Vectren 2016 Integrated Resource Plan (IRP)
October 14, 2016 Vectren DSM IRP Modeling Meeting Summary

The following is a summary of the Vectren DSM IRP Modeling meeting held on October 14, 2016.

Welcome and Introduction
Rina Harris, Director of Energy Efficiency

Ms. Harris opened the meeting welcoming guests and started the meeting with a safety message. She stated this meeting was to discuss the Energy Efficiency (EE) modeling assumptions in the IRP and encouraged an open dialogue.

Ms. Harris highlighted that Vectren's IRP process will inform the level of EE that will be achieved in future program plans. For modeling purposes, major assumptions include: treating DSM as a resource in its entirety, which includes residential and commercial/industrial blocks of EE , no minimum level of EE embedded in sales/demand forecast, EE in 2016-2017 will be based on the Energy Efficiency plan approved in Cause No. 44645 and will be included as a resource, and levelizing DSM costs over the measure life.

She explained the blocks of EE were represented in .25% blocks of eligible sales for the model to select for a maximum of 2% (8 blocks) per year. She indicated that 2% is aligned with Vectren's latest MPS for 2015-2019 for technical potential, which is the highest potential of DSM, as it assumes there are no market limitations.

She noted the prices increase from block 1 to block 8 and increase each year. The model can select up to 150+ blocks, which represents approximately 40% of sales. This level of potential exceeds typical estimates of achievable potential as well as technical potential.

Pricing Discussion
Dr. Richard Stevie
VP, Forecasting – Integral Analytics

Dr. Stevie discussed how the EE pricing was determined in the IRP model. He indicated as a starting point, Vectren used the current 2016 EE plan as the base cost for block pricing, which also aligns with the cost/kwh in their latest MPS. He noted that the escalation of those costs is based upon two econometric models developed to examine how EE costs change as market penetration changes. The models that he created were based on Energy Information Administration (EIA) data. The econometric model results indicate that the cost of EE increases as there is deeper penetration in the market.

The econometric analysis provided insights on how costs change with changes in the size of Energy Efficiency load impact initiatives as well as increases in the overall cumulative penetration of the market. He noted the growth rates in cost were developed from two separate econometric models of EIA data. The results of the two models were averaged to produce a growth rate of 4.12% per 1% of retail sales achievement or 1.04% per 0.25% energy efficiency block. Dr. Stevie indicated that he developed two tiers of Energy Efficiency pricing: first 1% of retail sales which over the 20 year horizon exceeds an expected high achievable and the second 1% of retail sales occurs at a higher marketing cost than the first.

Stakeholders inquired how energy efficiency is priced in the model, and there was discussion around whether or not EE pricing could decrease over time. A 2008 ACEEE study by Kenji Takahashi and David Nichols was referenced during this discussion. Dr. Stevie noted that he generally did not agree with the analysis and that the study suffers from numerous analytical issues that produce statistically biased results.

Related to the cost of EE, Vectren noted the electric EE Portfolio first year cost/kwh in 2013 was approximately $0.16/kwh, moving to $.18/kwh in 2015 and $0.20/kwh in 2016. With time implementation becomes harder and cost more due to costlier, available measures.

Dr. Stevie discussed the uncertainty related to 20 year cost-projections and for that reason, Vectren incorporated alternative levels of cost projections reflecting plus and minus one standard deviation in the projected growth rates. This helps assess whether alternative scenarios on EE cost achievement would impact the selection of an EE resource within each possible future state.

Modeling Discussion,
Matthew Lind
Burns & McDonnell

Mr. Lind discussed how modeling assumptions were put into the optimization software (Strategist). He indicated that 8 blocks of EE per year generates a tremendous number of options for the model to solve for given other resource options being considered. To help the model solve the decision to select EE was made in year 2018. If selected, the same level of EE would be selected for years 2018-2036. This assumption was consistent within Dr. Stevie's EE cost projections.

A stakeholder suggested that breaking the link between EE selected in the near term versus long term as costs increase over time may overly constrain the model as it could result in the model not selecting EE in the short term. Vectren requested feedback/suggestions from stakeholders on how we could model differently (i.e., model in 3 year increments) and no specific feedback was provided during the meeting. In response to Vectren's inquiry during the meeting, Stakholders said no specific feedback could be provided without being able to look at the model first.

Mr. Lind continued to review the screening model used to evaluate alternatives and noted that model's primary objective is to minimize customer costs. The model evaluates both resource adequacy (capacity) and energy.

He further descripted contributing factors for energy efficiency programs being considered as cost effective, which included ability to beat existing generation avoided energy costs, long term cost of carbon, and ability to contribute to resource adequacy requirements.

A stakeholder inquired about how our model determines which load shapes are available for selection. Mr. Stevie stated the load shape in the IRP model is aligned with Vectren's 2016 IRP plan.