## State of Florida

(OMMISSIONERS:

#  

March 4, 2008

Russell A. Badders, Esquire<br>Gulf Power Company<br>Beggs \& Lane Law Firm<br>P.O. Box 12950<br>Pensacola, FL 32591-2950

## STAFF'S DATA REQUESTS

## Re: Docket No. 080001-EI - Fuel and purchased power cost recovery clause with generating performance incentive factor.

Dear Mr. Badders:
On January 31, 2008, Florida Power \& Light Company (FPL) filed a petition with the Commission seeking approval of an alternative to hedging. FPL requested that the Commission reach a decision on the petition prior to May 1, 2008. Accordingly, Commission staff is gathering information to assist it in preparing a recommendation for an upcoming Commission agenda. By this letter, the Commission staff requests that Gulf Power Company (GULF) provide responses to the following data requests.

1. Currently, companies typically file hedging plans for the projected year in September of the current year. Companies also typically file the results of their hedging programs for the true-up year in April of the current year.
A. What comments docs GULF have regarding the timing of reports on hedging activities?
B. Should the Commission determine the prudence of utility hedging plans for the projected year?
2. With this next set of questions, staff is seeking to understand the relationship of fuel procurement and hedging activities.
A. Does an electric utility's participation in financial hedging activities for residual oil and natural gas make it a more effective purchaser of residual oil and natural gas? Please explain.
B. Does an electric utility's participation in financial hedging provide it with information that allows it more accurate and timely price discovery and enhanced ability to evaluate specific deals and proposals from suppliers?
[^0]NOTE: Please refer to the attached tables and graphs for the remaining questions. Table 1 shows NYMEX Last-Trading-Day Settlement Prices for the month-ahead and the following 17 months, for June 1996 through January 2008. Staff views the month-ahead price as the "current market price." Table 2 shows the differences between the month-ahead settlement price and comparable month's futures prices for from one to 17 months. Graphs 1.1 through 1.4 show the month-ahead prices and the same month's futures prices for contracts purchased six, nine, twelve, and fifteen months earlier. Graphs 2.1 through 2.4 show the differences between the prices graphed in Graphs 1.1 through 1.4, or the difference from Table 2, for the six-month, nine-month, twelve month, and fifteen-month columns.
3. Do the prices in Table 1 agree with the historical market prices used by GULF? If your response is no, please explain what the historical market prices are that are used by GULF.
4. Does GULF agree that the differences in Table 2 and Graphs 2.1 through 2.4 resemble the hedging gains and losses that would have been realized over the 140-month period, had the Last-Trading-Day Settlement Prices been realized (ignoring transactions costs)? If your response is no, please explain.
5. Does GULF agree that, on the average, the differences in Table 2 and Graphs 2.1 through 2.4 resemble the hedging gains and losses that would have been realized over the 140 -month period, had the Last-Trading-Day Settlement Prices NOT been (exactly) realized? Explain your response.
6. Does GULF agree that during the natural gas "price spikes" in 2000-2001 (all graphs), 2002-2003 (6-and 9-month graphs), and 2005-2006 (all graphs), large gains would have been realized by anyone purchasing futures contracts several months in advance and selling those contracts during the highprice periods? Explain your response.
7. Does GULF agree that following the high-price periods, beginning in 2001 and again in 2003, losses would have been realized by anyone purchasing futures contracts several months in advance and selling those contracts during the lower-than-high-price periods (the periods immediately following the high-price periods)'? Explain your response.
8. Does GULF agree that immediately following the 2000-2001 and 2002-2003 price spikes, losses would have been realized for only about twelve months? Explain your response.
9. Does GULF agree that between the each of the 2000-2001 and 2002-2003 price spikes and the twelve-month periods immediately following each of those periods, gains and losses would have roughly cancelled each other, and price stability would have resulted for anyone purchasing futures contracts several months in advance and selling those contracts during the lower-than-high-price periods, and using the gains and losses to offset "market price volatility"? Explain your response.
10. Does GULF agree that losses are still occurring roughly 24 months after the 2005-2006 price spike? Explain your response.

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11. Cin GULF tell us why, roughly 24 months after the 2005-2006 price spike, futures prices are still one to two dollars above their comparable current market prices?
12. Should another price spike occur in the near future, with regard to natural gas market prices and futures prices, does GULF think that the period following the spike would resemble the period following the 2000-2001 and 2002-2003 spikes, or the period following 2005-2006 price spike? Why?
13. In carrying out hedging activities to achieve reduced price volatility, does GULF regard "volatility" as 1) unknown prices in future periods, or 2) period-to-period price variability?
14. Generally, the longer the refund/recovery period for refunding over recoveries or recovering under recoveries, the smoother will be the period-to-period recovery factors. Agree? Explain your response.
15. Is this truer for under recoveries than it is for over recoveries?
16. If an under recovery is extraordinarily small (negative sign, large number of dollars) or an over recovery is extraordinarily large (positive sign, large number of dollars), what benefit is there to ratepayers deferring part of the amount beyond the next immediate recovery period?
17. As future months draw nearer, if you realize that your natural gas (heavy oil) needs are going to be lower than anticipated when swaps were initiated, do you reverse your short positions to maintain your percentage of hedged MMBtu's (barrels)?

Table 3 shows the estimated End-of-Period Total Net True-ups [Column (c)], estimated Total Fuel Revenue [Column(d)], and estimated Fuel Revenue Applicable to Period [Column (f)] for the last five years' reprojected estimates. The table also shows over-recovery percentages based on total revenue [Column (e)] and over-recovery percentages based on applicable revenue [Column (g)]. The percents are also based on reprojected estimates.
18. Do you agree that the amounts in Table 3 are correct for GULF? If not, please provide corrected dollar amounts.
19. Do you agree that the percents in Column (g) are calculated according to the mid-course percent method adopted in 2007 (Order No. PSC-07-0333-PAA-EI)? If not, please provide corrected percents.
20. Although none of the four large IOU's have petitioned for mid-course corrections since early 2003, do you agree that during the previous five years, your mid-course percents have been greater than 10 percent, at least at the times that some of the estimated revenues and expenses were "reprojected." If you disagree, please explain.
21. Please indicate the years from 2003 through 2007 in which hedging gains or losses prevented the percents in columns (e) and (g) from being less than $-10 \%$ or greater than $+10 \%$ at the time that the estimates were reprojected.

## Russell Madders, Esquire

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22. Please indicate the years from 2003 through 2007 in which hedging gains or losses caused the percents in columns (e) and (g) to be greater than $-10 \%$ or greater than $+10 \%$ at the time that the estimates were reprojected.

Please file the original and five copies of the requested information by Friday, March 14, 2008, with Ms. Ann Cole, Commission Clerk, Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida, 32399-0850. Please feel free to call me at (850) 413-6230 if you have any questions.

Sincerely,


LCB:th

cc: Office of Commission<br>Division of Economic Regulation (McNulty, Lester)<br>Docket 080001-EI - Parties

Table 2 －Proceeds Per MMBtu for Contracts Held for One to Seventeen Months Example：For October 28． 1990 ，the contract purchased 3 months eariver．$\$ 2.652-2.250=\$ 0.402$

| Year | Month | Month | aths | donths | Months | Month | Onths | conths | nous |  | ontis | conts | － | tont | fonts | Honth |  | anths |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1996 | 08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 07 | －6． 345 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 08 | －4．396 | －6， 81 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 09 | C． 109 | －0．381 | － 1.855 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 10 | 6.597 | 0.56 | 040 | － 5.45 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 11 | 1.6 | 1.639 | 1504 | 1．53 | 1.151 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 12 | C． 368 | 1 515 | 1．880 | 1，950 | 1.687 | 1.447 |  |  |  |  |  |  |  |  |  |  |  |
| 1997 | 01 | 811 | $0 \cdot 0$ | 0.486 | 0．331 | $0.7 \%$ | 0.738 | 0.381 |  |  |  |  |  |  |  |  |  |  |
| 1997 | 02 | 4．85 | 1．AEC］ | －新5： | － 3.548 | －6．30 | －0．332 | － 0.35 | － 5.45 |  |  |  |  |  |  |  |  |  |
| 1997 | 03 | U163 | 4．5at | －11．73 | －${ }^{\text {da }}$ | －1．33 | －0．2：6 | －${ }^{\text {a }}$ 26 | － 8.8 | －0．428 |  |  |  |  |  |  |  |  |
| 1997 | 04 | D． 219 | 0.15 |  | －3． 364 | －6．0．7 | 0.004 | （1）（6） | 0.033 | 0.050 | －1． 103 |  |  |  |  |  |  |  |
| 1997 | 05 | 8.269 | 0.6 ate | 1.56 | 0.22 | 5 Co | 0.239 | 0.311 | 0.413 | 0.318 | a，${ }^{*}$ | 0.236 |  |  |  |  |  |  |
| 1997 | 06 | 817 | 0.045 | a．30 | 0.200 | 0.020 | －1．125 | 8.345 | 0.110 | 0.225 | －10．64 | 0.115 | 0.045 |  |  |  |  |  |
| 1997 | 07 | 0.68 | C． 1515 | 0.053 | 0．32 | 0.192 | D． 2120 | 6， 6 | 0.61 | 0.125 | 0.241 | 0.131 | 0.131 | 9． 056 |  |  |  |  |
| 1997 | 08 | 0.408 | 6． 305 | 0.229 | 0.405 | 0.565 | 0.525 | 0.34 | 0.260 | 0.415 | 6． 400 | 5.595 | $0.45 \%$ | 0.450 | 0.488 |  |  |  |
| 1997 | 09 | l． 13.3 | 0.230 | $0.24 \%$ | 0.060 | 0.21 k | $0.35 \%$ | 3． 334 | 0.209 | 0.058 | 0.208 | 0.312 | 0.421 | 0.306 | 0.336 | 2.311 |  |  |
| 1997 | 10 | C0\％ | 0.541 | 1014 | 1.001 | 0.56 | 1.032 | 1． 3 3 | 1.122 | 1.026 | 0.92 s | 1.106 | 1.169 | 1.283 | 1．161 | 1.161 | 1.156 |  |
| 1997 | 11 | －8．39\％ | －4．727 | －8．155 | 6.181 | 0.177 | 10．032 | 0． 23 | 1． 327 | 0.310 | 0.222 | 0.132 | 0.327 | 0.378 | 0.894 | 9.388 | 0.377 | 6． 2.7 |
| 1997 | 12 | 4.512 | $\cdot 1.217$ | －Ant | － 0.570 | －0．258 | －0．27a | －1．360 | －6．208 | －0．120 | － 5.332 | －0．217 | －0．305 | －0．0\％ | － 5.000 | 1．305 | －0．025 | －6，0235 |
| 1998 | 01 | C． 6184 | －（1）50 | －2， 36 | －8．869 | －6．544 | －0．394 | －0．32 | －1．424 | －0．3\％ | －奈文 | － 0.212 | －0．306 | －6．3\％ | － 12.15 |  |  |  |
| 1998 | 02 | 6． 243 | 0.31 | Q 30 ？ | 0．3nt | －1．234 | －6． 074 | 0.141 | 0.103 | 0.111 | 0.051 | 0． 189 | 0.152 | 0.059 | －0．034 |  |  |  |
| 1998 | 03 | 0.018 | 0277 | 8300 | 8.865 | －0．6se | －1．000 | 0.340 | 0.185 | 0.180 | 0.175 | 0.190 | 0.318 | 0.303 | 0.166 |  |  |  |
| 1998 | 04 | 0．0．0n | 0． 671 | －1． 139 | 0.232 | 0.074 | 0.022 | －0．016 | 0.172 | 0.182 | 3． 187 | 0.152 | 0.202 | 0.365 | 0． 300 |  |  |  |
| 1998 | 05 | 4794 | 0.38 | － 6.36 | －0．131 | 8.803 | －0．156 | 0.203 | ， 2.253 | －1．061 | 0.051 | －0．038 | －0．028 | －0．005 | 0.560 |  |  |  |
| 1998 | 06 | 0.312 | 0.415 | －bim ${ }^{\text {a }}$ | 0.008 | 6.118 | 0.318 | 6.376 | 0.138 | 0.1833 | 0.278 | 0.293 | 0.313 | 0.324 | 0.340 |  |  |  |
| 1998 | 07 | 0.461 | 0.158 | 0.431 | 6．4\％ | 0.418 | －0．248 | －6．103 | －6．253 | C． 283 | ． 0.388 | 0.141 | ． 0.123 | －0． 104 | －0．106 |  |  |  |
| 1998 | 08 | 6.261 | －0．761 | －8．874 | －6．70 | －0．348 | －0．691 | －4．56\％ | －2．373 | ． 0.532 | －6． 5.58 | －0．598 | －0．413 | －0．393 | ． 4.371 |  |  |  |
| 1998 | 09 | 0.315 | 0.649 |  | －2．164 | －6．399 | －0． 205 | －0．354 | －0．202 | －6．079 | －1．21 | 0.229 | －0．259 | －0．074 | －3．349 |  |  |  |
| 1998 | 10 |  | －601 | ．0．23 | －0．64 | －6．413 | －0．578 | －6．9\％ | －6．5\％ | －0．3\％ | －0．163 | －0．408 | －0．42\％ | －0．450 | －0．261 | －bicis |  |  |
| 1998 | 11 | 0.175 | － 6.35 | －6．13 | －0．364 | －6， $\mathrm{Ca}_{6}$ | －0．463 | － 0.5 | －5．533 | －1．481 | 9， 34 | －0．131 | －0．383 | －0．396 | － $0.41 \hat{6}$ | －0．214 | －0．145 |  |
| 1998 | 12 | 0.516 | 0.712 | －680 | －6．60 | －0．63 | －1．e50 | －0．823 | －0．934 | ．0．93 | ， 4.388 | －6．755 |  | －0．797 | － 0.81 | －0．310 | －0．615 | －0．565 |
| 1999 | 01 | 0.008 | 0.425 | ， 695 | 9．680 | 0.532 | －0．693 | －0．880 | －6．680 | 0.749 | 0.347 | 0． 835 | －0．585 | 0.293 | －0．646 | － 0.645 | －0．655 | － 0.482 |
| 1999 | 02 | － 0.160 | 0.153 | 065 | －4．639 | 0.69 | －0．604 | － 0.742 | － 8.85 | －0．719 | 0.743 | （1）．36 | 0.759 | －0．619 |  | 0.65 | ． 0.655 | －0．679 |
| 1999 | 03 | 0.155 | C． 601 | 0.355 | ． 0.301 | 0.38 | －0．340 | －3．353 | －0．466 | －0．533 | ． 0.488 | －6．433 | －0．438 | ． 0.450 | ． 13.328 |  | －0．343 | －0．366 |
| 1999 | 04 | 0.465 | 0.621 | 0.477 | 0.521 | 0.20 | 0.173 | $0.20 \%$ | 0.163 | 0.069 | 0.013 | 0.103 | 0.106 | 0.068 | 0.680 | 0.187 |  | 0.193 |
| 1999 | 05 | 0.115 | 0．3n | 3.459 | 0.330 | 0.355 | 0．077 | 0.051 | 0.085 | 0.041 | －3．059 | －0．114 | －0．019 | ． 0.016 | ． 0.024 | － 0.034 | 0.68 |  |
| 1999 | 06 | 4.85 | －1． 180 | Q．32？ | $0.45 \%$ | 0.387 | 0.372 | 0.10 | 0.087 | 0.122 | 0.777 | ＋1．02\％ | －0．081 | 0.012 | 0.015 | 0．704 | －2，00\％ | 0.6 |
| 1999 | 07 | ＂\％\％ | 0.366 | 3.259 | 0.53 ！ | 0.755 | 12．650 | 0.601 | 0.443 | 6． 428 | 0.463 | 0.416 | 0.318 | 1． 2.25 | 0.334 | 0.345 | $0.34 \%$ | 0.326 |
| 1999 | 08 | 0.306 | 0.563 | 0.657 | 0.537 | 0.917 | 1.025 | 0.936 | 0．920 | 0.753 | 0.737 | 0.772 | 0.724 | 0.615 | 0.564 | 0.631 | 0.652 | 0.657 |
| 1999 | 09 | 0.362 | 0063 | 0.156 | 0.265 | 0.152 | 0.525 | 0.628 | 0.529 | 0.550 | 0． 355 | 0.345 | 0.372 | 0.347 | 0.235 | 0.155 | 0.25 | 0.275 |
| 1999 | 10 | C．33） | 0.055 | 0.354 | 0.571 | 0.517 | 0.567 | $0.87 \%$ | 0.973 | 0.911 | 0.947 | 0.752 | 0.739 | 0.763 | 0.736 | 2．625 | 0.57 | 0.568 |
| 1999 | 11 | 1.100 | 048 | －1．804 | －7．748 | －0．548 | －0．515 | 0.563 | ．0．278 | －0．170 | 0.311 | 4.190 | －0．358 | －0．370 | 0．332 | －0．36\％ | 0.475 | － 0.496 |
| 1990 | 12 | 0.014 | U． 365 | － 8.84 | ． 1.806 | 0.554 | －1639 | $-4.336$ | －6． 879 | －0．128 | －2．0．6 | ． 0.637 | －0．036 | －0．198 | －0．994 | －6．351 | －0．17s | －0．236 |

## Table 1 －Natural Gas Futures Prices

Last－Trading－Day Settlement Prices in S／MMBtu＇s－Natural Gas
Sources：Gas Markets Weekly－June 1996 to January 2000；Gas Daily～February 2000 to Present

| Year | Month | Issue | Date | M1 | M2 | M3 | M4 | M5 | M6 | M | MB | M9 | M10 | M11 | M12 | M 13 | M14 | 0.115 | M16 | M17 | M18 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1996 | 06 | 07／01／96 | 06／24，96 | 2 绍 | 2．ter | 2.65 | 2698 | 2.710 | 2.750 | 8.745 | 2.625 | 2425 | 2.235 | 2145 | 2.110 | 2.100 | 2.065 | 3835 | \％ 335 | 2.108 | 220 |
| 1996 | 07 | 08105／96 | 07／28／96 | ？ 3 | 2285 | 2209 | 2.250 | 2.315 | 2.325 | 2.250 | 2.170 | 2.090 | 2.010 | 2．020 | 2.030 | 2.40 | 2.025 | 2．0．00 | 2.105 | 2.200 | 2 館 |
| 1996 | 08 | 09103／96 | 08／27／96 | 38 | 19 | 2084 | 20 | ＜ 220 | $2.28 \%$ | 2． 12 ？ | 2060 | 2 ${ }^{\text {c }}$ |  | 2.28 | 2．000 | 2． 1 as\％ | 2．138 | 2， 105 | 2.98 | 2.15 |  |
| 1996 | 09 | 09／30／96 | 09／25／96 | ： 82 | $2 \mathrm{as5}$ | 2． 2 ¢ 2 \％ | 235 | 2355 | 2.145 | 2.083 | 1.973 | 1.923 | 1.920 | 1.920 | 1.920 | 1925 | 1.983 | 2.083 | 2.085 |  |  |
| 1996 | 10 | 11／04／96 | 10／2890 | 268 | 2784 | 267 | 2500 | 2． 320 | 2.155 | 2.00 |  | ？感5 | 2.035 | 2．035 | 2.005 | 2.097 | 2.199 | 2.200 |  |  |  |
| 1996 | 11 | 12／02／96 | 11／22／96 | 3.01 | 3384 | 2887 | 2 SF | 2327 | 2.137 | 2.107 | 2.100 | c．100 | 2.100 | 2.100 | 2．150 | 2.250 | 2265 | 2.190 | $\cdots$ |  |  |
| 1998 | 12 | 12／30／88 | 12／26／96 | 4190 | 369 | 8180 | 2.580 | 3 3 5 | 2.280 | 2.270 | 2.350 | 2.255 | 2.258 | 2.345 | \％．445 | 2.475 | 2.400 | 2.30 |  |  |  |
| 1997 | 01 | 02／03／97 | 01／27／97 | 2．${ }^{\text {\％}}$ | 2.45 | 2307 | 2.159 | 2.128 | 2.125 | 2.25 | 2． 131 | 2． 37 | 2.240 | 2.35 | 2.387 | 2.367 | 2227 | 2.124 | ．． |  |  |
| 1997 | 02 | 03／03／97 | 02／2497 | 3.780 | 18 BL | 1.860 | 1.150 | 1．945 | 1.368 | 2.990 | 2.012 | 2． 344 | 2． 66 | 2302 | 2.218 | 2.124 | 194 | 1.652 |  |  |  |
| 1997 | 03 | 03131／97 | 03／24197 | \％ 80 ？ | 1 䋨 | 1900 | 1.926 | 1．940 | 1.950 | 1．990 | 2．13 | 2250 | 2.80 | 2．$\frac{1212}{}$ | 2.097 | 1988 | 1957 | 1．95\％ |  |  |  |
| 1997 | 04 | 04／28／97 | 04／24／97 | 3．碞 | 2 z | 2100 | 2103 | 2110 | 2.130 | 2236 | 2．338 | 2.776 | 2.327 | 2.235 | 2.110 | 2.060 | 2.022 | 2.18 |  | － |  |
| 1997 | 05 | 08102／97 | 05／28／97 | \％．36 | 2316 | 2．312 | 2 as | 2200 | 2390 | 2.495 | 2．530 | 2485 | 2.275 | 2． 123 | 2.070 | 2.045 | 2.034 | 2． 148 |  |  |  |
| 1997 | 06 | 05／30／97 | 06／26／97 | S． 48 | 2193 | 2108 | 2.135 | ？ 265 | 2.400 | 2.440 | 2.383 | 2.23 | 2.100 | 2.075 | 2．ss | 2.045 | 2.845 | 2.443 |  |  |  |
| 1997 | 07 | $08104 / 97$ | 07／29／97 | $\therefore$ 人 51 | 2.173 | 2116 | 2．20 | 2.39 | 2.420 | 2.350 | 2.245 | 2．15 | 2.830 | 2， 06 | 20.05 | 2065 | 2．06\％ | 2080 | 2．185 | 2.25 | 2．330 |
| 1997 | 08 | 09／01／97 | 08／27／97 | 2． 525 | 2． 488 | 2.68 | 273 | 274 | 2.545 | 3.300 | 2160 | 2.350 | 2．778 | 2.000 | 2.083 | 2.885 | 2.105 | 2.23 | 2.363 | 2384 | 2 Ca |
| 1997 | 09 | 10／06／97 | 09／20197 | 2346 | 324 | 3304 | 3．270 | 2.876 | 2570 | 2.300 | 2.280 | 2.270 | 2.73 | 2.270 | 2.270 | 2.290 | 2.42 | 2．505 | 2.575 | 2.865 | 2345 |
| 1997 | 10 | 11／03／97 | 10／29／87 | 3 3 50 | 34.35 | 3387 | 2．97？ | 2.512 | 2.330 | 2.240 | 2.220 | 2.320 | 2.225 | 2．3管 | 2.260 | 2399 | 2.565 | 2.565 | 2.459 | 2.31 | 220 |
| 1997 | 11 | 12101／97 | 11／2497 | \％．5\％ | 2． 68 | 2550 | 2.383 | 2．2\％ | 2.188 | 2.183 | 2．188 | 2.195 | 2.204 | 2.842 | 2．380 | $2.5 \times 2$ | 2.562 | 2.456 | \％． 318 | 2.19 | 8.258 |
| 1997 | 12 | 01／05／98 | 12／30／97 | 2.517 | 2． 085 | 2055 | 2.040 | 2.030 | 2.040 | 2.340 | 2.050 | 2.345 | 2.10 | 2.140 | 2.280 |  | 2.103 |  |  |  |  |
| 1998 | 01 | 01／29／98 | 01／28／98 | ？ 20.1 | 2043 | 2.083 | 2.123 | 2． 148 | 2.100 | 2190 | 2.138 | 2.223 | 2.355 | 2.496 | 2.520 | 2.395 | 2.285 | 2.180 | 2.361 | 2163 | $21 / 3$ |
| 1998 | 02 | 02／26／98 | 02／25／98 | 2，${ }^{\text {\％}}$ | 23 a | 2338 | 2，34 | \％ 350 | 2.360 | 2． 56 | 2.385 | － 508 | 2.600 | 2．647 | 2585 | 2.425 | 2308 | 2.268 | 2.260 | 2269 | 2.85 |
| 1998 | 03 | 03／30／98 | 03／27／98 | 2301 | 23 E 2 | 2.38 | 240 c | 2420 | 2.420 | 2440 | 2567 | 4．682 | 2.697 | 2 cs ${ }^{\text {c }}$ | 2.422 | 2.290 | 2.260 | 2250 | 2.253 | 8.25 | 2355 |
| 1988 | 04 | 04／29／98 | 04／2498 |  | 2 n 1 | 2 34.3 | 2.373 | 2372 | 2.40 | 2550 | 2.684 | 2689 | $2.56 \hat{7}$ | 2.424 | 2285 | 2.282 | 2.848 | 2.247 | 2256 | 2860 | ？ 298 |
| 1998 | 05 | 05／28198 | 05／27／98 | 2．0．7 | 2046 | 2.100 | 2146 | 2215 | 2.385 | $255 \%$ | 2.595 | 2490 | 2335 | 2．280 | 2.285 | 2.245 | 2.259 | 2.287 | 2.881 | 2300 | ${ }^{2} 434$ |
| 1998 | 06 | 06／29／98 | 06／26／98 | 2356 | 2.423 | 243. | 245 | 2618 | 2.783 | 2.825 | 2.570 | 2.525 | 2335 | 2.335 | 2.340 | 2.343 | 2346 | 2.358 | 2.395 | 2.515 | 256 |
| 1998 | 07 | 07／30／98 | 07／29：98 | 1． 54 | 1.823 | 1.982 | 2335 | 2.513 | 2.503 | 2.568 | 2.488 | 2.304 | 2.279 | 2． 285 | 2.284 | 2.282 | 2297 | 2.325 | 2.467 | 2 S | 208 |
| 1998 | 08 | 08／28／98 | 08／27／88 | 1.80 | 1.176 | 1973 | 2253 | 2．385 | 2.342 | 2．27 | 2.205 | 2.305 | 2.185 | 2． 188 | 2.185 | 2.188 | 2.213 | 2.356 | 8.407 | 2．523 | $2 \times 2$ |
| 1998 | 09 | 09：29／98 | 09／2898 | 2． 3 3 | 230 | 2514 | 2585 | 2.475 | 2.335 | 2.182 | 2.142 | 2． 340 | 2.140 | 2．132 | 2.140 | 2.168 | 2329 | 2.458 | 2.495 | 2．30\％ | 2． |
| 1998 | 10 | 10129／98 | 10／28／98 | 1.972 | 2．${ }^{3}$ | － $4 \%$ | 2.405 | 2305 | 2205 | 2． 175 | 2.175 | 2.175 | 2.1 的 | 2.175 | 22.5 | 2.35 | 2． 490 | 2．53e | ＋429 | 20\％ | 2.28 |
| 1998 | 11 | 11／25／98 | 11／24／98 | 2． 349 | 2 Pm | 2236 | 219 | 2.153 | 2.145 | 2149 | 2.153 | 2.358 | 2.150 | 2.20 | 2.346 | 2478 | 25：36 | 2.483 | 2．309 | 2318 | 283 |
| 1998 | 12 | 12／30／98 | 12／29／98 | ： 705 | 131 | 1789 | 179 ？ | 1．827 | 1.560 | 1.890 | 1.920 | 1.950 | 2．000 | 2.145 | 2.320 | 2.380 | 2.399 | 2.200 | 2.10 | 3 Sas | 208 |
| 1999 | 01 | 01／28／99 | 01／27／99 | 1．820 | 1.828 | 1.851 | 187 | 1896 | 1.825 | 1．981 | 1.976 | 2831 | 2.183 | 2.331 | 2． 3 㐌 | 2.301 | 2.216 | 2.148 | 2．：25 | 2．144 | 2.15 |
| 1999 | 02 | 02：25／99 | 0212499 | 1806 | 1697 | 1727 | 136 | 1.806 | 3.846 | 1 86 | 1．923 | 2.119 | 2．280 | 2． 3 給 | 2200 | 2.219 | 2.137 | 2122 | 212 | 2.33 | $23^{38}$ |
| 1999 | 03 | 03／30／99 | 03／29／99 | 1958 | 1885 | 1.515 | 195 | 1.970 | 1.985 | 2835 | 2.216 | 3.358 | 2.470 | 2.390 | 2.83 | 2165 | 2137 | 2.147 | 2157 | \％167 | 277 |
| 1999 | 04 | 04／29199 | 04128：99 | 2340 | 2．342 | 2.358 | 2.372 | 2.375 | 2398 | 2.525 | 8.673 | 2.723 | 2.635 | 2.476 | 2.333 | 2.295 | 2.305 | 2.310 | 2.320 | 2．385 | $8{ }^{2} 4$ |
| 1999 | 05 | 05／27／99 | 05／2699 | $2.2 \%$ | 2 Ca | \％ 235 | 2.25 | 2.295 | 2475 | 2.635 | 2.680 | 2.585 | 2． 485 | 2.350 | 2310 | 2.315 | 2 O 18 | 2327 | 2.335 | 2． 365 | 2 96 |
| 1995 | 06 | 08／29／99 | 06／28／99 | 2.3 | 2．324 | 2349 | 2．3\％ | 2． 581 | 2.668 | 2.123 | 2.615 | 2.470 | 2.335 | 2． 290 | 2285 | 2.290 | 2300 | 2.313 | 2.342 | 2492 | 268 |
| 1999 | 07 | 07／29／99 | 07／28899 | 2.601 | \％ 30 | ＜ 623 | 2.373 | 2． 668 | 2.898 | 2．700 | 2.565 | 2.435 | a． 370 | 2．300 | 2.30 | 2.36 | 2348 | 2.400 | 2． 551 | 2689 | 2.308 |
| 1999 | 08 | 08／30／99 | 08／27／99 | 2.912 | 2 8 \％ 2 | 3027 | 318. | 3154 | 2.957 | 2．76E | 2．580 | 2.485 | 2.468 | 2．465 | 2.470 | 2.480 | 2.570 | 2．fel | 2.804 | 2.845 | 2.20 |
| 1999 | 08 | 09／29／99 | 09／28／99 | 250 | 2.855 | 3.05 | 3091 | 2886 | 2.720 | 2．585 | 2.540 | 2550 | 2.560 | 2.570 | 2.500 | 2.620 | 2.762 | 2.877 | 2.905 | 233i | 2054 |
| 1999 | 10 | 10／28／59 | 10／27／99 | 3698 | 3223 | 3230 | 3.050 | 2．850 | 2.655 | 2.575 | 2.577 | 2585 | 2.597 | 2． 607 | 2.63 | 2.769 | 289 | 2.930 | 2.788 | 2.649 | 2.593 |
| 1999 | 11 | 11／29／98 | 11／24／99 | き：7 | 233 | 2.335 | 2.302 | 2．205 | 2368 | 2.350 | 2．355 | 2.375 | 2.403 | 2.433 | 2.554 | 2.690 | 2.723 | 2.506 | 2.491 | 2.391 | 236 |
| 1999 | 12 | 12／29／98 | 12／28／99 | 2．344 | 235 | 2.354 | 2.360 | 2． 342 | 2.355 | 2.375 | 2.395 | 2.483 | 2.438 | 2.587 | 2.584 | 2.715 | 2.501 | 2.490 | 2.387 | 2366 | 2.374 |

Tsbic 3
Ger Recovenes and Over Retovery Percentages Fiondas Four Generating lov's
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