IRP Load Analysis and Forecasting Examples

Some specific examples related to the lack of flexibility and the inclusion of additional side analyses in Staff's current draft IRP load analysis and forecasting rule are provided below. The examples and comments are based on our interpretation of the draft rule. Please note that we are providing a few examples and the list of examples is not an all inclusive list.

Some Lack of Flexibility Examples (not an exhaustive list):

4 CSR 240-22.030 (5)

(5) Selecting Load Forecasting Models. The utility shall select load forecast models and develop the historical data base needed to support those models. The selected load forecast models will include a method of end-use load analysis for at least the residential and small commercial class, unless the utility demonstrates that end-use load methods are not practicable and provides documentation that other methods are superior.

Comment: The forecast must support end-use load analysis for some classes. This implies that you must forecast at the end-use level for those classes. This seems to be just the appearance of choice. In addition, in order to not meet this requirement, the utility would have to demonstrate that another method is superior. This is not true flexibility. The burden of proof is on the utility and it could be very subjective on which method is superior. How do you prove one method is superior over another without performing both?

4 CSR 240-22.030 (5) (A-C)

(B) Long term load forecasts: to serve as a basis for planning capacity and energy service needs. This can be served by any forecasting method or methods that produce reasonable projections (based on comparing model projections of loads to actual loads) of future demand and energy loads;
(C) Policy analysis: to assess the impact of legal mandates, economic policy and rate policy on future electricity energy and demand requirements. The utility shall use forecast models based on end-use loads for the analysis of actual or proposed legal mandates and forecast models including appropriate econometric parameters for the analysis of economic and rate policies comment. The utility may substitute other types of load forecast models if it demonstrates that the substitute load forecast models can adequately analyze the impacts of legal mandates, economic policies and rate policies;

Comment: It appears that you can use any forecast method for long term forecasts (highlighted in yellow). Yet you must use a forecast model based on end-use loads for certain analysis (highlighted in green). The requirement in (C) would seem to remove the

flexibility granted in (B), or force the utility to have multiple methods of forecasting of which one method must be end-use. Again, the utility can substitute other types of load forecast after performing another side analysis to demonstrate that the substitute method is adequate (highlighted in blue). This is a "limiting" requirement and while there is an appearance of flexibility, the rule is really forcing the utility toward a preferred method.

4 CSR 240-22.030 (7) (A) (1)

1. The utility shall document how the base case forecasts of energy usage and demands have taken into account the effects of real prices of electricity, real prices of competitive energy sources, real incomes and any other relevant economic and demographic factors. If the methodology does not incorporate economic and demographic factors, the utility shall document how it accounted for the effects of these factors.

Comment: It appears that one way or another, you must take into account the effects of real prices of electricity, real prices of competitive energy sources, etc. Even if you do not explicitly use these variables, you must show how your model accounted for them. Again, this is not true flexibility if the rule prescribes that certain variables must be utilized.

4 CSR 240-22.030 (9) (H) (1)

(H) For each major class, the utility shall provide estimated load profile plots for the summer and winter system peak days.

1. The plots shall show each end-use load of the hourly load profile.

Comment: Although prior language in the document appears to grant the forecaster the option of producing a forecast without using end-use variables, this rule seems to preclude the use of any forecasting method that does not use end-use measures. This is an example of how the flexibility granted in prior language is stripped and an additional constraint toward the forecasting method is made.

Some Side Analysis Examples (not an exhaustive list):

4 CSR 240-22.030 (6) (A) (1) (A-B)

(6) Load Forecasting Model Specifications.

(A) For each load forecasting model selected by the utility pursuant to section 4 CSR 240-22.030(5), the utility shall:

1. Identify appropriate independent variables as predictors of energy and peak demand for each major class. The critical assumptions that influence the independent variables shall also be identified.

A. The utility shall assess the applicability of the historical explanatory variables pursuant to section (3)(A) to its selected forecast model;

B. To the extent that the independent variables selected by the utility differ from the historical explanatory variables, the utility shall explain and document those differences.

Comment: Completing an accurate and timely forecast requires a significant amount of time and analysis. Requiring further time spent on analyzing the "applicability of the historical explanatory variables" and documenting the differences between the "independent variables selected by the utility" and the historical explanatory variables is an exercise that provides little benefit for the amount of time taken to complete it. Although some side analysis might provide some benefit, it also serves to detract from the primary goal of producing an accurate and timely forecast. Pertinent side analysis should be at the discretion of the forecaster.

4 CSR 240-22.030 (8) (B)

(8) Load Forecast Sensitivity Analysis. The utility shall analyze the sensitivity of the dependent variables of the base-case forecast for each major class to variations in the independent variables identified in section 4 CSR 240-22.030(6)(A).

(B) The utility shall estimate the sensitivity of system peak load forecasts to extreme weather conditions. This information will be used by utility decision makers to assess the ability of alternative resource plans to serve load under extreme weather conditions when selecting the preferred resource plan pursuant to 4 CSR 240-22.070(1).

Comment: This is an example of an additional analysis that is not necessary to complete a good IRP. The IRP rule is already an arduous process. The rule revision really needs to focus on streamlining the rule to make it more meaningful. The new rule should focus on what is important. Any and all superfluous processes need to be avoided. It may seem like it is fine to add an extra side analysis because it would be "nice to have", but when taken together, all of these extra side analysis are only serving to detract from the process and adds to an already time consuming and costly process.

4 CSR 240-22.030 (6) (C) (2-3)

2. Archive previous projections of all independent variables used in the energy usage and peak load forecasts made in at least the past ten (10) years and provide a comparison of the historical projected values in prior plan filings to actual historical values and to projected values in the current compliance filing.

3. Archive all previous forecasts of energy and peak demand, including the final data sets used to develop the forecasts, made in at least the past ten (10) years. Provide a comparison of the historical final forecasts to the actual historical energy and peak demands, and to the current forecasts in the current triennial compliance filing. The

utility shall use the historical forecast information in its assessment of energy consumption trends and the ability of forecasting methods to produce reasonable projections of future demand and energy loads pursuant to 4 CSR 240-22.030 (5).

Comment: This seems like an excessive exercise that does not have enough merit to be a requirement codified into a rule. Although it **might** be somewhat useful, it will certainly require time and cost—taking valuable time away from analyst that could be used on more important IRP functions. If it exists only to show that the forecast is valid, perhaps the rule should allow for the regulators to require this type of information if and only if there are real concerns about the validity of the forecast.