          Fuel 1  Fuel 1   Fuel 2  Fuel 2
;Name     Long Name             Price   Units    Price   Units
"EFURN" "Electric Furnace"     "WIN_E" "kWh"    ""      ""
"EROOM" "Electric Room"        "WIN_E" "kWh"    ""      ""
"HPMP"  "Electric Heat Pump"   "WIN_E" "kWh"    ""      ""
"GFURN" "Gas Furnace"          "PGAS"  "kBtu"   ""      ""
"GROOM" "Gas Room"             "PGAS"  "kBtu"   ""      ""
"OTHER" "All Other"            "POIL"  "kBtu"   ""      ""

;Equipment Life
;  Min   Max    MinConvLife
   13    23     0 ;EFURN
   15    23     0 ;EROOM
   10    20     0 ;HPMP
   13    20     0 ;GFURN
   10    20     0 ;GROOM
   10    20     0 ;OTHER

;Secondary Heating Components
;Name   Description            Fuel    Units
"STOVE" "WOOD STOVE"           "PWOOD" "kBtu"
"FIRE"  "FIREPLACE"            "PWOOD" "kBtu"
"ELEC"  "ELECTRIC"             "WIN_E" "kWh"

;
;Cooling Definitions
;
;Component List
;Short                          Fuel    Fuel
;Name     Long Name             Price   Units
"CAC"   "Central Air"          "SUM_E" "kWh"
"HPMP"  "Heat Pump"            "SUM_E" "kWh"
"RAC"   "Room Air"             "SUM_E" "kWh"
"NONE"  "No Air"               "SUM_E" "kWh"

;Equipment Life
;  Min   Max  MinConvLife
   10    20     0 ;CAC
   10    20     0 ;HPMP
    8    15     0 ;RAC
    0     1     0 ;NONE

;Secondary Cooling Components
;Name   Description            Fuel    Units
"SRAC"  "Secondary Air"        "SUM_E" "kWh"

;
;Distribution Systems
;
;Label     Long Name
"FA"     "Forced Air"
"N"      "None"

;
;System Types
;
;System Types
;id     name
"C"     "Central"
"R"     "Room Air"
"N"     "No Air"

;Shell Groups
;id     name
"E"     "Electric"
"O"     "Other"

;HeatFuel Segments
;id     name
"E"     "Electric"
"G"     "Gas"
"O"     "Other"

;
; System List
;
   16 ;Number of Systems
;System     Equipment          Distribution     Heat    Shell
;Type   Coolig  Heating     Cooling  Heating    Fuel    Group
"C"     "CAC"   "EFURN"       "FA"    "FA"      "E"     "E"
```

```
"C"     "CAC"   "EROOM"       "FA"    "N"       "E"     "E"
"C"     "CAC"   "GFURN"       "FA"    "FA"      "G"     "O"
"C"     "CAC"   "GROOM"       "FA"    "N"       "G"     "O"
"C"     "CAC"   "OTHER"       "FA"    "N"       "O"     "O"
"C"     "HPMP"  "HPMP"        "FA"    "FA"      "E"     "E"
"R"     "RAC"   "EFURN"       "N"     "FA"      "E"     "E"
"R"     "RAC"   "EROOM"       "N"     "N"       "E"     "E"
"R"     "RAC"   "GFURN"       "N"     "FA"      "G"     "O"
"R"     "RAC"   "GROOM"       "N"     "N"       "G"     "O"
"R"     "RAC"   "OTHER"       "N"     "N"       "O"     "O"
"N"     "NONE"  "EFURN"       "N"     "FA"      "E"     "E"
"N"     "NONE"  "EROOM"       "N"     "N"       "E"     "E"
"N"     "NONE"  "GFURN"       "N"     "FA"      "G"     "O"
"N"     "NONE"  "GROOM"       "N"     "N"       "G"     "O"
"N"     "NONE"  "OTHER"       "N"     "N"       "O"     "O"

;System conversions
   20 ;Number of conversions
;       From              To
;  cool    heat      cool    heat
"CAC"   "EFURN" "HPMP"  "HPMP"
"CAC"   "OTHER" "CAC"   "GFURN"
"CAC"   "OTHER" "HPMP"  "HPMP"
"RAC"   "EFURN" "CAC"   "EFURN"
"RAC"   "EFURN" "HPMP"  "HPMP"
"RAC"   "EROOM" "HPMP"  "HPMP"
"RAC"   "GFURN" "CAC"   "GFURN"
"RAC"   "GROOM" "CAC"   "GFURN"
"RAC"   "OTHER" "CAC"   "GFURN"
"RAC"   "OTHER" "HPMP"  "HPMP"
"RAC"   "OTHER" "RAC"   "GROOM"
"NONE"  "EFURN" "CAC"   "EFURN"
"NONE"  "EFURN" "HPMP"  "HPMP"
"NONE"  "EROOM" "HPMP"  "HPMP"
"NONE"  "EROOM" "RAC"   "EROOM"
"NONE"  "GFURN" "CAC"   "GFURN"
"NONE"  "GROOM" "RAC"   "GROOM"
"NONE"  "OTHER" "CAC"   "OTHER"
"NONE"  "OTHER" "HPMP"  "HPMP"
"NONE"  "OTHER" "NONE"  "GFURN"

;
;Shell Attributes
;
;Name    Description              nLevels
"INDEX" "Whole House Index"      9

;Shell Attribute Weights
;   INDEX
      1.5 ;SF
      1.5 ;MF
      1.5 ;MH

      1.5 ;SF
      1.5 ;MF
      1.5 ;MH


;Shell Attribute Values
;Label        HLM       HGM
"U.6"         0.6       0.6
"U.5"         0.5       0.5
"U.4"         0.4       0.4
"U.3"         0.3       0.3
"U.25"       0.25      0.25
"U.2"         0.2       0.2
"U.15"       0.15      0.15
"U.1"         0.1       0.1
"U.05"       0.05      0.05


    9 ;Number of shell options
;Label       INDEX
"U60"         1
"U50"         2
"U40"         3
"U30"         4
"U25"         5
"U20"         6
"U15"         7
"U10"         8
"U05"         9

;
;Base Year Data
;
;Base-Year System Shares
;      SF        MF        MH
     28.5      55.4      17.5 ; EFURN CAC
      0.3       0.9       2.8 ; EROOM CAC
     24.5       6.6      32.1 ; GFURN CAC
      0.6       0.4       4.5 ; GROOM CAC
      0.9         1       0.8 ; OTHER CAC
     17.8      20.8       4.6 ; HPMP HPMP
      0.9         0       1.7 ; EFURN RAC
```

```
      4.4          7        2.3 ; EROOM RAC
      3.2        0.6       21.2 ; GFURN RAC
     12.3        3.3        4.5 ; GROOM RAC
        3        0.6        1.2 ; OTHER RAC
      0.2        0.3        1.9 ; EFURN NONE
      0.1        0.4        2.5 ; EROOM NONE
      0.8        0.5          2 ; GFURN NONE
      1.5        2.3          0 ; GROOM NONE
      0.8          0        0.3 ; OTHER NONE

;Heating Equipment -- Average Size (kBtuh)
;       SF         MF         MH
        35         26         21 ;EFURN
        40         29         25 ;EROOM
        35         26         22 ;HPMP
        60         44         38 ;GFURN
        50         37         32 ;GROOM
        50         37         32 ;OTHER

;Heating Equipment -- Size Model
;EFURN
"1.0 * (HOMESIZE * HLM) ** .8;"

;EROOM
"1.0 * (HOMESIZE * HLM) ** .8;"

;HPMP
"1.0 * (HOMESIZE * HLM) ** .8;"

;GFURN
"1.0 * (HOMESIZE * HLM) ** .8;"

;GROOM
"1.0 * (HOMESIZE * HLM) ** .8;"

;OTHER
"1.0 * (HOMESIZE * HLM) ** .8;"


;Heating Equipment -- Average Efficiency
;     Share     Fuel 1     Fuel 2  Comp  Vint
      12.3      3.412          0 ;EFURN PRE76
      55.9      3.412          0 ;EFURN 76-84
      31.8      3.412          0 ;EFURN 85+
        23      3.412          0 ;EROOM PRE76
        56      3.412          0 ;EROOM 76-84
        21      3.412          0 ;EROOM 85+
       2.7        4.8          0 ;HPMP PRE76
      42.7        5.6          0 ;HPMP 76-84
      54.6        6.3          0 ;HPMP 85+
      23.8       0.62          0 ;GFURN PRE76
        55       0.67          0 ;GFURN 76-84
      21.2       0.74          0 ;GFURN 85+
     22.53       0.62          0 ;GROOM PRE76
     13.65       0.67          0 ;GROOM 76-84
     60.55       0.74          0 ;GROOM 85+
      4.72       0.74          0 ;OTHER PRE76
      5.79       0.76          0 ;OTHER 76-84
     14.16       0.79          0 ;OTHER 85+

;Heating Equipment -- UEC Values
;       SF         MF         MH
      2770       1736       1537 ;kWh  EFURN
      2183       1410       1261 ;kWh  EROOM
      2075       1286       1135 ;kWh  HPMP
     10655       6883       6156 ;kBtu GFURN
     13546       8750       7827 ;kBtu GROOM
     21727      14035      12554 ;kBtu OTHER

;Heating Equipment -- Usage Model
;EFURN
"( (.77 * (HOMESIZE * HLM) * (HDD * 24) - .25 * SHARE(FIRE)*USE(FIRE)"
"-.75 * SHARE(STOVE) * USE(STOVE) - 3.412 * SHARE(ELEC)*USE(ELEC) )"
"/EFFIC"
"* PRICE ** -.30"
"* INCOME ** .20"
"* HHSIZE ** .25)"
"* (CALINDEX/100);"

;EROOM
"( (.77 * (HOMESIZE * HLM) * (HDD * 24) - .25 * SHARE(FIRE)*USE(FIRE)"
"-.75 * SHARE(STOVE) * USE(STOVE) - 3.412 * SHARE(ELEC)*USE(ELEC) )"
"/EFFIC"
"* PRICE ** -.30"
"* INCOME ** .20"
"* HHSIZE ** .25)"
"* (CALINDEX/100);"

;HPMP
"( (.77 * (HOMESIZE * HLM) * (HDD * 24) - .25 * SHARE(FIRE)*USE(FIRE)"
"-.75 * SHARE(STOVE) * USE(STOVE) - 3.412 * SHARE(ELEC)*USE(ELEC) )"
"/EFFIC"
"* PRICE ** -.30"
"* INCOME ** .20"
"* HHSIZE ** .25)"
```

```
"* (CALINDEX/100);"

;GFURN
"( (.77 * (HOMESIZE * HLM) * (HDD * 24) - .25 * SHARE(FIRE)*USE(FIRE)"
"-.75 * SHARE(STOVE) * USE(STOVE) - 3.412 * SHARE(ELEC)*USE(ELEC) )"
"/EFFIC"
"       * PRICE ** -.30"
"       * INCOME ** .20"
"       * HHSIZE ** .25)"
"* (GASINDEX/100);"

;GROOM
"( (.77 * (HOMESIZE * HLM) * (HDD * 24) - .25 * SHARE(FIRE)*USE(FIRE)"
"-.75 * SHARE(STOVE) * USE(STOVE) - 3.412 * SHARE(ELEC)*USE(ELEC) )"
"/EFFIC"
"       * PRICE ** -.30"
"       * INCOME ** .20"
"       * HHSIZE ** .25)"
"* (GASINDEX/100);"

;OTHER
"( (.77 * (HOMESIZE * HLM) * (HDD * 24) - .25 * SHARE(FIRE)*USE(FIRE)"
"-.75 * SHARE(STOVE) * USE(STOVE) - 3.412 * SHARE(ELEC)*USE(ELEC) )"
"/EFFIC"
"       * PRICE ** -.30"
"       * INCOME ** .20"
"       * HHSIZE ** .25);"


;Secondary Heating Shares
;   STOVE      FIRE      ELEC
     0.01      0.01      0.01 ;SF EFURN
     0.01      0.01      0.01 ;SF EROOM
     0.01      0.01      0.01 ;SF HPMP
     0.01      0.01      0.01 ;SF GFURN
     0.01      0.01      0.01 ;SF GROOM
     0.01      0.01      0.01 ;SF OTHER
     0.01      0.01      0.01 ;MF EFURN
     0.01      0.01      0.01 ;MF EROOM
     0.01      0.01      0.01 ;MF HPMP
     0.01      0.01      0.01 ;MF GFURN
     0.01      0.01      0.01 ;MF GROOM
     0.01      0.01      0.01 ;MF OTHER
     0.01      0.01      0.01 ;MH EFURN
     0.01      0.01      0.01 ;MH EROOM
     0.01      0.01      0.01 ;MH HPMP
     0.01      0.01      0.01 ;MH GFURN
     0.01      0.01      0.01 ;MH GROOM
     0.01      0.01      0.01 ;MH OTHER

;Secondary Heating UEC Values
;   STOVE      FIRE      ELEC
        1         1         1 ;SF EFURN
        1         1         1 ;SF EROOM
        1         1         1 ;SF HPMP
        1         1         1 ;SF GFURN
        1         1         1 ;SF GROOM
        1         1         1 ;SF OTHER
        1         1         1 ;MF EFURN
        1         1         1 ;MF EROOM
        1         1         1 ;MF HPMP
        1         1         1 ;MF GFURN
        1         1         1 ;MF GROOM
        1         1         1 ;MF OTHER
        1         1         1 ;MH EFURN
        1         1         1 ;MH EROOM
        1         1         1 ;MH HPMP
        1         1         1 ;MH GFURN
        1         1         1 ;MH GROOM
        1         1         1 ;MH OTHER

;Secondary Heating Usage Model
;STOVE
"1.0 * (HLM * HDD *24) * PWOOD ** -.3"
"    * INCOME  ** .20"
"    * HHSIZE ** .25;"

;FIRE
"1.0 * (HLM * HDD *24) * PWOOD ** -.3"
"    * INCOME  ** .20"
"    * HHSIZE ** .25;"

;ELEC
"1.0 * (HLM * HDD *24) * WIN_E ** -.3"
"    * INCOME  ** .20"
"    * HHSIZE ** .25;"


;Secondary Cooling Shares
;    SRAC
        0 ;SF CAC
        0 ;SF HPMP
     0.01 ;SF RAC
        0 ;SF NONE
        0 ;MF CAC
```

```
        0 ;MF HPMP
     0.01 ;MF RAC
        0 ;MF NONE
        0 ;MH CAC
        0 ;MH HPMP
     0.01 ;MH RAC
        0 ;MH NONE

;Secondary Cooling UEC Values
;    SRAC
        1 ;SF CAC
        1 ;SF HPMP
        1 ;SF RAC
        1 ;SF NONE
        1 ;MF CAC
        1 ;MF HPMP
        1 ;MF RAC
        1 ;MF NONE
        1 ;MH CAC
        1 ;MH HPMP
        1 ;MH RAC
        1 ;MH NONE

;Secondary Cooling Usage Model
;SRAC
"( 1.0 * HGM * (CDD * 24)"
"* SUM_E ** -.30"
"*INCOME ** .20"
"* HHSIZE ** .25)"
"* (CALINDEX/100);"


;Base Year Ventilation UEC Values
;      SF        MF        MH
      450       450       450 ; EFURN CAC
      300       300       300 ; EROOM CAC
      450       450       450 ; GFURN CAC
      300       300       300 ; GROOM CAC
      300       300       300 ; OTHER CAC
      450       450       450 ; HPMP HPMP
      150       150       150 ; EFURN RAC
        0         0         0 ; EROOM RAC
      150       150       150 ; GFURN RAC
        0         0         0 ; GROOM RAC
        0         0         0 ; OTHER RAC
      150       150       150 ; EFURN NONE
        0         0         0 ; EROOM NONE
      150       150       150 ; GFURN NONE
        0         0         0 ; GROOM NONE
        0         0         0 ; OTHER NONE

;Ventilation Usage Model
"(HEATUSE + COOLUSE);"

; EFURN CAC
"COOLUSE;"

; EROOM CAC
"1.0 * (HEATUSE + COOLUSE);"

; GFURN CAC
"COOLUSE;"

; GROOM CAC
"1.0 * (HEATUSE + COOLUSE);"

; OTHER CAC
"1.0 * (HEATUSE + COOLUSE);"

; HPMP HPMP
"HEATUSE;"

; EFURN RAC
"0;"

; EROOM RAC
"HEATUSE;"

; GFURN RAC
"0;"

; GROOM RAC
"HEATUSE;"

; OTHER RAC
"HEATUSE;"

; EFURN NONE
"0;"

; EROOM NONE
"HEATUSE;"

; GFURN NONE
"0;"
```

```
; GROOM NONE
"0;"

; OTHER NONE

;Cooling Equipment -- Average Size (kBtuh)
;       SF         MF         MH
        36         24         22 ;CAC
        36         24         22 ;HPMP
      12.6       10.5        9.6 ;RAC
         0          0          0 ;NONE

;Cooling Equipment -- Size Model
"1.0 * (HOMESIZE * HGM) ** .8;"

;CAC
"1.0 * (HOMESIZE * HGM) ** .8;"

;HPMP
"1.0 * (HOMESIZE * HGM) ** .8;"

;RAC

;Cooling Equipment -- Average Efficiency
;      Share   Efficiency  Comp  Vint
       7.5        6.8 ;CAC PRE76
      47.4        7.8 ;CAC 76-84
      45.1        8.9 ;CAC 85+
       2.7        6.6 ;HPMP PRE76
      42.7        7.7 ;HPMP 76-84
      54.6        8.7 ;HPMP 85+
         5        6.2 ;RAC PRE76
        70          7 ;RAC 76-84
        25        7.9 ;RAC 85+
         1          1 ;NONE PRE76
         1          1 ;NONE 76-84
         1          1 ;NONE 85+

;Cooling Equipment -- UEC Values
;       SF         MF         MH
      3603       2221       1955 ;kWh  CAC
      2588       1671       1495 ;kWh  HPMP
      3034       1854       1627 ;kWh  RAC
         0          0          0 ;kWh  NONE

;Cooling Equipment -- Usage Model
"( 1.00 * (HOMESIZE * HGM) * (CDD * 24) / EFFIC"
"       * PRICE   ** -.30"
"       * INCOME  ** .20"
"       * HHSIZE ** .25)"
"* (CALINDEX/100);"

;CAC
"( 1.00 * (HOMESIZE * HGM) * (CDD * 24) / EFFIC"
"       * PRICE   ** -.30"
"       * INCOME  ** .20"
"       * HHSIZE ** .25)"
"* (CALINDEX/100);"

;HPMP
"( 1.00 * (HOMESIZE * HGM) * (CDD * 24) / EFFIC"
"       * PRICE   ** -.30"
"       * INCOME  ** .20"
"       * HHSIZE ** .25)"
"* (CALINDEX/100);"

;RAC

;Base Year Shell Shares
;SF
;Electric     Other
        3          8 ;U60
        2          3 ;U50
       13         14 ;U40
       16         17 ;U30
        2          5 ;U25
        5          6 ;U20
       12         12 ;U15
       32         21 ;U10
       15         14 ;U05
;MF
;Electric     Other
        3          8 ;U60
        2          3 ;U50
       13         14 ;U40
       16         17 ;U30
        2          5 ;U25
        5          6 ;U20
       12         12 ;U15
       32         21 ;U10
       15         14 ;U05
;MH
;Electric     Other
        3          8 ;U60
```

```
         2          3 ;U50
        13         14 ;U40
        16         17 ;U30
         2          5 ;U25
         5          6 ;U20
        12         12 ;U15
        32         21 ;U10
        15         14 ;U05

;Average Home Size
     1819 ;SF
     1175 ;MF
     1051 ;MH

;Home Size Model
;SF
"1481 + 17.2 * INCOME + 34.6 * HHSIZE + SFADJSF;"

;MF
"519+  7.7 * INCOME + 56.4 * HHSIZE;"

;MH
"676 +  5.4 * INCOME + 21.4 * HHSIZE +SFADJMH;"


;New Home System Shares
;       SF         MF         MH
        21       33.3       51.7 ; EFURN CAC
         0          0        4.3 ; EROOM CAC
      21.5        6.7          5 ; GFURN CAC
         0          0          0 ; GROOM CAC
         0          0          0 ; OTHER CAC
        80         64          0 ; HPMP HPMP
       0.8          0         20 ; EFURN RAC
         0          0          0 ; EROOM RAC
         0          0          0 ; GFURN RAC
         0          0          0 ; GROOM RAC
         0          0          0 ; OTHER RAC
         0          0        4.3 ; EFURN NONE
         0          0          0 ; EROOM NONE
         0          0          0 ; GFURN NONE
         0          0          0 ; GROOM NONE
         0          0          0 ; OTHER NONE

;System Conversion Rates
;       SF         MF         MH
      2.25          1       1.65 ;CAC/EFURN to HPMP/HPMP
         1          1          1 ;CAC/OTHER to CAC/GFURN
       0.1        0.1        0.1 ;CAC/OTHER to HPMP/HPMP
         0        4.5        4.5 ;RAC/EFURN to CAC/EFURN
      3.25       2.75       2.75 ;RAC/EFURN to HPMP/HPMP
       0.1        0.1        0.1 ;RAC/EROOM to HPMP/HPMP
         3          3          3 ;RAC/GFURN to CAC/GFURN
      2.75       2.75       2.75 ;RAC/GROOM to CAC/GFURN
      2.75       2.75       2.75 ;RAC/OTHER to CAC/GFURN
       0.1        0.1        0.1 ;RAC/OTHER to HPMP/HPMP
       0.1        0.1        0.1 ;RAC/OTHER to RAC/GROOM
         0          1          1 ;NONE/EFURN to CAC/EFURN
       0.1        0.1        0.1 ;NONE/EFURN to HPMP/HPMP
         2          2          2 ;NONE/EROOM to HPMP/HPMP
         2          2          2 ;NONE/EROOM to RAC/EROOM
         3          3          3 ;NONE/GFURN to CAC/GFURN
         3          3          3 ;NONE/GROOM to RAC/GROOM
      2.75       2.75       2.75 ;NONE/OTHER to CAC/OTHER
       0.1        0.1        0.1 ;NONE/OTHER to HPMP/HPMP
         1          1          1 ;NONE/OTHER to NONE/GFURN

;Heating Equipment Efficiency
;    Fuel 1     Fuel 2     Component
     3.412      3.412 ;EFURN
     3.412      3.412 ;EROOM
      6.82       6.82 ;HPMP
       0.8        0.8 ;GFURN
       0.8        0.8 ;GROOM
       0.8        0.8 ;OTHER

;Cooling Equipment Efficiency
;Efficiency  Component
         9 ;CAC
         9 ;HPMP
         8 ;RAC
         0 ;NONE

;New Home Shell Shares
;SF
;Electric     Other
         0          2 ;U60
         1          1 ;U50
        12         13 ;U40
        13          9 ;U30
         4          8 ;U25
         6          3 ;U20
        16          8 ;U15
        35         29 ;U10
        13         27 ;U05
```

```
;MF
;Electric     Other
        0         2 ;U60
        1         1 ;U50
       12        13 ;U40
       13         9 ;U30
        4         8 ;U25
        6         3 ;U20
       16         8 ;U15
       35        29 ;U10
       13        27 ;U05
;MH
;Electric     Other
        0         2 ;U60
        1         1 ;U50
       12        13 ;U40
       13         9 ;U30
        4         8 ;U25
        6         3 ;U20
       16         8 ;U15
       35        29 ;U10
       13        27 ;U05

;
;Cost Data
;
;Distribution System Cost
;    Size       Cost       Slope      Mult     System
        1        2.5         2.5 "CONST"     ;FA
        0          0           0 "CONST"     ;N

;Heating Equipment Cost
;    Size     Cost    Slope   Mult   Elas
       35      650         4 "CONST"          0 ;EFURN
       35     1300        37 "CONST"          0 ;EROOM
       35     2200        54 "CONST"        0.9 ;HPMP
       60      750         3 "CONST"       0.55 ;GFURN
       50      800        16 "CONST"       0.55 ;GROOM
       50      800        16 "CONST"       0.55 ;OTHER

;Cooling Equipment Cost
;    Size     Cost    Slope   Mult   Elas
       35     1350        35 "CONST"        0.6 ;CAC
       35     1540        40 "CONST"       0.55 ;HPMP
        8      330        20 "CONST"       0.66 ;RAC
        0        0         0 "CONST"          0 ;NONE

;Heating Fuel Availability
; New Home  Existing   Market
"CONST"     "CONST"     "CONST"     ;EFURN
"CONST"     "CONST"     "CONST"     ;EROOM
"CONST"     "CONST"     "CONST"     ;HPMP
"GASN"      "GASX"      "CONST"     ;GFURN
"GASN"      "GASX"      "CONST"     ;GROOM
"CONST"     "CONST"     "CONST"     ;OTHER

;Cooling Fuel Availability
; New Home  Existing   Market
"CONST"     "CONST"     "CONST"     ;CAC
"CONST"     "CONST"     "CONST"     ;HPMP
"CONST"     "CONST"     "CONST"     ;RAC
"CONST"     "CONST"     "CONST"     ;NONE

;Distribution System Conversion Costs
;Cost ($/sqft)  CostMult   Convert To
        0 ""          ;FA
        0 ""          ;N

;Heating System Conversion Costs
;Cost ($/sqft)  CostMult   Convert To
        0         0 "CONST"     ;EFURN EROOM
        0         0 "CONST"     ;EFURN HPMP
        0         0 "CONST"     ;EFURN GFURN
        0         0 "CONST"     ;EFURN GROOM
        0         0 "CONST"     ;EFURN OTHER
        0         0 "CONST"     ;EROOM EFURN
        0         0 "CONST"     ;EROOM HPMP
        0         0 "CONST"     ;EROOM GFURN
        0         0 "CONST"     ;EROOM GROOM
        0         0 "CONST"     ;EROOM OTHER
        0         0 "CONST"     ;HPMP EFURN
        0         0 "CONST"     ;HPMP EROOM
        0         0 "CONST"     ;HPMP GFURN
        0         0 "CONST"     ;HPMP GROOM
        0         0 "CONST"     ;HPMP OTHER
        0         0 "CONST"     ;GFURN EFURN
        0         0 "CONST"     ;GFURN EROOM
        0         0 "CONST"     ;GFURN HPMP
        0         0 "CONST"     ;GFURN GROOM
        0         0 "CONST"     ;GFURN OTHER
        0         0 "CONST"     ;GROOM EFURN
        0         0 "CONST"     ;GROOM EROOM
        0         0 "CONST"     ;GROOM HPMP
        0         0 "CONST"     ;GROOM GFURN
        0         0 "CONST"     ;GROOM OTHER
```

```
        0         0 "CONST"     ;OTHER EFURN
        0         0 "CONST"     ;OTHER EROOM
        0         0 "CONST"     ;OTHER HPMP
        0         0 "CONST"     ;OTHER GFURN
        0         0 "CONST"     ;OTHER GROOM

;Cooling System Conversion Costs
;Cost ($/sqft)  CostMult   Convert To
        0         0 "CONST"     ;CAC HPMP
        0         0 "CONST"     ;CAC RAC
        0         0 "CONST"     ;CAC NONE
        0         0 "CONST"     ;HPMP CAC
        0         0 "CONST"     ;HPMP RAC
        0         0 "CONST"     ;HPMP NONE
        0         0 "CONST"     ;RAC CAC
        0         0 "CONST"     ;RAC HPMP
        0         0 "CONST"     ;RAC NONE
        0         0 "CONST"     ;NONE CAC
        0         0 "CONST"     ;NONE HPMP
        0         0 "CONST"     ;NONE RAC

;Shell Attribute Costs
;Electric     Other
        1 "CONST"     "CONST"     ;INDEX U.6
     1.09 "CONST"     "CONST"     ;INDEX U.5
     1.22 "CONST"     "CONST"     ;INDEX U.4
      1.4 "CONST"     "CONST"     ;INDEX U.3
     1.53 "CONST"     "CONST"     ;INDEX U.25
      1.7 "CONST"     "CONST"     ;INDEX U.2
     1.96 "CONST"     "CONST"     ;INDEX U.15
     2.38 "CONST"     "CONST"     ;INDEX U.1
     3.33 "CONST"     "CONST"     ;INDEX U.05

;Shell Cost Multipliers
;Electric     Other
"CONST"     "CONST"     ;U60
"CONST"     "CONST"     ;U50
"CONST"     "CONST"     ;U40
"CONST"     "CONST"     ;U30
"CONST"     "CONST"     ;U25
"CONST"     "CONST"     ;U20
"CONST"     "CONST"     ;U15
"CONST"     "CONST"     ;U10
"CONST"     "CONST"     ;U05

;Thermal Standards -- Legal Availability
;Electric     Other
"MEC92"     "MEC92"     ;U60
"MEC92"     "MEC92"     ;U50
"MEC92"     "MEC92"     ;U40
"CONST"     "CONST"     ;U30
"CONST"     "CONST"     ;U25
"CONST"     "CONST"     ;U20
"CONST"     "CONST"     ;U15
"CONST"     "CONST"     ;U10
"CONST"     "CONST"     ;U05

;
;Discount Rate Variables
;
"discnt1"  ;New Home Equipment
"discnt1"  ;Equipment Replacement

;System Type Equations
;Central
"0.0 - 0.30  * (CCAPCOST + COPCOST * ( N_CDD/CDD ) / DISCOUNT ) /1000"
"    + 0.025 * INCOME"
"    + 0.30  * LOGSUM;"

;Room Air
"0.0 - 0.30  * (CCAPCOST + COPCOST * ( N_CDD/CDD ) / DISCOUNT ) /1000"
"    + 0.013 * INCOME"
"    + 0.30  * LOGSUM;"

;No Air
"0.0;"


;Specific System Equations
;EFURN CAC
"0.0 - 0.57 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + (HTYPE=0)*10000*(YEAR>1989) + HOPCOST"
" * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;EROOM CAC
"0.0 - 0.57 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;GFURN CAC
"0.0 - 0.57 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"
```

```
;GROOM CAC
"0.0 - 0.57 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;OTHER CAC
"0.0 - 0.57 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;HPMP HPMP
"0.0 - 0.57 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;EFURN RAC
"0.0 - 0.44 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + (HTYPE=0)*10000*(YEAR>1989) + HOPCOST"
"* (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;EROOM RAC
"0.0 - 0.44 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;GFURN RAC
"0.0 - 0.44 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;GROOM RAC
"0.0 - 0.44 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;OTHER RAC
"0.0 - 0.44 * (  (CCAPCOST + COPCOST * (N_CDD/CDD) / DISCOUNT )"
"+ (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;EFURN NONE
"0.0 - 0.44 *( (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST + (HTYPE=0)*10000*(YEAR>1989)) / 1000;"

;EROOM NONE
"0.0 - 0.44 *( (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;GFURN NONE
"0.0 - 0.44 *( (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;GROOM NONE
"0.0 - 0.44 *( (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"

;OTHER NONE
"0.0 - 0.44 *( (HCAPCOST + HOPCOST * (N_HDD/HDD) / DISCOUNT )"
"+ DISTCOST ) / 1000;"


;New Home Shell Equations
;U60
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U50
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U40
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U30
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U25
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U20
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U15
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U10
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"

;U05
"0.0 - .20 * (HEATPVOC + COOLPVOC + SHELCOST) / 1000;"


;Secondary Heating Saturation Equations
;STOVE
"CONST;"
```

```
;FIRE
"CONST;"

;ELEC
"CONST;"


;Secondary Cooling Saturation Equations
;SRAC
"CONST;"


;Heating Equipment Efficiency Equations
;EFURN
"1.0;"

;EROOM
"1.0;"

;HPMP
"MAX (HPSTD, 1.0 * ((PRICE/0.0731) ** 0.15)"
"* HPSTD);"

;GFURN
"MAX ((GHSTD * 0.01), 1.0 * ((PRICE/0.5182) ** 0.20)"
"* (GHSTD * 0.01));"

;GROOM
"MAX ((GHSTD * 0.01), 1.0 * ((PRICE/0.5182) ** 0.20)"
"* (GHSTD * 0.01));"

;OTHER
"MAX ((OHSTD * 0.01), 1.0 * ((PRICE/5.1715) ** 0.20)"
"* (OHSTD * 0.01));"


;Cooling Equipment Efficiency Equations
;CAC
"MAX (CASTD, 1.0 * ((PRICE/0.0731) ** 0.15) * CASTD);"

;HPMP
"MAX (CASTD, 1.0 * ((PRICE/0.0731) ** 0.15) * CASTD);"

;RAC
"MAX (RASTD, 1.0 * ((PRICE/0.0731) ** 0.10) * RASTD);"


;System Conversion Rate Equations
"CONST;"

;EFURN CAC : HPMP HPMP
"CONST;"

;OTHER CAC : GFURN CAC
"CONST;"

;OTHER CAC : HPMP HPMP
"CONST;"

;EFURN RAC : EFURN CAC
"CONST;"

;EFURN RAC : HPMP HPMP
"CONST;"

;EROOM RAC : HPMP HPMP
"CONST;"

;GFURN RAC : GFURN CAC
"CONST;"

;GROOM RAC : GFURN CAC
"CONST;"

;OTHER RAC : GFURN CAC
"CONST;"

;OTHER RAC : HPMP HPMP
"CONST;"

;OTHER RAC : GROOM RAC
"CONST;"

;EFURN NONE : EFURN CAC
"CONST;"

;EFURN NONE : HPMP HPMP
"CONST;"

;EROOM NONE : HPMP HPMP
"CONST;"

;EROOM NONE : EROOM RAC
"CONST;"
```

```
;GFURN NONE : GFURN CAC
"CONST;"

;GROOM NONE : GROOM RAC
"CONST;"

;OTHER NONE : OTHER CAC
"CONST;"

;OTHER NONE : HPMP HPMP
"CONST;"

;OTHER NONE : GFURN NONE

;
;Calibration Constants
;
;Homesize Model Constants
         0 ;SF
         0 ;MF
         0 ;MH

;Secondary Heating UEC Constants
;       SF         MF         MH
         0          0          0 ;EFURN STOVE
         0          0          0 ;EFURN FIRE
         0          0          0 ;EFURN ELEC
         0          0          0 ;EROOM STOVE
         0          0          0 ;EROOM FIRE
         0          0          0 ;EROOM ELEC
         0          0          0 ;HPMP STOVE
         0          0          0 ;HPMP FIRE
         0          0          0 ;HPMP ELEC
         0          0          0 ;GFURN STOVE
         0          0          0 ;GFURN FIRE
         0          0          0 ;GFURN ELEC
         0          0          0 ;GROOM STOVE
         0          0          0 ;GROOM FIRE
         0          0          0 ;GROOM ELEC
         0          0          0 ;OTHER STOVE
         0          0          0 ;OTHER FIRE
         0          0          0 ;OTHER ELEC

;Secondary Heating Saturation Model Constants
;       SF         MF         MH
         0          0          0 ;EFURN STOVE
         0          0          0 ;EFURN FIRE
         0          0          0 ;EFURN ELEC
         0          0          0 ;EROOM STOVE
         0          0          0 ;EROOM FIRE
         0          0          0 ;EROOM ELEC
         0          0          0 ;HPMP STOVE
         0          0          0 ;HPMP FIRE
         0          0          0 ;HPMP ELEC
         0          0          0 ;GFURN STOVE
         0          0          0 ;GFURN FIRE
         0          0          0 ;GFURN ELEC
         0          0          0 ;GROOM STOVE
         0          0          0 ;GROOM FIRE
         0          0          0 ;GROOM ELEC
         0          0          0 ;OTHER STOVE
         0          0          0 ;OTHER FIRE
         0          0          0 ;OTHER ELEC

;Secondary Cooling UEC Constants
;       SF         MF         MH
         0          0          0 ;CAC SRAC
         0          0          0 ;HPMP SRAC
         0          0          0 ;RAC SRAC
         0          0          0 ;NONE SRAC

;Secondary Cooling Saturation Model Constants
;       SF         MF         MH
         0          0          0 ;CAC SRAC
         0          0          0 ;HPMP SRAC
         0          0          0 ;RAC SRAC
         0          0          0 ;NONE SRAC

;Heating Size Model Constants
;       SF         MF         MH
         0          0          0 ;EFURN
         0          0          0 ;EROOM
         0          0          0 ;HPMP
         0          0          0 ;GFURN
         0          0          0 ;GROOM
         0          0          0 ;OTHER

;Cooling Size Model Constants
;       SF         MF         MH
         0          0          0 ;CAC
         0          0          0 ;HPMP
         0          0          0 ;RAC
         0          0          0 ;NONE

;Heat UEC Constants
```

```
;       SF          MF          MH
          0           0           0 ;EFURN
          0           0           0 ;EROOM
          0           0           0 ;HPMP
          0           0           0 ;GFURN
          0           0           0 ;GROOM
          0           0           0 ;OTHER

;Cool UEC Constants
;       SF          MF          MH
          0           0           0 ;CAC
          0           0           0 ;HPMP
          0           0           0 ;RAC
          0           0           0 ;NONE

;Vent UEC Constants
;       SF          MF          MH
          0           0           0 ; EFURN CAC
          0           0           0 ; EROOM CAC
          0           0           0 ; GFURN CAC
          0           0           0 ; GROOM CAC
          0           0           0 ; OTHER CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; EFURN RAC
          0           0           0 ; EROOM RAC
          0           0           0 ; GFURN RAC
          0           0           0 ; GROOM RAC
          0           0           0 ; OTHER RAC
          0           0           0 ; EFURN NONE
          0           0           0 ; EROOM NONE
          0           0           0 ; GFURN NONE
          0           0           0 ; GROOM NONE
          0           0           0 ; OTHER NONE

;System Type Constants
;       SF          MF          MH
          0           0           0 ;Central
          0           0           0 ;Room Air
          0           0           0 ;No Air

;System Model Constants
;       SF          MF          MH
          0           0           0 ; EFURN CAC
          0           0           0 ; EROOM CAC
          0           0           0 ; GFURN CAC
          0           0           0 ; GROOM CAC
          0           0           0 ; OTHER CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; EFURN RAC
          0           0           0 ; EROOM RAC
          0           0           0 ; GFURN RAC
          0           0           0 ; GROOM RAC
          0           0           0 ; OTHER RAC
          0           0           0 ; EFURN NONE
          0           0           0 ; EROOM NONE
          0           0           0 ; GFURN NONE
          0           0           0 ; GROOM NONE
          0           0           0 ; OTHER NONE

;System Conversion Model Constants
;       SF          MF          MH
          0           0           0 ; HPMP HPMP
          0           0           0 ; GFURN CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; EFURN CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; HPMP HPMP
          0           0           0 ; GFURN CAC
          0           0           0 ; GFURN CAC
          0           0           0 ; GFURN CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; GROOM RAC
          0           0           0 ; EFURN CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; HPMP HPMP
          0           0           0 ; EROOM RAC
          0           0           0 ; GFURN CAC
          0           0           0 ; GROOM RAC
          0           0           0 ; OTHER CAC
          0           0           0 ; HPMP HPMP
          0           0           0 ; GFURN NONE

;Heating Efficiency Model Constants
          1 ;EFURN
          1 ;EROOM
          1 ;HPMP
          1 ;GFURN
          1 ;GROOM
          1 ;OTHER

;Cooling Efficiency Model Constants
          1 ;CAC
          1 ;HPMP
          1 ;RAC
          1 ;NONE
```

```
;Shell Model Constants
;       SF          MF          MH
          0           0           0 ;U60 Electric
          0           0           0 ;U50 Electric
          0           0           0 ;U40 Electric
          0           0           0 ;U30 Electric
          0           0           0 ;U25 Electric
          0           0           0 ;U20 Electric
          0           0           0 ;U15 Electric
          0           0           0 ;U10 Electric
          0           0           0 ;U05 Electric
          0           0           0 ;U60 Other
          0           0           0 ;U50 Other
          0           0           0 ;U40 Other
          0           0           0 ;U30 Other
          0           0           0 ;U25 Other
          0           0           0 ;U20 Other
          0           0           0 ;U15 Other
          0           0           0 ;U10 Other
          0           0           0 ;U05 Other

;Shell Conversion Model Constants
;       SF          MF          MH
          0           0           0 ;U60
          0           0           0 ;U50
          0           0           0 ;U40
          0           0           0 ;U30
          0           0           0 ;U25
          0           0           0 ;U20
          0           0           0 ;U15
          0           0           0 ;U10
          0           0           0 ;U05

;saveShell NDP Array
"N" ;saveShell Valid Flag
;end of file
```

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Gulf Power Company to determine need for proposed electrical power plant in Bay County	))))	Docket No. 990325-EI

Certificate of Service

I HEREBY CERTIFY that a copy of the foregoing has been furnished this 26th day of May 1999 by U.S. Mail or hand delivery to the following:

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