Park, Jun K.

From: Park, Jun K.
Sent: Wednesday, July 25, 2012 5:08 PM
To: McGee, Robert L., Jr. (GULF); Alexander, Rhonda J.; Armstrong, Mary Catherine
Subject: RE: Vacancy Rate Analysis

Just wanted update you on the p-value for vacancy rate in the new residential model. This email shows the p-value = 3.19% for the B2013 model. Actually, the final B2013 S2 residential model shows vacancy rates having a p-value of 20.98%. The p-values for Baseline and S5 are very similar. I think this further supports our conclusion to drop this variable.

Jun

From: Alexander, Rhonda J.
Sent: Tuesday, July 17, 2012 10:56 PM
To: McGee, Robert L., Jr. (GULF); Park, Jun K.; Armstrong, Mary Catherine
Subject: Vacancy Rate Analysis

Here is my write-up of the reasons for removing vacancy rate from the residential model. Please review and feel free to edit.

Thanks,
Rhonda

The Gulf Power residential use per customer regression model has incorporated the vacancy rate variable since the B2010 forecast. This variable attempts to capture the impact on Gulf Power's average use per customer due to the residential construction boom and subsequent collapse. The most recent regression model, however, appears to no longer support the inclusion of this variable.

Reasons for removing residential vacancy rate from residential regression model:

1. Ex post analysis was performed on 2 regression models: 1 with vacancy rate included as an independent variable and 1 with no vacancy rate variable. Results for ex post period of July 2011 through June 2012 for each model compared to actual showed that the average error and mean absolute error for the regression model with no vacancy rate variable was lower than the model including vacancy rate as an independent variable.

2. Prior to 2012, vacancy rate and real disposable income per household had a high positive correlation, but they had opposite impacts on use per customer. In other words, as income and vacancy rate increased, income increased use per customer and the rising vacancy rate decreased use per customer. However, these variables are negatively correlated in the forecast period. As we recover from the recession, income is projected to go up and vacancy rate is projected to decline. Therefore, projected growth in income and decline in vacancy rate will both drive use per customer up.

3. The P-value for the vacancy rate independent variable has become weaker over time since it was first included in the residential regression model. The table below shows the p-value for the vacancy rate variable since B2011:

	p-value
B2011	0.09%

B2012	1.70%
B2012A	1.98%
MYU	4.17%
B2013	3.19%

The general rule of thumb for the inclusion of an independent variable is that the p-value should be less than 5%.

4. Vacancy rate is the strongest driver in the residential use per customer model. Although its elasticity is less than that of income, because the projected decline in vacancy rate is so significant, it has the largest impact on use per customer.

5. The vacancy rate independent variable is also a less reliable variable:
    a. The calculation of vacancy rate is a function of 2 other economic variables combined (1-households/housing stock).
    b. Vacancy rate has additional lag in the historical data available
    c. Vacancy rate is not an "off-the-shelf" variable available from Moody's, which delays our ability to run frequent econ updates through our regression models

Rhonda J. Alexander
Forecasting Supervisor
Gulf Power Company
Work 850-444-6743
Cell 850-777-1100

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