ENERGY FUTURES GROUP

Iowa Energy Efficiency Programs: Impacts to Date and Future Potential

1. **Iowa's utility efficiency programs are very successful.** Just since 2009, they have produced:[1]
    a. **About 10% of their customers' total annual electricity needs.**
    b. **Lifetime savings equal to 5 years of total residential electricity consumption.**
2. **The benefits of the Iowa utilities' efficiency programs far outweigh their costs.** A review of the utilities' efficiency program costs and savings reveals the following:
    a. **2 to 1 benefit-cost ratio**. The Iowa utilities' own analyses suggest that their efficiency programs are saving customers about $2 for every dollar invested.[2]
    b. **About $400 million in economic benefits per year**. In 2016 alone, MidAmerican and Alliant's programs produced nearly $400 million in net savings.[3]
3. **The benefits of utility efficiency programs are experienced by all Iowans.**
    a. **Program participants:**
        i. **6.3 million efficiency measures were installed in just 2016** suggesting a large portion of the states' residences and businesses are participating in the programs every year.
        ii. Those participating customers will experience **over $325 million in net benefits** (savings minus costs) over the life of the efficiency measures they installed.[4]
    b. **Non-participants**: Even those who have not participated are benefiting from reductions in utility system costs that are typically spread across all consumers. Chief among these are:
        i. **Eliminating the need for new power plants.** Just since 2009, the utilities' programs have eliminated the need for two-and-a-half (2.5) new 500 MW power plants.[5]
        ii. **Avoided capital investment in transmission and distribution (T&D) system.** Efficiency programs also reduce the need for capital investment in new (or upgraded) T&D infrastructure. MidAmerican estimates that just its 2016 efficiency programs produced nearly $50 million in T&D cost savings.[6]
        iii. **Reduced credit and collection costs.** When efficiency makes it easier for customers to pay their energy bills, utilities incur fewer costs than they otherwise would to work with those who are behind on their bills.
4. **Iowa's economy benefits**. Efficiency programs are economic development engines. They create or preserve local jobs in several ways:
    a. **There were more than 20,000 such energy efficiency jobs in the state in 2016**.[7] Energy efficiency tends to be much more labor intensive than supplying energy. Moreover, the labor for many efficiency measures cannot be outsourced. Put another way efficiency programs create local jobs for energy auditors, insulation contractors, manufacturers and vendors of efficiency lighting and other products, heating and cooling contractors, and other local businesses who sell and/or install efficiency products and services.
    b. Efficiency programs can help local businesses become more cost-competitive, preserving local jobs.
    c. Every dollar that efficiency programs save, is another dollar in consumers' "pockets" which they can spend at local stores, restaurants and other venues. These "rippling effects" through the economy can be substantial.
5. **Iowa's utility efficiency programs are leveraging substantial private capital investment**. For every dollar the utility programs spent in 2016, customers invested roughly one additional dollar of their own.[8]

6. **Despite progress to date, energy use in Iowa is not as efficient as it can be**. The Iowa utilities' September 2017 assessment of efficiency potential in the state[9] suggests the following:
    a. **17% of electricity use** in the state could be *cost-effectively* saved through utility efficiency programs over the next decade.
    b. **15% of gas use** in the state could be *cost-effectively* saved through utility efficiency programs over the next decade.
    c. The electric savings would be enough to avoid **four new 500 MW power plants**.
    d. The result would be **$3.3 billion in net economic benefits** to the state.
    e. These savings and benefits would not be realized without utility efficiency programs. Though there are efficiency investments customers would make without any help from efficiency programs, those savings were – by design – assumed to be included in the baseline from which utility program efficiency potential was estimated.

Specific Legislative Proposals

2% Spending Cap

- **A 2% cap would – by itself – cut current efficiency programs by about two-thirds**.[10]
- Since programs provide significantly more benefits than they cost, eliminating programs means imposing higher energy costs on consumers. Cuts to programs over the next decade would probably result in **$2.0 billion of unnecessary energy costs**.[11]
- Ironically, the **imposition of a 2% cap in Iowa would run counter to recent trends in other Midwestern states**. For example, in late 2016 the state of Michigan – with both a Republican Governor and a Republican legislature – eliminated its spending cap and provided incentives for its utilities to increase their efficiency program savings. Similarly, recent legislation passed in IL increased their spending cap from 2% to more like 4% of revenues – and that is just for efficiency (DR is funded in other ways).

Large Industrial Opt-Out

SF 2311 as amended in the Senate Commerce Committee makes energy efficiency programs "opt-in" for all groups of customers. There is not a single program in the country that has made energy efficiency opt-in, but the likely impact would be dramatically shrink or effectively eliminate energy efficiency programs jeopardizing all of the benefits described above. The additional changes discussed below would be impacts from only industrial opt-out.

- **The proposed industrial opt-out provision would – by itself – eliminate more than 20% of total 2016 electric energy efficiency budgets**.[12]
- **The savings potential from large customers is substantial and some of the least expensive to acquire**. The industrial sector offers some of the most cost-effective energy efficiency available. Indeed, the utilities' recent efficiency potential study suggests that the Large Business Retrofit program[13] – just one of 17 programs analyzed – could provide 53% of all the energy savings available in the state with only 32% of the program budget.
- **Allowing large customers to opt out of energy efficiency programs could be viewed as unfair to other customers**. Because many of the benefits of efficiency accrue to all customers, those who opt out will still benefit from the efficiency investments of others without commensurate contributions of their own to the efficiency of the system.

- **There are better alternatives to "opt out" provisions**. If current efficiency programs don't meet large customers' needs, the solution should be better programs. One option would be what is commonly known as a self-direct program which allows individual large customers to develop their own, site-specific efficiency investment plans rather than contribute funds to the utilities' system-wide efficiency programs. Well-designed self-direct programs provide greater flexibility and control over how customers' efficiency funds are spent while maintaining energy savings targets and independent evaluation, measurement and verification of what was accomplished.[14]
- **Any suggestions that all cost-effective efficiency have already been acquired are likely inaccurate**. It is common for large industrial customer to claim that they are as efficient as they can be and do not need energy efficiency programs to reduce their energy use. However, there is very little independent evidence to support such claims. Indeed, such claims are in direct conflict with years of field experience to the contrary. This is because industrial customers' definitions of "all cost-effective efficiency" – typically measures with less than a 2-year payback – are quite different than those appropriate for a utility system for which investment decisions are often justified over time horizons of 20 years or more. However, to provide a backstop for the rare large customer who may have addressed all cost-effective efficiency opportunities, a provision can be established to allow large customers to opt-out of energy efficiency programs if an independent assessment finds that there are no further energy saving opportunities with less than a 10-year payback. Such provisions have been used in the past in Utah, Wyoming and Oregon.[15]

Changing Iowa's Cost-Effectiveness Test

- **A switch to the TRC will eliminate many utility efficiency programs**:[16]
    - Five (5) of MidAmerican's 16 non-low income electric efficiency programs found to be cost-effective under the SCT would be eliminated under the TRC test;
    - Six (6) of MidAmerican's 13 non-low-income gas efficiency programs would be eliminated as no longer cost-effective under the TRC test.
    - Among the programs likely to be eliminated are all agricultural programs, residential efficiency audits, rebates for efficient gas furnaces, multi-family programs
    - *The eliminated programs represent about 50% of MidAmerican's 2016 program spending*.
- **A shift to the TRC test is inconsistent with national best practices**, per the *National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources* (NSPM).[17]
- **The proposed definition of the TRC produces a very biased perspective of cost-effectiveness,** including all utility system and program participant costs but only a portion of their benefits.[18]
- If the concern with the current cost-effectiveness framework is that it is potentially too broad and encompassing too many things, **a more appropriate solution may be to move to the Utility Cost Test** which is narrowly focused on just utility system costs and benefits. That is the test Michigan adopted several years ago.

Background: This document includes the results of the Energy Futures Group (www.EnergyFuturesGroup.com) analysis of the historic impacts of the Iowa utilities' energy efficiency programs and the potential for future efficiency programs to further reduce Iowa's energy costs. Chris Neme and Richard Faesy conducted this analysis at the request of the Iowa Environmental Council and Environmental Law & Policy Center. We also assess the impacts that three key provisions of SF 2311 and HSB 595 – (1) capping efficiency program spending, (2) exempting large industrial customers and (3) changing the definition of cost-effective efficiency – will likely have on future efforts to acquire cost-effective efficiency resources. Finally, we endeavor to address – at a high level – some potential questions regarding who benefits from efficiency programs.

Note that because of time constraints, our analysis focused just on MidAmerican and Alliant; we do not include Black Hills. As a result, our estimates of gas savings and benefits may be slightly understated.

Endnotes:

[1] From annual reports for 2009 through 2016 for MidAmerican (Annual Report, Exhibit F) and Alliant (Annual Report, Appendix A). MidAmerican estimated savings degradation rates (as measures reach the end of their lives) assumed to reasonable proxies for Alliant). Total persisting annual savings in 2016 was 9.2% of total sales; at historic savings rates, new savings from 2017 programs likely to push total to about 10% of sales. Estimates of total sales from the utility Form 861 data published by the U.S. Energy Information Administration (https://www.eia.gov/electricity/data/eia861/index.html).

[2] This 2-to-1 benefit-cost ratio is for the societal cost test (SCT) historically used by the utilities to assess program cost-effectiveness. It is intended to include all societal costs and savings. The SCT ratio for MidAmerican was 2.0-to-1 and for IPL was 2.2-to-1 in 2016. Under the narrower view that considers just utility spending and utility system benefits, the benefit-cost ratio is even better; 2.3-to-1 for MidAmerican and 3.2-to-1 for IPL. (MidAmerican Annual Report Exhibit E, Alliant Annual Report, Appendix D)

[3] These are *societal* net benefits (i.e. societal savings from efficiency programs minus the societal costs of the programs) for MidAmerican ($216 million) and IPL ($180 million), as reported by the utilities (MidAmerican Annual Report Exhibit E, Alliant Annual Report, Appendix D). The net benefits to just the *utility system* – i.e. excluding the value of environmental benefits and other customer benefits – are $309 million ($150 million for MidAmerican and $159 for IPL).

[4] Net benefits under the Participant test (MidAmerican Annual Report Exhibit E, Alliant Annual Report, Appendix D).

[5] About half of the impact is related to efficiency programs and half is related to demand response programs. The capacity savings from the efficiency programs have a load factor that is very similar to the national average capacity factor in 2016 for gas combined cycle units.

[6] MidAmerican 2016 Annual Plan Exhibit F.

[7] https://www.cleanjobsmidwest.com/state/iowa.

[8] Based on a comparison of Utility Cost Test costs – utility costs only – and Total Resource Cost (TRC) test costs – utility costs plus customer costs as reported in the 2016 annual reports by MidAmerican (MidAmerican Annual Report Exhibit E, Alliant Annual Report, Appendix D).

[9] Dunsky Energy Consulting, *Assessment of Iowa's Energy Efficiency Potential*, Final Report submitted to the Iowa Utilities Association, September 25, 2017. Maximum achievable efficiency potential can be found at p. xxiii; economic net benefits can be found in Appendix K, Tables A56 and A69 (note that there appears to be a error in the totals in the tables; we recomputed the totals by adding up results for each program).

[10] MidAmerican 2016 Annual Report Exhibit B and Alliant 2016 Annual Report Appendix B.

[11] Assumes that roughly two-thirds of the net economic benefits forecast by the potential study would be lost. This is based on the study's estimates of the costs of acquiring cost-effective savings.

[12] MidAmerican Direct testimony of Charles B. Rea in Docket No. EEP-2017-0001, filed with the Iowa Utilities Board on November 1, 2017, p. 31.

[13] See study Appendix K, Tables A56 and A69. The Large Business Retrofit program would serve more than just the very largest customers proposed for exemption, so at least a portion of this savings potential would still be available. However, it illustrates the substantial cost-effective savings potential available from large customers.

[14] http://aceee.org/sector/state-policy/toolkit/industrial-self-direct

[15] Chittum, Anna, *Follow the Leaders: Improving Large Customer Self-Direct Programs*, ACEEE Report Number IE112, October 2011.

[16] MidAmerican 2016 Annual Report Exhibit E and Alliant 2016 Annual Report Appendix D.

[17] The NSPM states that the cost-effectiveness test used by any state should be based on that state's relevant energy policy goals and objectives. No assessment of such policies in Iowa has been conducted, so there is no basis for changing the test to better align cost-effectiveness analysis with state policy. (see https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf).

[18] The TRC is nominally intended to reflect the combined impact – costs and benefits – on the utility system plus efficiency program participants. However, the statutory TRC definition does not include all utility system benefits (e.g. avoided T&D costs and reduced risk are excluded); nor does it include a variety of program participant impacts such as secondary fuel savings, water savings, and non-energy impacts of efficiency investments such as improved business productivity, improved comfort, reduced maintenance costs, etc.