Comments on the December, 2009 Colorado Springs Utilities DSM Potential Study

Howard Geller, SWEEP

Jan. 6, 2010

Summary

- The demand-side management (DSM) potential study uses outdated data on the budget and energy savings levels of DSM programs to establish DSM program benchmarks.
- Colorado Springs Utilities (CSU) trails far behind the leading municipal utilities in the western U.S. in terms of commitment to and results from DSM, and the plan put forward in this study will not result in CSU catching up.
- The study's estimates of economic energy savings potential, namely saving 1,644 GWh of electricity by 2015 and 1,753 GWh in 2020, are not unreasonable even though the study excludes a number of significant energy efficiency measures that other utilities in the region have found to be cost effective.
- The study's estimates of achievable energy savings potential, namely saving about 200 GWh by 2015 and 350 GWh by 2020 (medium case estimates), are very low and NOT reasonable. Based on the experience of other utilities and the goals established by the Colorado PUC for investor-owned utilities in the state, CSU should set a goal of saving at least 700 GWh by 2020 and implement a wide range of cost-effective and well-funded programs in order to meet the goal.
- The list of recommended DSM programs is incomplete and the budgets suggested for some programs are inadequate. In addition to those programs recommended in the study, CSU should implement energy efficiency programs for new homes and new commercial buildings, a direct installation program for small businesses, and a commercial building retro-commissioning program. In addition, the budgets for some recommended programs should be increased.
- The CSU DSM potential study was not distributed for peer review prior to being issued, contrary to standard and good practice within the utility industry.

Detailed Comments

1. The review of DSM programs of investor-owned utilities (IOUs) and municipal utilities in the study is outdated. The review cites typical levels of DSM spending and energy savings as of 2006, showing benchmarks based on median values for a spectrum of utilities. But electric utility DSM program spending and energy savings has increased significantly since 2006. According to the Consortium for Energy Efficiency (CEE) which is the best source of data on DSM spending and savings nationwide, funding for electric utility DSM programs nationwide increased 14% in 2007 and 19% in 2008.[1] Given new or expanded utility commitments to energy efficiency in many states over the past year (including Colorado!), I expect that total national DSM funding increased at least 15% in 2009 as well. Thus national spending on DSM programs in 2009 was at least 50% higher than in 2006. Furthermore, many IOUs in the region (and elsewhere) were

[1] See http://www.cee1.org/ee-pe/2007/index.php3 for details.

spending more than 1.8% of revenues on DSM programs and/or saving more than 0.8% of sales from DSM programs implemented in 2009, which are the benchmarks cited in the study for IOUs.[2]

2. As for municipal utilities and rural electric coops, those with significant commitments to DSM including Fort Collins Utilities, Austin Energy, Seattle City Light, and SMUD spend much more on DSM, and achieve much more energy savings, than the benchmark levels indicated in the report. The benchmarks cited in the study for median spending and savings levels are based on an arbitrary set of munis and co-ops including a few utilities that spend virtually nothing on energy efficiency programs. In addition, some leading municipal utilities such as Fort Collins Utilities and Seattle City Light have significantly expanded their DSM programs and increased their energy savings goals during the past three years. Seattle, for example, issued a DSM Action Plan in 2008 that calls for the utility roughly doubling energy savings during 2010-12 relative to levels achieved in 2006-08.[3] Compared to the leading municipal utilities in the western U.S. with respect to DSM efforts, CSU is falling short by a factor of five or more.

3. The study's estimates of technical and economic potential for energy and peak demand savings through DSM measures are not unreasonable although there are some additional energy efficiency measures that should be cost effective but for some reason were determined to be cost uneconomical in the study (see comment 6 below). The study estimates an economic (i.e., cost-effective) potential for saving 1,644 GWh of electricity by 2015 and 1,753 GWh in 2020, equivalent to 36-38% of CSU's electricity sales as of 2007. But the study's estimates of achievable energy and peak demand savings are very low, only about 200 GWh of electricity savings by 2015 and 350 GWh by 2020 (from cumulative DSM programs starting in 2009). In other words, the study assumes that only about 20% of the identified cost-effective energy savings potential can be realized through DSM programs by 2020. Put differently, the estimated achievable savings potential in 2020 is equal to only about 5% of projected electricity sales that year, assuming average load growth of 3% per year during 2007-2020. This is less than half the energy savings goal that the Colorado PUC has established for Xcel Energy and Black Hills Energy (in percentage terms). With adequate funding and reasonably well implemented programs, CSU should be able to achieve much more of the identified economic energy savings potential than the study indicates.

4. The values for achievable potential cited above refer to the medium case where it is assumed rebates equal to 50% of measure costs are offered, with DSM programs that ramp up slowly over time. The study also includes a sensitivity

[2] For details, see presentation of Howard Geller at the 2009 SWEEP regional energy efficiency workshop, Phoenix, AZ, Nov. 9, 2009. http://www.swenergy.org/events/annual/2009/presentations/Geller_SWEEP_110909.pdf. Also, see SWEEP news items at http://www.swenergy.org/news/news/default.aspx.

[3] "2008-2012 Action Plan – Conservation Resources Division. Seattle City Light. Aug. 26, 2008. http://www.seattle.gov/light/Conserve/docs/Conservation_5_Year_Action_Plan.pdf

analysis considering high and low cases regarding achievable savings potential. The high case shows achievable savings of about 430 GWh by 2020, which is still only about 25% of the identified economic savings potential. In my view, CSU should strive to achieve at least 10% electricity savings off of otherwise projected levels by 2020 (i.e., about 700 GWh that year), which is equivalent to realizing about 40% of the identified economic savings potential by 2020. This is not an excessive target considering the goals for other utilities in the state and what other utilities are achieving from robust DSM programs. Xcel Energy has voluntarily offered to strive to achieve 50% of economic savings potential over ten years, and the Colorado Public Utilities Commission has set goals of more than 10% electricity savings by 2020 for investor-owned utilities in the state.[4] Furthermore, if CSU were to realize 700 GWh of energy savings by 2020 as a result of DSM programs implemented during 2010-2020, it would do its part to achieve the energy savings and carbon dioxide emissions reduction goals established in the Colorado Climate Action Plan for electric utilities in the state.[5]

5. Regarding the cost effectiveness of energy efficiency and DSM measures, the CSU potential study needs to be interpreted carefully. In its initial discussion of DSM cost effectiveness starting on p. 58 of the study, the cost per unit of first year energy savings ($ per kWh) is presented. This is value considers the full cost of the efficiency measures but only one year of energy savings, not energy savings over the lifetime of the efficiency measures. The levelized cost of saved energy considers the full energy savings over the lifetime of the efficiency measure and is the appropriate metric for comparing to the cost of electricity supply. Elsewhere the study notes that there is considerable energy savings potential at a levelized cost of $0.03/kWh or less. This is less than half the cost of supplying electricity from any type of new power plant, meaning DSM is the most cost-effective energy resource available to CSU by far.

6. Certain energy efficiency measures that are cost effective and included in DSM programs implemented by other utilities in the region are not cost effective for CSU according to the potential study. These measure include whole house evaporative coolers, SEER=14 central air conditioners, ceiling and wall insulation in air conditioned homes, compressed air system controls, and retro-commissioning of commercial buildings. It is questionable whether such measure are truly uneconomical in the CSU service area. In addition, there are other measures that are cost effective and are included in the DSM programs of other electric utilities in the region that do not appear to be considered in CSU's DSM potential study. Such measure include standard evaporative coolers for residences, variable air volume controls for commercial HVAC systems, ceramic metal halide light fixtures for commercial and industrial buildings, and delamping and

[4] Regarding the Xcel Energy goal, see Rebuttal Testimony of Ms. Deb Sundin in CO PUC Docket 07A-420E, March 2009; regarding the energy savings goals established by the CO PUC, see Order in Docket 07A-420E, adopted May 23, 2008.

[5] "Energy Efficiency and Colorado Utilities: How Far We've Come; How Far We Need to Go." Colorado Public Utilities Commission, Oct. 20, 2009.

fluorescent lighting optimization. Excluding these viable efficiency measures from CSU's study reduces the identified energy savings potential.

7. The DSM potential study includes a set of recommended DSM programs, building on the programs that CSU currently offers. It includes recommendations to expand the business lighting rebate program to include a much wider range of efficiency measures, initiate a commercial and industrial custom rebate program, initiate a commercial and industrial direct load control program, and expand (or start) a number of residential programs including programs for CFLs and ENERGY STAR products, home retrofit measures, refrigerator/freezer recycling, and direct load control. These are all well proven DSM programs that should be implemented by CSU. However, the funding and energy savings levels proposed for some of these programs are too timid in my view. For example, the business custom incentive program has a budget of only $160,000 in 2010 and the home retrofit program has a budget of only $122,000 in 2010. The budgets and energy savings targets for these programs should be expanded, including adding additional cost effective energy efficiency measures noted above. Furthermore, there are a number of "tried and true" DSM programs that were excluded from the set of program recommendations including programs promoting construction of high efficiency new homes, high efficiency new commercial buildings, a small business direct install program, and commercial building retro-commissioning. These programs are implemented successfully by Xcel Energy in Colorado, for example, and should be added to the portfolio of DSM programs that CSU implements. Expanding the recommended programs as well as adding additional proven programs should enable CSU to achieve much greater energy savings, and do so cost effectively. In addition, CSU should hire experienced DSM contractors to implement its programs as well as partner with other utilities such as Xcel Energy and Black Hills Energy where appropriate to maximize the impact and net benefits of its DSM programs.

8. In addition to its serious technical flaws, CSU's DSM potential study was not distributed for peer review prior to being completed and issued. SWEEP had requested such peer review on numerous occasions, and would have submitted these comments on a draft report had we been given a chance to do so. Other utilities routinely invite peer review and also seek outside input in early stages of DSM potential study preparation. By not inviting peer review, CSU failed to conduct the study according to "good practice" for such work.