
CIP Energy Code Compliance Programs: Opportunities for Reaping Savings in Minnesota

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Introduction

This document provides a condensed summary of the opportunities related to CIP-funded energy code compliance programs in Minnesota, and recommends policies for addressing the challenges associated with counting energy savings towards utility program goals. It is meant to orient Minnesota utilities, program providers, and regulatory staff to this subject matter, rather than provide an in-depth treatise on this subject. For those readers that want to explore this topic in greater detail, references are provided, and more detail for some issues can be found in the companion final report for the Commercial Energy Code Compliance Enhancement Pilot that encompassed the development of this policy brief (Landry 2018). The pilot program's goal was to provide an example of a code compliance improvement program that will provide confidence and lessons to guide Minnesota utilities and regulators in their decisions about future CIP programs. While the final report details specific pilot program design elements, success, and lessons learned, this policy brief gives a broader, high level summary of the topic of energy code compliance programs, and provides recommendations regarding the key regulatory issue in Minnesota: counting savings.

How the Stage Has Been Set in Minnesota

A number of programs aimed at comprehensive energy code compliance have been piloted or rolled out in other parts of the country over the last few years. Although commercial energy code compliance in Minnesota is relatively good (Hernick 2013), there is reason to believe that there is potential to achieve significant energy savings through increased compliance. It has been estimated that improved statewide energy code compliance could provide savings of 16,000 to 48,000 MWh and 78,000 to 235,000 MMBtu per program year in Minnesota (Lee 2013). Despite the important potential that this type of program has to contribute to Minnesota's 1.5% annual savings goal for CIP programs, no utilities in Minnesota currently offer such a program. This reluctance is largely due to utility staff uncertainties about optimal utility program design and cost-effectiveness in a state with relatively low utility rates, and the difficulty in measuring impact compared to traditional programs. Although past CIP program policies in the state did not allow programs to claim savings for bringing projects up to code, numerous developments within the last several years have suggested that CIP-funded programs that increase code compliance could be given credit for energy savings in Minnesota. This document outlines policy options and recommendations for quantifying these savings.

Since the passage of the Next Generation Energy Act in 2007, there has been more interest in code compliance programs:

- Codes and Standards were endorsed as an opportunity by a stakeholder working group report commissioned by DER (MEI 2011)
- Behavioral programs (which, like code compliance programs, also have special M&V considerations) have had savings recognized within CIP programs, with program evaluation justification

- CARD Funding was awarded to the code compliance enhancement pilot project under which this document was prepared, and this pilot demonstrated the potential to cost-effectively achieve significant code compliance program savings in Minnesota (Landry 2018)
- In 2017 DER issued two CARD-funded RFPs for energy code compliance studies

Recent discussions with utilities have indicated that the two key concerns causing hesitation about moving ahead with code compliance program development are uncertainty about if and how regulators will recognize program savings, and how a new program would relate to current program offerings.

Precedents for Energy Code Compliance Programs

The table below summarizes numerous utility-funded energy code compliance improvement program activities. While a majority of these utilities have also implemented energy code adoption advocacy with compliance improvement efforts, the information provided in the table focuses specifically on the program efforts aimed at promoting high compliance with a new or existing energy code.

Summary of Code Compliance Programs

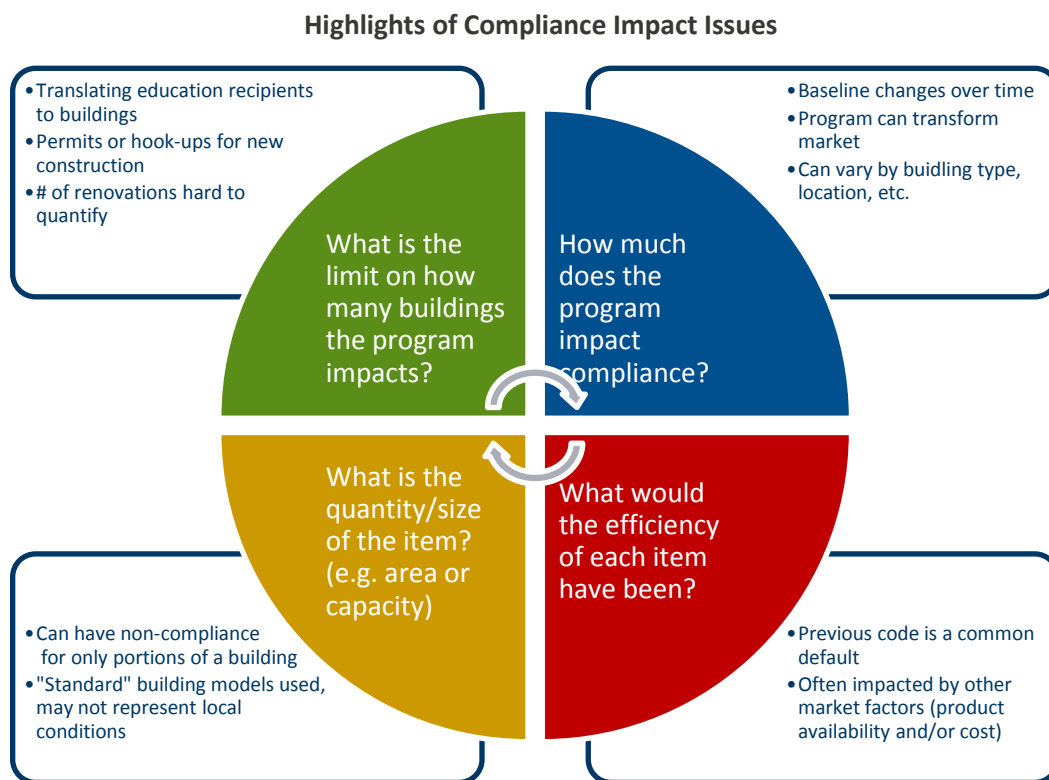
States (and Program Administrator)	Most Common Focus	Less Common Focus
<ul style="list-style-type: none"> • California (All IOUs) • Oregon, Washington, Idaho, & Montana (Northwest Energy Efficiency Alliance) • Illinois (All IOUs) • Colorado (Xcel Energy) • Arizona (Arizona Public Service, Salt River Project) • Rhode Island (National Grid) • New York (NYSERDA) • Massachusetts (pilot) • Vermont (Efficiency Vermont) 	<ul style="list-style-type: none"> • Residential buildings • Classroom-type training of code officials and/or other building industry professionals • Remote consulting support for building industry professionals regarding individual code questions • Form & support local energy code compliance collaborative 	<ul style="list-style-type: none"> • Commercial buildings • Experts provide in-person support via periodic rounds of office and/or site visits to a certain geographic area (aka circuit riders) • Develop & distribute code compliance tools (e.g. checklist forms, guides, software, code books) • Pay third-party verifiers (e.g. HERS rater) • Systematic review of numerous code items for individual building projects

These precedents for utility code compliance enhancement programs represent a wide variety of utility service territory conditions and program services that Minnesota utilities can take lessons from while developing programs for their Minnesota service territories.

Claiming Program Savings

Energy Impact Quantification Issues

There are a wide variety of issues to consider when assigning specific energy savings values to utility-funded energy code programs. While precedents for this have been established,¹ it is important to recognize the numerous issues and simplifying assumptions used, so that an approach that is appropriate in one circumstance is not misapplied to a different circumstance. For example, the three states that have led the way in counting savings use models that combine the impact of compliance improvement efforts with code adoption advocacy efforts. This has affected the calculation methodology, resulting in a higher evaluation budget than would be expected for compliance only programs.



While not exhaustive, the figure above outlines some of the key issues related to quantifying the energy impact of an energy code compliance improvement program. While a number of these issues are addressed in more detail in summaries by Cadmus Group (Lee 2013), PNNL (2016), and the evaluation

¹ California, Arizona, New York, Oregon, Washington, and Rhode Island are the farthest along, with Massachusetts also nearing finalization of an approach (Cadmus 2015, Cadmus 2013, NMR Group 2013, DNV-GL 2017).

reports noted in the footnote, the brief discussion here highlights the number and complexity of issues that have not typically been taken into account in CIP program savings calculations in Minnesota.

One key example regarding impact evaluation is the basic choice about whether the number of buildings impacted and/or change in compliance will be based on gross assumptions about impact based on the level of program activities, or if representative sampling of buildings in the program service territory will be used and compared against a baseline. While representative sampling is the “gold standard” for seeing what is taking place in the program service territory (and has been done periodically in California) the high cost of doing this—and conducting sampling of a representative baseline for comparison—may not be justified for programs of modest scale, and may not increase the savings estimate accuracy as much as it may appear. Even if current construction practices in the program territory are measured accurately through representative sampling, it may not be possible to definitively determine the same for a truly representative baseline to compare against. This is because the natural change in markets over time, (i.e. the question of what the compliance trend would be without the program) cannot be accurately measured in an area where a large-scale code compliance program is implemented. In addition, utility service territories in Minnesota likely have significant differences in natural compliance rates, such that there would be biases if compliance in one utility’s territory with a program was compared against another utility’s territory that did not have a program. In order to balance costs or address situations where an accurate, representative baseline is not available for comparison, another alternative is to ask a panel of “experts” a number of specific questions about what difference a program is making.

While a significant issue, the challenge of comparing compliance against a baseline is just one of a number of issues that impact savings estimates. Since most compliance program designs do not have activities that allow for directly counting the impacted buildings or capturing key information from them, this tends to cause savings quantification to rely more heavily on evaluation efforts (compared to other programs), or to make a number of simplifying assumptions.

Note that even for the pilot program approach that was able to collect detailed project specific data, the long-term program savings determination would not necessarily be straightforward. For a small number of program buildings, multiple rounds of city plan review submittals were used to document measure-by-measure changes due to program intervention. However, the longer term, large scale implementation of a program like this would be expected to eventually cause designers to submit plans with higher compliance rates once “the word got out” that a city (or cities) is being more strict and systematic about energy code compliance. As market transformation occurs, designers would tend to “get it right the first time,” and there would be fewer observed changes (and less directly observed program impact) between the first and second plan reviews.

Therefore, the most accurate impact quantification for such a program would involve a combination of data gathered from program participants about observed intervention impacts, and a quantification of how the program improved compliance over time, relative to what would have happened without the program. This pilot program is just one example of the variety of program design options that may require the adoption of different evaluation approaches to accurately represent the program impact, or to cost-effectively take advantage of collateral data that is obtained during program implementation.

Policy Recommendations

With the potential variability in code compliance program types, and scale, we do not believe a specific energy savings quantification approach should be established at this time. We instead recommend that program savings be based on a third-party impact evaluation according to a plan that is established as part of the CIP program approval process. Some key principles for this evaluation process are proposed below:

- Utilities should be encouraged to file for cost-effective code-compliance programs, and to work collaboratively with the DER and other utilities to come up with an appropriate evaluation plan in their filing.
- During program implementation, the evaluation should be carried out by a third party. Evaluation contractors could either be directly contracted by DER with program funds provided by the utility, or at least have the evaluation firm credentials approved by DER.
- Utilities should be encouraged to work together to jointly implement programs that would be evaluated together as well. In addition to having the benefit of being able to be more easily evaluated, it would also be a more efficient use of ratepayer dollars.
- During program development, each individual utility (or ideally, a group of utilities) is responsible for contracting directly with a DER approved evaluation firm to develop the evaluation plan, in a form that will provide for competitive bidding of the implementation evaluation. The integration of savings evaluation planning into the program development process is meant to provide utilities with a degree of confidence that a proposed program will be able to count an appropriate level of savings.
- DER approval of evaluation firms should be based on minimum standards for experience with program evaluations and with energy code compliance programs, and be a third party (i.e. a firm cannot evaluate a program it is delivering). Certain, reasonable limits on claiming savings could also be established by DER through the TRM [Technical Resource Manual] (e.g. a limit of 30% of savings compared to the previous code for general education only programs). As precedents for specific types of compliance programs are established through individual program approvals, the TRM can be updated with guidance for future, similar programs.

A set of guidelines such as this will meet the need for utilities to have confidence in the ability to claim savings while also providing a degree of rigor in the savings quantification process.

Conclusions

Energy code compliance improvement programs provide Minnesota utilities with opportunities to cost-effectively increase CIP portfolio savings. The current energy code and utility program regulatory environments appear to be ripe for the adaptation of energy code compliance program approaches used in a number of other states, or the application of new program models.

As Minnesota utilities move forward with programs, the high portfolio savings goals and cost recovery mechanism makes it important for program savings to be quantified in a fairly predictable and rigorous manner in Minnesota. Given the numerous issues surrounding appropriate program impact evaluations and possible high costs relative to program delivery for modest scale programs, it does not seem appropriate to dictate a broad-brush requirement that a specific calculation method for counting savings be used for all code compliance programs. In order to allow for savings quantification approaches and costs to be appropriately adapted to the wide range of possible program types and scales, we instead recommend that policy provide for an evaluation plan that is approved along with other program filing information, and carried out by a third-party evaluator.

We recommend that DER and stakeholders work together to establish a more specific set of guidelines following the principles outlined in the previous section, and within a timeline that will give utilities time to use this process in the next round of triennial program filings. As details are worked out and additional lessons are learned from local experience with specific program examples, additional direction can be incorporated into the TRM.

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