

Making Market Transformation Mainstream in Illinois

Jim Fay, Rick Tonielli, ComEd
Randy Opdyke, Nicor Gas
Patricia C. Plympton, Guidehouse

Background

Illinois utilities have been administering energy efficiency programs since 2008 and now have among the largest energy efficiency portfolios in North America. In 2018, new legislation added Market Transformation (MT) Programs to energy efficiency portfolios.

In Illinois, during the decade between 2008 and 2018, the evaluation and administration of Market Transformation Programs was the responsibility of the State of Illinois (the Department of Commerce and Economic Opportunity (DCEO)). The 2016 Illinois energy legislation (Future Energy Jobs Act (FEJA) 2016) integrated the responsibility for MT Programs into utility energy efficiency portfolios. In 2018, Illinois utilities began a re-evaluation of MT Programs within the perspective of their objective to optimize the impact of the portfolio of energy efficiency programs. As an alternative program design to meet energy savings goals, MT Programs needed to be assessed in terms of resource requirements (i.e., costs), energy savings impacts, and, in stark contrast to traditional Resource Acquisition Programs, in terms of risks. The fundamental differences between RA and MT programs are shown in Table 1 (Davis, Harris, and Violette 2019a).

Table 1 Comparing resource acquisition programs and market transformation initiatives

	Resource Acquisition	Market Transformation
Scale	Program Administrator's service territory	Entire defined market
Target	Whoever can be induced to participate	All consumers of a particular product or service
Goal	Near-term savings	Structural changes in the market leading to long term savings
Approach	Save energy through customer participation	Save energy through mobilizing the market
Scope of Effort	Results from a single program	May result from effects of multiple programs or interventions
Level of Program Administrator Control	PAs can control the pace, scale, geographic location, and can usually identify participants	Markets are very dynamic, and the PAs are only one set of actors. If, how, where, and when the impacts occur are usually beyond the direct control of the program administrators

Evaluation and Measurement	Energy use and savings, participants, free-ridership, and sometimes spillover	Interim and long-term indicators of market progress and structural changes, attribution to the program, and cumulative energy impacts
Timeframe for planning, savings measurement, and cost-effectiveness	Typically based on annual or multi-year planning and reporting cycle savings	Typically planned and implemented over a 10–20-year timeframe.

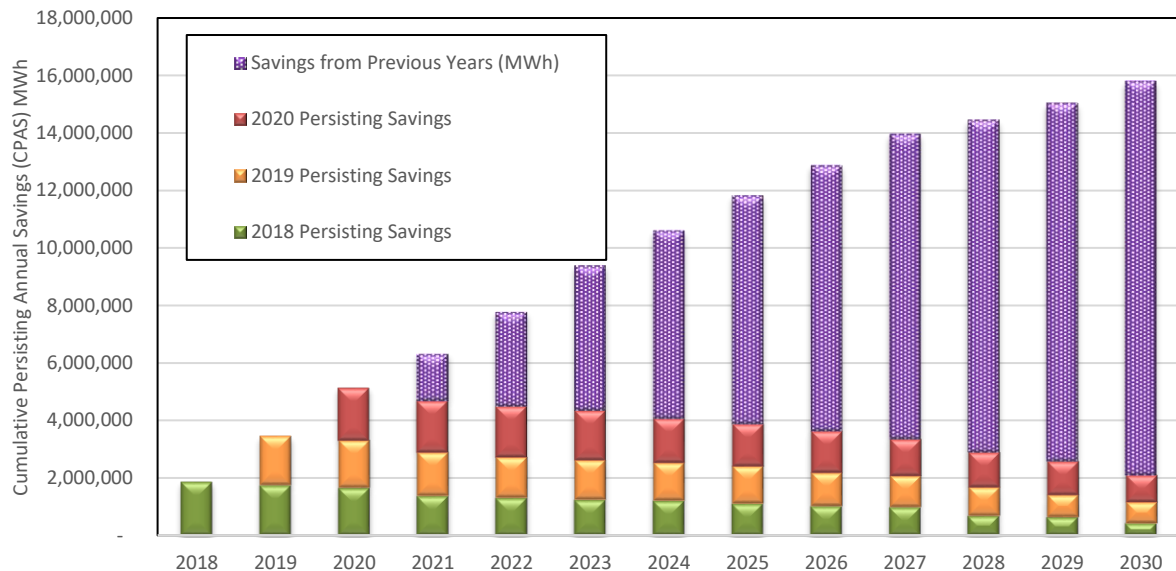
Given these fundamental differences, the primary question for EE portfolio planning is “What is the better program design (Market Transformation or Resource Acquisition) to adopt to pursue an energy efficiency opportunity?” The intent of a Resource Acquisition Program is to influence a single decision. The impact is the incremental energy savings of the more efficient option for the life of that measure. The savings value and, in many cases, the program attribution (net-to-gross value) is known (deemed) before the program has been initiated and before the resources have been allocated. The only unknown is how many transactions will be affected in the market in a given time period (realization rate).

On the other hand, the intent of a Market Transformation program is much more ambitious – to influence the entire market trajectory for an energy efficient product or service – all the decisions in the market. These decisions occur not only in the year that the resources are allocated, but in future years as well. The program plan (logic model) lays out how program resources will be allocated and the expected outcomes. These outcomes can be measured (Market Progress Indicators (MPI’s)), but they are only intended to indirectly produce energy savings. The impact on the entire market is tracked by estimating the expected change in the trajectory of the measure in terms of market share or products sold or installed. The energy savings impact can then be determined.

This means Market Transformation Programs can pursue a much larger impact and therefore yield much more energy savings for the resources allocated. However, MT Programs are much more uncertain and riskier. In Illinois, the rules under which these programs will be evaluated are still under discussion and development. The aim of this process is to provide utility portfolio managers as much knowledge about the evaluation process rules to minimize the uncertainty of MT investments so that they can be compared on a level playing field with traditional RA program designs before deciding which model is best.

This comparison of the relative productivity (energy savings per dollar of program investment) of alternative MT and RA program designs must be made using the rules from the 2016 Illinois legislation (FEJA 2016). For electric utilities in Illinois, the energy efficiency goals and measurements are unique (ACEEE 2019). The key element that is new to EE Portfolio Planning for electric utilities in Illinois is energy savings persistence. The key metric is Cumulative Persisting Annual Savings (CPAS). Figure 1 shows CPAS in green for 2018. Electricity savings decline over time but persist through 2030. This framework provides an incentive to EE portfolio managers to ensure that resources are allocated to programs that produce more savings over the long term.

Figure 1 Cumulative Persisting Annual Savings



In addition, the size and cost-effectiveness of programs incentivizing the accelerated adoption of LED Lighting continue to be the key to meeting electric portfolio savings goals. By mid-decade, the potential for continued savings is expected to decline as LED's reach saturation in residential and commercial markets. Investments made in Market Transformation programs in the next few years offer the possibility to fill this anticipated gap.

Market Transformation programs, if successful, also offer gas utilities the prospect of new sources of long-term savings. Gas energy efficiency programs have seen a reduction of cost-effective offerings for consumers as baselines for end use increases through code advancement, which decreases therm savings opportunities. Market Transformation programs offer an opportunity to identify, support and accelerate the adoption of next generation, non-incremental savings leap, gas end use technologies for consumers. New technologies identified and supported through Market Transformation programs allow gas utilities to continue to offer consumers options for energy efficiency in their homes or businesses, while also supporting the energy efficiencies goals of Illinois. Investing in Market Transformation programs early, with documented intent and agreement with regulators, offers the opportunity for gas utilities to claim cost effective market effect savings as new technologies are adopted in the market, supporting the increasing gas energy efficiency goals.

Illinois Progress to Date

After completing the transfer of the legacy (DCEO) MT programs to the utilities, an initial step was to examine industry best practices in Market Transformation programs. ComEd and its independent evaluator (then Navigant; now Guidehouse) conducted the Energy Efficiency Market Transformation Summit in Chicago in September 2018. Figure 2 includes the organizations represented at the Summit meeting.

Figure 2. Organizations Represented at the Energy Efficiency Market Transformation Summit



The meeting addressed 3 questions:

- 1) How does market transformation work in today's energy efficiency portfolio?
- 2) What are the must-have components of a market transformation initiative?
- 3) What market transformation initiatives could be pursued in the Midwest today?

The meeting produced valuable insights and guidance for Illinois utilities, evaluators, and stakeholders to enable MT Programs to be assessed on a solid foundation. Two reports (Davis, Harris, and Violette 2019a, 2019b) detail the discussions and conclusions. These insights include the following:

1. Market Transformation Programs require more up-front analysis to launch properly. To be able to influence an entire market requires a deep knowledge of the market and how it works, including an understanding of the business models of supply chain participants.
2. Program designs and strategies need to be more explicit and thought-out. Program logic models include the theory, the tactics, and interim metrics to measure impact. It should not be expected that MT Program logic models do not need market validation.
3. The RA Evaluation template should be discarded. MT Programs require a unique approach and trying to impose RA Evaluation protocols will be counterproductive.

Midwest Market Transformation Collaborative

In late 2018, Nicor Gas and ComEd, initiated an effort for utilities to work together, called the Midwest MT Collaborative, to develop progressive MT initiatives that would fit well with how utilities approach energy efficiency. This effort was based on the principle that if Midwest utilities pool resources to investigate, implement and evaluate MT initiatives, they can significantly leverage each other's resources for start-up and oversight/evaluation costs. Collaboration through MT also leverages activities such as marketing to customers and training salespeople to enhance market impact.

The Illinois utilities recognized two characteristics of MT Programs – 1) establishing the needed protocols and processes for MT Programs could be more efficiently advanced in collaboration with other utilities, and 2) energy efficiency markets and supply chains are not neatly aligned with utility service territories and can be more effectively influenced through collaborative efforts between utilities.

For this reason, Nicor Gas, ComEd, the Midwest Energy Efficiency Association (MEEA), and Resource Innovations created the Midwest Market Transformation Collaborative in 2019 (MEEA 2022). Although most Midwest states do not have the same MT Program opportunity as Illinois, this group has been used as a forum to share MT Program experiences and consider joint program initiatives. Since late 2018, the MT Collaborative has:

- Recruited 10 utilities, including all Illinois utilities and others in Wisconsin, Minnesota, Michigan, and Ohio
- Solidified \$640,000 in first- year funding from the collective group
- Initiated plans for developing new programs and technologies

Illinois Technical Reference Manual - Attachment C

In Illinois, as in most states, the Technical Reference Manual (TRM), which includes energy savings formulas and protocols, reduces uncertainty and risk for Program Administrators. The TRM, along with deeming net-to-gross factors prior to the program year, minimizes evaluation risk. After the program year is complete, the Independent Evaluator only needs to verify energy efficiency measure installations.

Although key fundamental elements of Market Transformation Programs may not allow this arrangement to be replicated for MT, it is a goal for Market Transformation Programs in Illinois to come as close to this risk-minimizing arrangement as possible.

The Illinois TRM Market Transformation Attachment C lays out the framework to the critical business plan components that are necessary to reach consensus to implementing a Market Transformation Program. The first major components to a Market Transformation business plan and highlighted in Attachment C are the market characterization, Unit Savings, Natural Market Baseline (NMB), Market Progress Indicators and Potential Savings. This research and market data is very important to then develop and a market evaluation pathway, utility attribution and the duration market effect saving can be claimed.

With this in mind, Version 8.0 of the Illinois TRM (this version applied to the 2020 program year) incorporated guidance for MT Programs in Attachment C to Volume 4 (IL TRM 2019). The approach and contents to this attachment was summarized in an ACEEE 2020 Summer Study paper (Graham, Gardner, and Daugherty 2020). This guidance highlights key aspects of MT Program, but it has not resolved the uncertainty issues for MT Programs. Illinois utilities are still evaluating RA and MT program options under a cloud of uncertainty. Until these issues are resolved in Illinois, MT program alternatives will be burdened with this bias.

Program Status

Given both the substantial progress toward a framework for planning and evaluating MT Programs in Illinois and the uncertainty of the still-unresolved issues, where does that put utilities' investments in MT Programs?

It was felt at this point that the best next step forward was to select an MT Program to move forward with and try to define the remaining rules using that program as a test case. The Midwest MT Collaborative base on best market transformation practices developed a set of criteria to assess programs that might be good candidates for MT (MEEA 2022). The criteria include the following:

1. Strong MT Logic (Market barriers, opportunities, and intervention strategies): There must be a thoughtful logic model that clearly defines the market and defensibly links the present state of the market to the desired future state. There must be identified market barriers and opportunities that the intervention strategies can overcome to effectuate market change.

2. Lastingness: Initiatives that can cause lasting market changes due to changes in codes, standards and equipment specifications are preferred over those that rely on softer mechanisms to assure long-term market change.
3. Leverage: Initiatives that identify strong leverage points in the market are preferred. An example of strong leverage points would include market leaders who control >25% of the market - or actors who influence them, or representatives of end-use customers or retailers who dominate the market, like large real estate developers, Home Depot, or strong trade associations.
4. Clear specification of target market and EE product: Initiatives that have a definable target market and a product or service that already is subject to specifications such as ENERGY STAR is preferred.
5. Strong non-energy benefits for end-use decision makers: The initiative offers additional non-energy benefits for the end user, enhancing the value of the initiative. Initiatives with multiple value streams are preferred.

There are a host of other important factors that need to be developed before launching a market transformation program, and these can sometimes sway which initiatives are selected. However, the set proposed here are some basic MT traits that can help utilities think about which initiatives will result in the most robust outcomes.

Like RA Programs, a basic characterization of the energy savings potential and cost-effectiveness is an essential input to portfolio planning. However, for MT Programs, a more thorough understanding of the market leverage points and the ability to realistically influence energy efficiency markets is a priority as well. Utilities in Illinois are performing market characterization and supply chain research, that will help understand market barriers, intervention strategies and opportunities that would lead to a logic model with documented short- and long-term market outcomes.

Because of the critical importance of the program logic, all the questions about the effectiveness of the program strategy must be asked and answered as early as possible before or shortly after program launch. If there are issues with understanding how markets work, the nature of market barriers, the logical connection between how the program is trying to affect the market and the ultimate energy savings, or with the processes by which the program's impact will be measured, these issues need to be identified and resolved before MT program implementation.

Several programs were examined to initially launch as Market Transformation Programs, but for ComEd participation in the Retail Products Platform is now seen as a test case for MT Programs. Two of the MT Programs in Illinois that Nicor Gas is exploring are Advanced Windows and Efficient Rooftop Units (eRTU).

Advanced Windows cover the next generation of window products, such as thin triple pane windows and quad-pane windows. For Advanced Windows, Nicor Gas is coordinating activities with NEEA to co-develop a MT strategy for this product and is an active participant in a newly formed national coalition of actors to advance windows, the Partnership for Advanced Window Solutions (PAWS). Nicor Gas is investing in specific activities to develop the necessary information to reach consensus with stakeholders and evaluator. Nicor Gas has funded the development of a national natural market baseline, with the intent to develop an Illinois specific natural market baseline. Nicor Gas worked with ComEd and Ameren IL to develop an Illinois specific qualitative market characterization around the window purchase journey and is engaged with homebuilders in Illinois to better understand how window product choices are made for new construction.

The eRTU program is focused on understanding optimal energy efficiency improvements to existing RTU products, such as foam insulation around the box and dampers. Nicor Gas worked with NEEA in 2021 to develop a new specification, based off the CSA P.8 standard, that outlines prescriptive and modeled requirements that deliver heating energy savings and are direct replacements for existing RTUs (NEEA). Nicor Gas is conducting market characterization research in Illinois on commercial RTUs to develop data necessary to complete an Illinois natural market baseline. This work is crucial to developing data to assess the potential of the MT Program and further allocation of additional resources.

For both these Nicor Gas MT Programs, there's additional work and effort needed to develop the business plan that will form the foundation of the MT Program. Nicor Gas will continue to work with the existing partners and with stakeholders and evaluators to answer the questions identified in this paper that allow the Illinois utilities to prudently allocate resources to MT Programs.

To help with full transparency the Illinois utilities have been working closely with their independent evaluator to be informed and advise in the business plan efforts and to help in the process to produce a work product that can be verified by an evaluator in efforts to reach stakeholder consensus on a business plan for implementation in the MT Program.

With Attachment C in place, ComEd examined several options for its initial entry into market transformation, and in mid-2020, joined the Retail Products Platform (RPP), a national initiative designed to drive ever-increasing energy efficiency in the national market for refrigerators, clothes washers/dryers, and other household appliances.

Led by the Northwest Energy Efficiency Alliance (NEEA), utilities across the country had for several years been coordinating their efforts to incent large retailers to stock more efficient appliances and to use their collective purchasing power to push manufacturers to bring efficient appliances to market. RPP participants also work to advance efficiency standards through support of federal rulemakings such as ENERGY STAR, evolution of testing procedures, and other activities.

While ComEd patterned its program after successful models being used in other jurisdictions, the initial evaluation process proved to be challenging. This was Illinois's first utility program to be evaluated using the Attachment C MT framework, and it became evident that there were program-specific issues not directly addressed in the framework. At the time of this writing, a workpaper outlining approaches to addressing these details is being prepared for potential addition to the TRM. It is likely that future MT programs will also have elements which Attachment C does not address; additional workpapers would be a possibility in those cases as well

Energy Efficiency Portfolio Strategy Issues

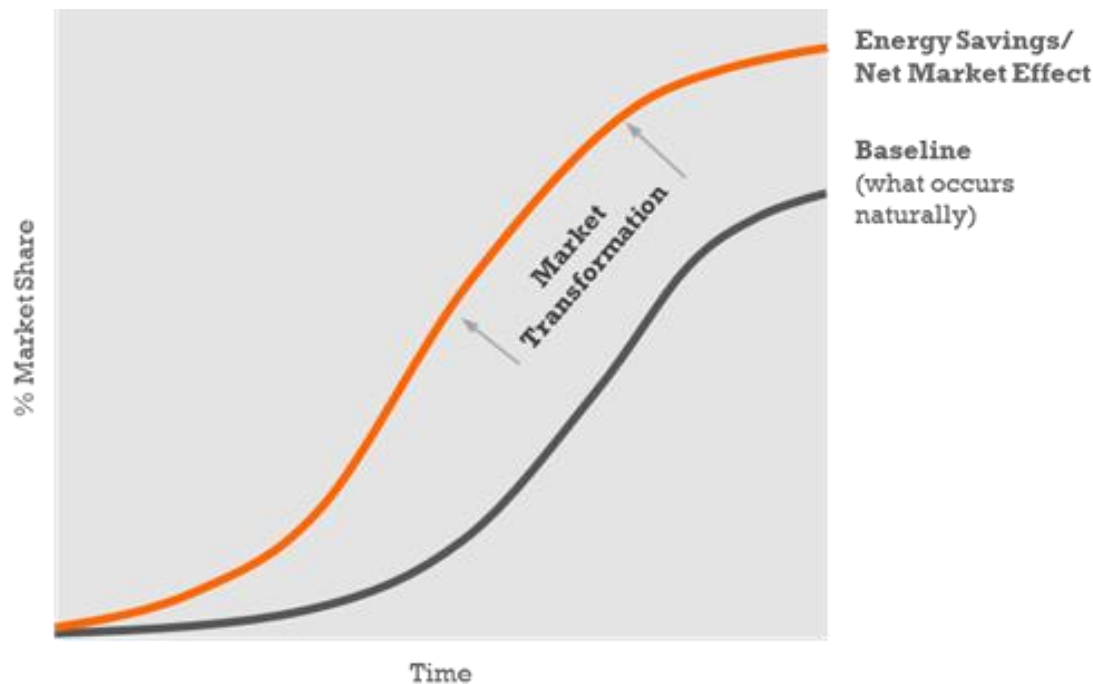
A key conclusion from the Market Transformation Summit was "*In-depth knowledge of targeted energy efficiency markets is critical*" (Davis, Harris, and Violette 2019a). This knowledge is applied in developing the energy savings framework. Key questions remain to be answered in Illinois before a framework can be applied.

Can the uncertainty in 1) program design logic and 2) energy savings impact be minimized before resource investments are made?

Can the rules for managing energy savings and evaluation risk be established before resource investments are made?

1. Program Design Logic.

- a. Are all questions about the linkage between proposed program actions and expected market changes answered?
 - b. Is there agreement with Evaluators about how market changes will be measured?
 - c. Finally, is there agreement on what to do about differences between expected market impact and observed market impact?
2. Energy Savings Impact
- a. Has a framework been developed and reviewed for determining MT Program impact?
 - b. Is there agreement on how to develop the Natural Market Baseline including what data sources will be used and what adjustments, if any, need to be made?
 - i. Is there agreement that the historical market data used as a basis for projecting the NMB is appropriate and adequate?
 - c. Is the incremental program impact projection reasonable and achievable?
 - d. Is there agreement on including savings from non-participants?
 - e. Under what criteria should the NMB and Program Impact Projections be revisited and potentially revised?
 - f. How will any revisions affect the productivity of resource allocations?
 - i. Will savings associated with prior allocations be revisited?
 - ii. How will the revisions affect past vs. future measure installations?



Based on what criteria and when do utilities “bank” savings? Recall the critical difference between RA and MT programs: RA is seeking savings from market decisions (equipment purchases or installations) made in the same year as the funds are allocated (in other words, in the same program evaluation period). MT Programs are seeking to influence the way the market works in the future. This includes market decisions that *have not yet been made*. In fact, for MT Programs, the market impact is not a group of installations to be measured with the Evaluation Period (for RA Programs, this is typically one year), but an expected group of market decisions occurring in the future.

For RA Programs in Illinois, the savings are known before the program year starts and the attribution (NTG value) is known. Only the number of installations is unknown (this evaluation factor is called a Realization Rate).

For MT Programs where the impact is in the future, the savings per measure may change (TRM savings values are subject to change every year). For MT Programs, the NMB is a forecast of the future in which no utility-funded energy efficiency programmatic intervention exists and is designed to capture free ridership. But what happens when conditions in the market change and the trajectory of the program market impact requires revision? These questions have yet to be addressed in Illinois.

Summary

The Market Transformation Energy Savings Framework in Illinois has made steady progress in the last 4 years. Leading industry experts came together in a facilitated workshop format to define best practices. General guidelines for MT Programs have been incorporated into the Illinois TRM. Several MT project concepts have been analyzed by Illinois utilities and through the Midwest Market Transformation Collaborative.

However, crucial decisions remain, primarily around program risk and uncertainty. A framework that does not find the right balance between risk and energy savings benefits will result in future EE portfolios that are biased in favor of Resource Acquisition Programs. If Illinois utilities are going to identify, develop, prudently allocate resources to, and implement MT Programs, the remaining framework issues need to be addressed and resolved in a timely way.

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