FUNDAMENTALS OF MARKET TRANSFORMATION

MARKET TRANSFORMATION: DEFINITION

The concept of market transformation (MT) was developed in the early 1990s as a market-based approach to increasing adoption of energy efficient products and services.

The full definition includes additional language about the "how" of market transformation:

"Market Transformation is the strategic process of intervening in a market to create lasting change in market behavior by removing identified barriers or exploiting opportunities to accelerate the adoption of all cost-effective energy efficiency as a matter of standard practice."

MARKET TRANSFORMATION: KEY CONCEPTS

Innovation: Energy efficiency has always been driven by innovation. Market transformation seeks to find efficient innovations that can leverage the power of market forces to achieve the long-term goal of all cost-effective energy efficiency. Once identified, MT provides a structured process to work with the market and drive adoption of the efficient innovations.

MT Logic: Barriers and Opportunities: Any innovation faces barriers to increased market adoption. Examples of traditional barriers include:

- lack of awareness,
- lack of availability,
- uncertainty in performance,
- lack of capability, and
- price.

MT programs are designed to specifically address and overcome these barriers to enable accelerated market adoption. MT also recognizes that innovations are most successful when they can catch a wave of opportunity that may drive their adoption due to factors unrelated to the core efficiency innovation. Examples include:

- need for air-conditioning driving ductless heat pump sales,
- water resource efficiency driving sales of front-load clothes washers, and
- a change in federal standards driving a potential change in water heating efficiency.

MT develops an evolving set of intervention strategies to remove barriers or exploit opportunities to increase market adoption over time.

"Market Transformation is the strategic process of intervening in a market to create lasting change in market behavior."

Leveraging Market Forces: Market transformation is built on the idea that markets are powerful forces for change that can be leveraged to accelerate adoption of energy efficient innovations for their own purposes. MT is a strategic process designed to maximize the benefit of these market forces to advance energy efficiency outcomes. MT recognizes that markets work in specific ways to maximize their own outcomes and seeks to find ways to align energy efficient outcomes with those of the market.

Diffusion of Innovation: Efficient innovations are often viewed as radical new ideas when they are first introduced. If aligned with market interests, these innovations grow to be accepted as mainstream practices; some eventually become mandated through government regulations.

The process of innovations moving through these various stages of market adoption has been studied extensively by researchers in the consumer products and technology sectors. The Diffusion of Innovations Theory[1] has developed a structured view of the process, focused primarily on the characteristics of the markets at a given point in time. It has segmented the market into five groups of adopters: innovators, early adopters, early majority, late majority and laggards.

Figure 1 illustrates this theory.

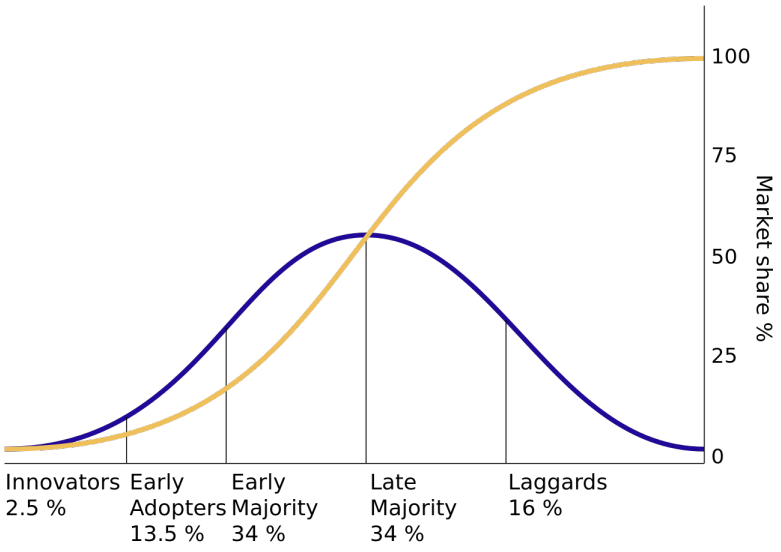

Figure 1. Diffusion of Innovations Theory

Market transformation leverages the Diffusion of Innovations theory as a foundational structure to guide the process of assessing, developing and implementing intervention strategies to address barriers and opportunities as the innovation progresses up the adoption curve over time. This theory has fundamental implications in almost all dimensions of the discipline of market transformation. The alliance has structured our operational practices around this theory and its many corollaries.

[1] Diffusion of Innovations, 5th Edition, 2003 Everett M. Rogers

MARKET TRANSFORMATION AND RESOURCE ACQUISITION: TWO PARADIGMS FOR ENERGY EFFICIENCY

Resource Acquisition Paradigm

For most of the past four decades, energy efficiency programs have successfully implemented a paradigm that treats energy efficiency as a transaction that is analogous to any other energy resource acquired by a utility. This approach, often referred to as resource acquisition (RA), is built around individual transactions; i.e., the exchange of money for the energy savings embodied in a quantifiable specific change in an individual decision-maker's choice of technology, design, or practice. For example, a consumer receives a rebate if they choose to purchase more efficient light bulb. Incentives are generally proportional to the energy savings and are offered to all potential decision makers equally regardless of need or interest.

The transactional nature of RA paradigm drives many aspects of program design and implementation. It implicitly assumes that market adoption is driven primarily by a financial cost-benefit analysis at the time of purchase decision. As a result, the RA paradigm creates a focus on influencing individual financial transactions. This focus requires a program design capable of marketing to and offering financial incentives to large numbers of individual decision makers just at the time they are making a purchase decision.

Under the RA paradigm, energy savings are typically measured by counting the number of transactions and assessing energy savings per transaction. As a result, the RA paradigm often requires rigorous tracking and documentation of individual transactions.

Cost-effectiveness of RA programs are often measured over short time frames comparing the program costs to energy savings benefits on a year to year basis.

The RA paradigm has been very successful over the last four decades. However, energy savings for many efficiency opportunities are smaller and in many cases the value of the energy savings no longer justify meaningful economic incentives to individual decision makers. While RA will continue to be the primary paradigm for utility efficiency programs, these trends indicate that it will be increasingly harder to rely on financial incentives to individual decision makers as the primary approach to energy efficiency.

Market Transformation Paradigm

Market Transformation represents a different paradigm that provides a comprehensive framework to increase the efficiency of markets over the entire lifecycle of an efficiency innovation.

The MT paradigm is grounded in diffusion of innovation and therefore adapts and changes as an innovation moves from the first introduction through its life cycle.

The MT paradigm is focused on market barriers and opportunities that are present at the current stage in the diffusion process. Accordingly, an MT program will evolve over its life and its focus will change as barriers and opportunities change.

Energy savings result from increases in market adoption and are estimated at the whole market level. According to diffusion of innovation theory, there is often an exponential increase in market adoption that follows a significant amount of effort during the early stages of market diffusion. That means that the bulk of the market adoption and therefore measurable energy savings occur after much effort and investment has been expended to remove barriers or exploit opportunities. In other words, there is a significant time delay between the investment in MT interventions and the main delivery of energy savings from increased market adoption following successful intervention in the market.

Cost-effectiveness for MT programs is measured based on total societal costs and benefits over the full lifecycle of the MT interventions. NEEA's standard cost-effectiveness time frame is 20 years.

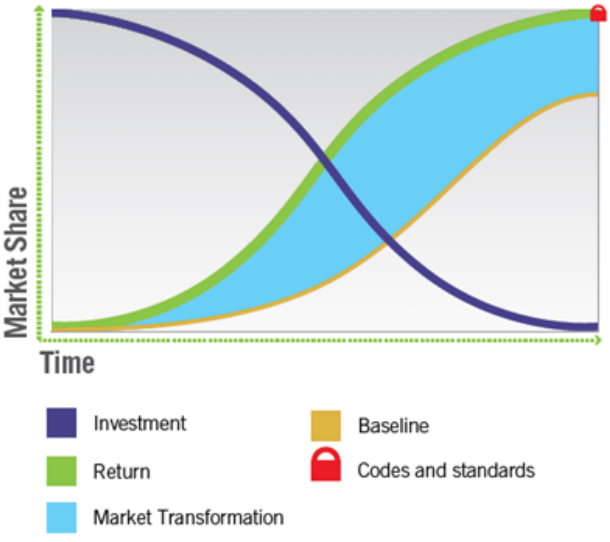

Figure 2. Market Transformation Over Time

MARKET TRANSFORMATION: INCREASING AND ACCELERATING MARKET ADOPTION

As illustrated in Figure 2, MT recognizes that in most successful MT programs, there is probably an underlying diffusion curve that would have occurred with no intervention. In Figure 2, this underlying curve is represented as the baseline. If successful, the MT interventions will accelerate market adoption and increase the ultimate market share indicated by the green "return" diffusion curve. The increased market share is often the result of a deliberate effort to influence codes and standards represented by the red

lock symbol in Figure 2. The area between the green MT and the gold baseline curves can be considered direct effects of the MT programs.

The dark blue inverted curve in Figure 2 represents the level of programmatic investment over time and illustrates the decline in program costs as the market forces begins to drive increased market adoption.

Alliance and Partner Roles Over Time

Figure 3 illustrates the different roles for alliance partners over time.

NEEA staff tend to take a lead role during the early stages of the adoption curve and at the end when the focus turns to codes and standards efforts. Utility programs play a very important role to help drive market demand during the early adopter/early majority stages. During the early and late majority stages, market partners and natural market forces take over and drive market adoption.

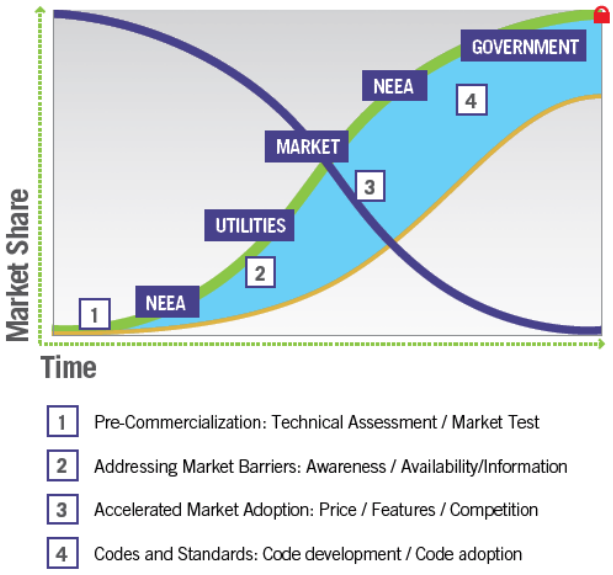

Figure 3. Alliance Partner Roles in Market Transformation

From Theory Into Action

Over the past two decades, NEEA has developed a defined set of tools and processes to operationalize the market transformation theory and turn it into actionable programs. Major tools include:

1. **Market Characterization:** Market transformation relies on a deep understanding of the market barriers and opportunities and leverage points. This requires market specific research to understand supply chains and market structures and is documented in a formal report.

2. **Logic Models:** NEEA uses this tool as a graphic and narrative representation of the market transformation logic. Logic models start with barriers and opportunities and identifies links to specific intervention strategies that have expected near, mid and long-term outcomes the result in a long-term vision of the transformed market. The model includes a series of linkages between actions and outcomes that have defined market progress indicators (MPIs) that are evaluated in the near term to ascertain whether the MT program is on track to achieve the longer-term outcomes.

3. **Market Progress Evaluation:** Markets are dynamic and are constantly evolving. In order to assess the success of the MT program, it is necessary to

launch evaluation of the program in parallel with program implementation and to provide feedback to the program on a nearly real-time basis. MT evaluation efforts include assessment of MPIs as well as program implementation effectiveness. NEEA uses third-party evaluators in order to ensure independent assessments of MT program performance and market response. The findings of the third-party independent evaluations are documented in public reports for review by regulatory and other stakeholders. The evaluators also provide an independent assessment of the validity of the assumptions and methods contained in the cost-effectiveness models for the initiative.

NEEA works to find and develop new efficient technologies and bring them into wider market adoption.

4. **Adaptive Management:** MT programs must adapt as market conditions change. NEEA's management practices are designed to be flexible to adapt as markets change, and as MT evaluations identify the need or opportunity for adaptation. NEEA tracks these changes in quarterly reporting to management and its Board, as necessary.

5. **Initiative Life Cycle (ILC) Stage Gate Process:** NEEA works to find and develop new efficient technologies and bring them into wider market adoption. These early stage technologies often come with many risks as well as promising future performance. NEEA has developed a stage-gate system to manage NEEA's financial and performance risk in proportion to proven success of these new technologies. RPAC participates in this process by voting to allow new technologies to enter the program portfolio as well as before committing to full-scale implementation.

6. **Alliance Cost-effectiveness (ACE) Model:** Given the long-term nature of market transformation, NEEA has developed a specific tool to assess cost-effectiveness of individual MT opportunities. The ACE model assesses cost-effectiveness over a 20-year program life, using a total societal cost framework developed by the Northwest Power and Conservation Council. The ACE model is created by a separate analytical team and serves as long-term tracking and documentation of actual market adoption and costs over time as the MT program progresses. The ACE models are reviewed by the Cost-Effectiveness and Evaluation Advisory Committee (CEAC) as well as by the third-party MT program evaluators.

7. **Portfolio Management:** NEEA staff - along with the RPAC - actively manage a portfolio of MT programs toward an overall set of metrics. NEEA and RPAC manage this portfolio to ensure a healthy pipeline of new emerging efficiency opportunities, to balance risk with energy savings potential and to ensure a balanced, equitable delivery of value across the region.