

**BEFORE THE FLORIDA
PUBLIC SERVICE COMMISSION**

**DOCKET NO. 080677-EI
FLORIDA POWER & LIGHT COMPANY**

**IN RE: PETITION FOR RATE INCREASE BY
FLORIDA POWER & LIGHT COMPANY**

REBUTTAL TESTIMONY OF:

PHILIP Q. HANSER

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FPSC-COMMISSION CLERK

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5 **AUGUST 6, 2009**

6

7 **Q. Please state your name and business address.**

8 A. My name is Philip Q Hanser. My business address is *The Brattle Group*, 44
9 Brattle Street, Cambridge, MA 02138.

10 **Q. Did you previously submit direct testimony in this proceeding?**

11 A. Yes.

12 **Q. Are you sponsoring any rebuttal exhibits in this case?**

13 A. No.

14 **Q. What is the purpose of your rebuttal testimony?**

15 A. The purpose of my rebuttal testimony is to comment on the direct testimony of
16 Office of Public Counsel witness Brown, relating to the FPL forecasts that I
17 support in my direct testimony. Specifically, I will explain why the in-sample
18 mean absolute percentage error (MAPE) value I discussed in my direct testimony
19 does not preclude necessary and appropriate adjustments to the net energy for
20 load (NEL) econometric model. I would also like to address a comment of Ms.
21 Brown with regard to a characterization of my testimony.

1 **Q. Please summarize your rebuttal testimony.**

2 A. The purpose of my testimony is to address Ms. Brown's misinterpretation of the
3 in-sample MAPE statistic presented in my direct testimony, as well as her
4 mischaracterization of the mean percentage error (MPE) statistic, and her ultimate
5 interpretation and use of these. As I previously stated in my direct testimony, it is
6 imperative to adjust FPL's NEL econometric model for the over-forecasting
7 tendency that became clearly evident in early 2008. It would be incorrect to
8 ignore the over-forecasting tendency in the model on the grounds that the
9 unadjusted model has a low in-sample MAPE statistic, as argued by Ms. Brown.
10 Further, Ms. Brown incorrectly interprets the MAPE and MPE statistics. These
11 statistics each measure different qualities of the forecasting model and, as a result,
12 cannot be directly compared to each other as Ms. Brown has done. This
13 inapposite comparison of the statistics then leads Ms. Brown to reach the
14 incorrect conclusion that FPL's *ex post* adjustments were unnecessary.

15 **Q. What are the MAPE and MPE statistics used for and how do they differ**
16 **from each other?**

17 A. As I previously discussed in my direct testimony, the MAPE statistic is a standard
18 *measure of accuracy* in statistical regressions whose data are observations over
19 time. The MAPE statistic is defined as the average absolute percentage error of
20 the model's predictions. The MAPE statistic is, by virtue of its definition,
21 necessarily zero or higher, i.e., non-negative. On the other hand, the MPE
22 statistic is calculated by taking the average of all individual percentage errors for
23 a given estimation period and provides a *measure of the bias* in a regression

1 model. The MPE statistic has no restrictions on its sign, i.e., it can be negative,
2 zero, or positive. Indeed, since there are potentially negative and positive error
3 percentages, there may be cancellation of terms of opposite sign in the calculation
4 of the MPE. Therefore, in absolute terms, the MPE must, by virtue of its
5 definition, be lower than or equal to the MAPE statistic's value when calculated
6 for the same period. More importantly, and this is clear from their definitions, the
7 MAPE and MPE are statistics used for different purposes.

8 **Q. Do you agree with Ms. Brown's assumption that the in-sample MAPE**
9 **statistic indicates that FPL's adjustments to the NEL econometric model**
10 **were unnecessary?**

11 A. No. Ms. Brown suggests in her direct testimony that the in-sample MAPE
12 statistic indicates that FPL's adjustments to the NEL econometric model were
13 unnecessary. There are major flaws in Ms. Brown's argument. First, Ms. Brown
14 confusingly and inappropriately compares the MAPE and MPE statistics. Ms.
15 Brown refers to the MPE statistic as the "error rate" and argues that the error rate
16 adjusted for incremental efficiency and wholesale loads results in a smaller value
17 for the January 2008 through October 2008 period *compared* to the MAPE value
18 calculated for the same period. As noted above, these two statistics measure
19 different qualities of a regression model and Ms. Brown is incorrect to compare
20 them. Second, a relatively low in-sample MAPE statistic does not preclude the
21 use of necessary and appropriate *ex post* adjustments to the model. In fact, it
22 would be plain wrong to ignore some of the factors driving changes in NEL just
23 because a relative improvement in what Ms. Brown describes as the "error rate"

1 results when the model is adjusted for some but not all of the information
2 available. It is a fundamental principle of statistics that all relevant data should be
3 brought to bear in analyzing or, in this case, forecasting a particular variable.

4 **Q. Ms. Brown at page 32 of her testimony claims that you “observed a shift**
5 **from over-forecasting to under-forecasting in 2008”. Does that correctly**
6 **characterize your testimony?**

7 A. No, that does not. What I stated in my testimony at page 14 was that “Starting in
8 March 2008, the NEL per customer predictions from FPL’s monthly NEL
9 forecasting model are above the actual values of NEL per customer.” I never
10 characterized FPL’s NEL model as under-forecasting prior to March, 2008.

11 **Q. Does this conclude your rebuttal testimony?**

12 A. Yes.