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SUMMIT BLUE
CONSULTING, LLC

NOVA SCOTIA POWER INC.: DSM REPORT SUMMER 2006

FINAL REPORT

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However, several utilities in North America also offer interruptible rates to medium sized industrial customers in addition to large industrial customers. These types of interruptible rates are generally structured rather simply, along the lines of NSPI's Interruptible Rider, which offers a flat demand charge discount per kilowatt of load reduced. Several utilities, such as Xcel Energy in Minnesota, make interruptible rates available to commercial and industrial customers who commit to reducing their loads by as little as 50 kW during a peak demand period. However, expanding industrial DR programs to smaller customers in Nova Scotia may require approval of rate discounts offered through such programs through separate rate case related regulatory processes, and so may require more time to implement than energy efficiency programs.

Summit Blue estimated the DSM potential for industrial interruptible rates and direct load control of central air conditioners and electric water heaters. In total, the industrial demand response potential is estimated to be about 16 MW of coincident peak demand reduction over the forecast period, or about three percent of NSPI's commercial peak demand of about 520 MW. The large majority of demand response or load management potential is forecast to be achieved from interruptible rates, while only a small amount of potential is estimated to come from direct load control (DLC) of air conditioners and water heaters, primarily due to the small magnitude of those loads in the industrial sector.

4.2.4 Economic DSM Potential Results

As discussed previously, economic potential is the amount of technical DSM potential that is "cost-effective" as defined by the TRC test. However, economic potential does not consider market barriers, such as customers' lack of awareness of DSM measures, nor economic barriers, such as customers requiring DSM measures to have much faster "paybacks" than simply meeting the utility discount rate, as estimated by the TRC test.

Economic potential is therefore more analogous to a "thought experiment" than a realistic benchmark for specific DSM programs or portfolios. It helps to imagine how economic potential would be achieved in practice to illustrate the limitations of the concept. Implementing economic DSM potential would require hiring DSM measure installers who would drive throughout a utility's service area with truckloads of DSM measures. The installers would visit homes and businesses with computers to calculate the TRC test ratios for each measure in the home or business. The measures that pass the TRC test for a given home or business would be installed, regardless of whether the homeowner or business owner wants the DSM measure or not. This is obviously not a feasible manner in which to operate an actual DSM program.

The economic potential concept has further limitations when considered in the context of demand response programs in addition to energy efficiency programs. In theory, almost all loads in homes and businesses could be shut down for several hours during a peak demand period or emergency situation. If the homeowner or business owner is provided with a rate discount for reducing their loads during such peak or emergency periods, shutting down loads would be considered very cost-effective from the perspective of the TRC test. However, most homeowners and business owners do not care to be inconvenienced in this manner during normal circumstances, and the large majority will not elect to participate in interruptible rate style programs. This is often not the case for the largest businesses, for whom the cost of electricity is often one of their largest operating costs, and such businesses are often very interested in reducing a large operating cost, and are often willing to be inconvenienced to do so.

The economic potential estimates and ranges of TRC results for each class of DSM measure are shown in Table 4-4 below. The load management results duplicate the energy efficiency results in many cases, as the same kilowatt that is conserved cannot then be reduced through a load management or demand response program.

5.2.3 Discussion of Reasonable Level of DSM Spending

Determining the appropriate level of DSM is a challenging task for any utility, jurisdictional, or regional organization. There is no single or predominant approach but in many cases results are similar in terms of rough size of targeted savings and dollars allocated, sometimes as a percent of total revenues. The CAMPUT study interviewed several program managers and regulators to determine the methods used for setting the level of DSM spending.

There are several considerations viewed as important in setting targets. First, targets should cover a period of time that allows for ramp-up of DSM programs and development of the appropriate infrastructure for resource acquisition and market transformation programs. Second, a minimum level of expenditure can be established such that the amount dedicated to energy efficiency is sufficient to build and maintain a critical mass of infrastructure within markets' program capacity; and, over time, the amount should never go so low that critical capacity (i.e., qualified contractors, trained employees) is eliminated. In Vermont, when Efficiency Vermont was created, this minimum amount was thought to be roughly a 1.5% surcharge on rates. Program budgets were ramped up from there after the first year (2000) to the current level of roughly 3.0% of rates in 2005.

There are a number of ways to set the final amount. It can be set administratively, as in many restructured states. This would typically be a rough round number approximating what policymakers felt consumers could afford, informed by how much was spent on energy efficiency in the past. This is simple, and in jurisdictions where energy efficiency stirred some of the more contentious regulatory disputes (owing to the throughput incentive), the relief from fighting is just as welcome as the secured commitment. But this approach has a long term problem—energy efficiency is disconnected from other resources that are serving customers. There is no assessment as to whether all cost-effective energy efficiency is being achieved. The program becomes like a government program, in which managers get a budget and do their best to manage within it, without necessarily considering fundamental questions about the size and purpose of the program.

In most states and provinces where energy efficiency programs exist, at one time or another a resource-driven process was used to set energy efficiency budgets. In some states, spending has not returned to the nominal levels of the early 1990s (i.e., not accounting for inflation) despite higher avoided costs today. To really know the appropriate spending level for energy efficiency, some regulatory process in which energy efficiency and other resources are evaluated together is necessary, e.g., an Integrated Resource Plan.

A key issue in each jurisdiction, not always explicit, is resolving the conflict between wanting to procure all cost-effective energy efficiency and concern about the resulting immediate effect on rates. In many jurisdictions, it is evident some compromise was struck, allowing for a significant yet limited rate impact to support a meaningful suite of programs. Budgets based solely on findings from an IRP or from a benefit-cost assessment would come down squarely on the side of accepting whatever rate effects are necessary to secure a long term overall resource plan—energy efficiency might enable fewer kWh to meet the region's energy needs but at a somewhat higher price for each kWh.

Our analysis shows an expenditure of 0.7% of annual electric revenues might be appropriate with a ramping up to a level near 2% of annual electric revenue. These figures are irrespective of whether a jurisdiction has adopted retail electric competition or imposed generation divestiture, though regulatory oversight details may be quite different in either case. Our benchmarking study found that there was no correlation to spending levels and the impact achieved. We recommend that NSPI base their DSM plan on the best practice programs, which should deliver the savings more efficiently. We note that some