

1 **Q. Reference: Review of Newfoundland Power Load Forecasting Methodology, April 17,**
2 **2024, page 14.**

3
4 **Newfoundland Power uses weather-normalized energy sales as the basis for its**
5 **average energy use forecasting model. To what degree, if any, does the use of**
6 **weather-normalized energy sales mitigate the absence of weather variables in**
7 **Newfoundland Power’s average use model?**

8
9 **A.** The use of weather-normalized data in the model can yield problematic results if there
10 is a correlation between the weather variables and the other variables in the model.
11 Suppose the weather variables were perfectly uncorrelated with the non-weather
12 variables, and the approach was to perform the regression in stages, first removing the
13 effect of weather on the energy sales data and then assessing the impact of the non-
14 weather variables. The proper estimation procedure would be to first perform a
15 regression of sales on the weather variables. This first step accounts for the influence
16 of weather on energy sales. The residuals from this first regression would then serve
17 as the dependent variable in a regression with the non-weather variables. This
18 approach is a variant of the so-called step-wise approach to performing a regression¹.

19
20 However, if the weather variables and the non-weather variables are correlated, then
21 the most appropriate approach is to include all of the variables in a single regression
22 equation. The procedure of using the weather-normalized energy revenue as the
23 dependent variable runs the risk of not accounting for the correlation between the
24 weather and non-weather variables.

¹ See for example, J.W. Tukey and F. Mosteller, Data Analysis and Regression (Pearson, 1977), at Chapter 12.