Cost-Effectiveness Framework for Market Transformation Initiatives

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The Growth of Market Transformation Nationwide

Limited Resource Acquisition Opportunities

As demand side management has matured as an industry concept the available energy efficiency resources have diminished.

Market Transformation as an Alternative

Many jurisdictions have begun to look to Market Transformation initiatives as a supplemental part of their energy efficiency strategies.

Identifying New Strategies to Effectively Evaluate these Initiatives

Simply applying the same evaluation strategies used for Resource Acquisition programs isn't always appropriate

Addressing Fundamental Differences Between Market Transformation (MT) and Resource Acquisition (RA) Programs

Resource Acquisition vs Market Transformation Characteristics

RESOURCE ACQUISITION

Transactional Nature
Short-term transactions in pursuit of efficiency as a resource.

Targeted Initiatives
RA programs target specific measures and purchase the associated efficiency gains.

Clear Definitions of Participants
Identifying free-riders and non-participants is straightforward, but potentially difficult.

MARKET TRANSFORMATION

Focus on Systemic Change
MT programs aim for long-term, systemic changes.

Broad Goals in Pursuit of Efficiency
MT programs aim for long-term, systemic changes rather than short-term transactional gains.

Societal in Scope
The distinction between participants, non-participants, and free-riders is blurred.

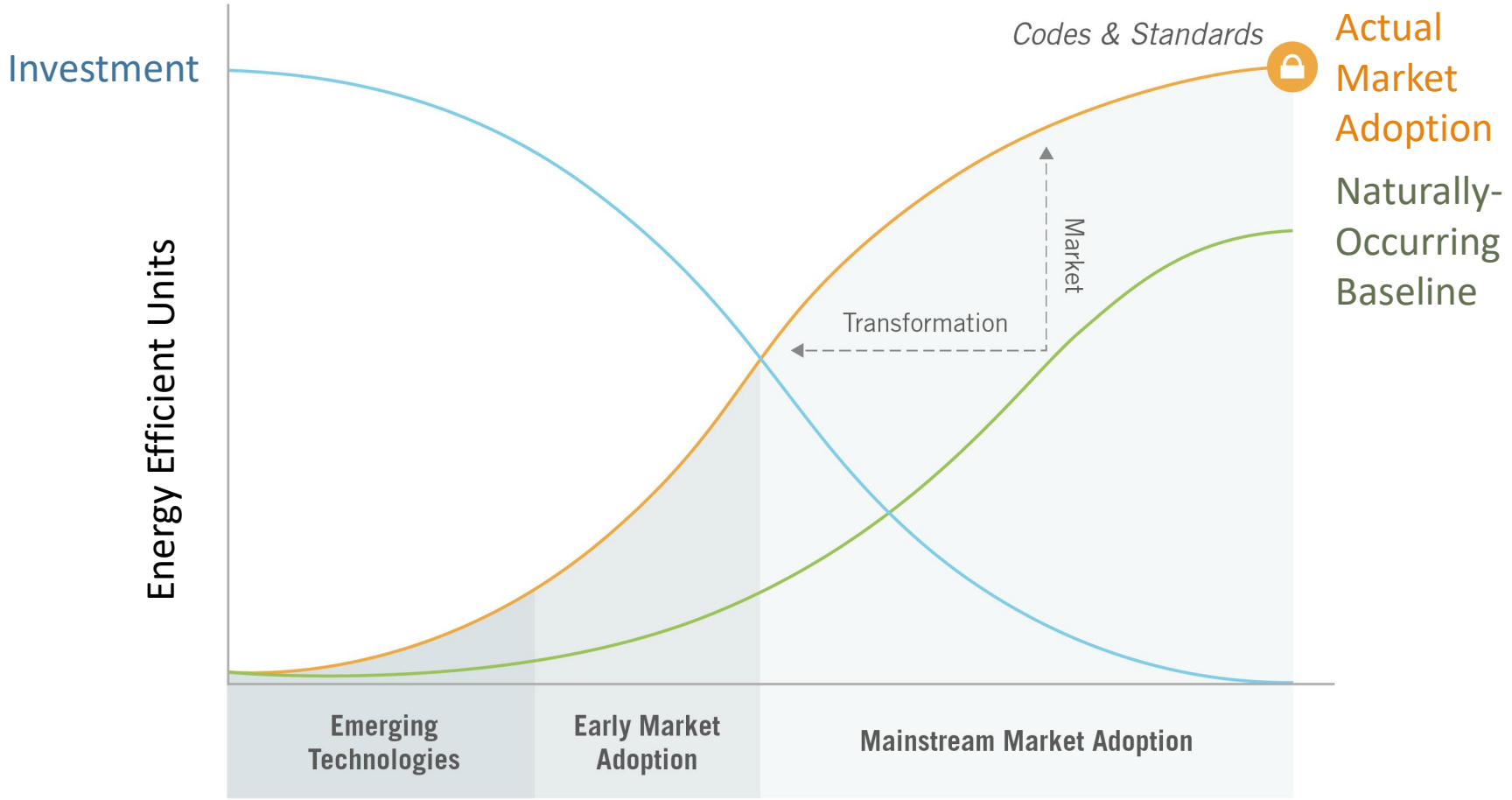
Challenges in applying traditional tests to Market Transformation programs

Inadequate Short Time Frames
Short analysis periods typical of RA fail to capture long-term impacts of MT investments.

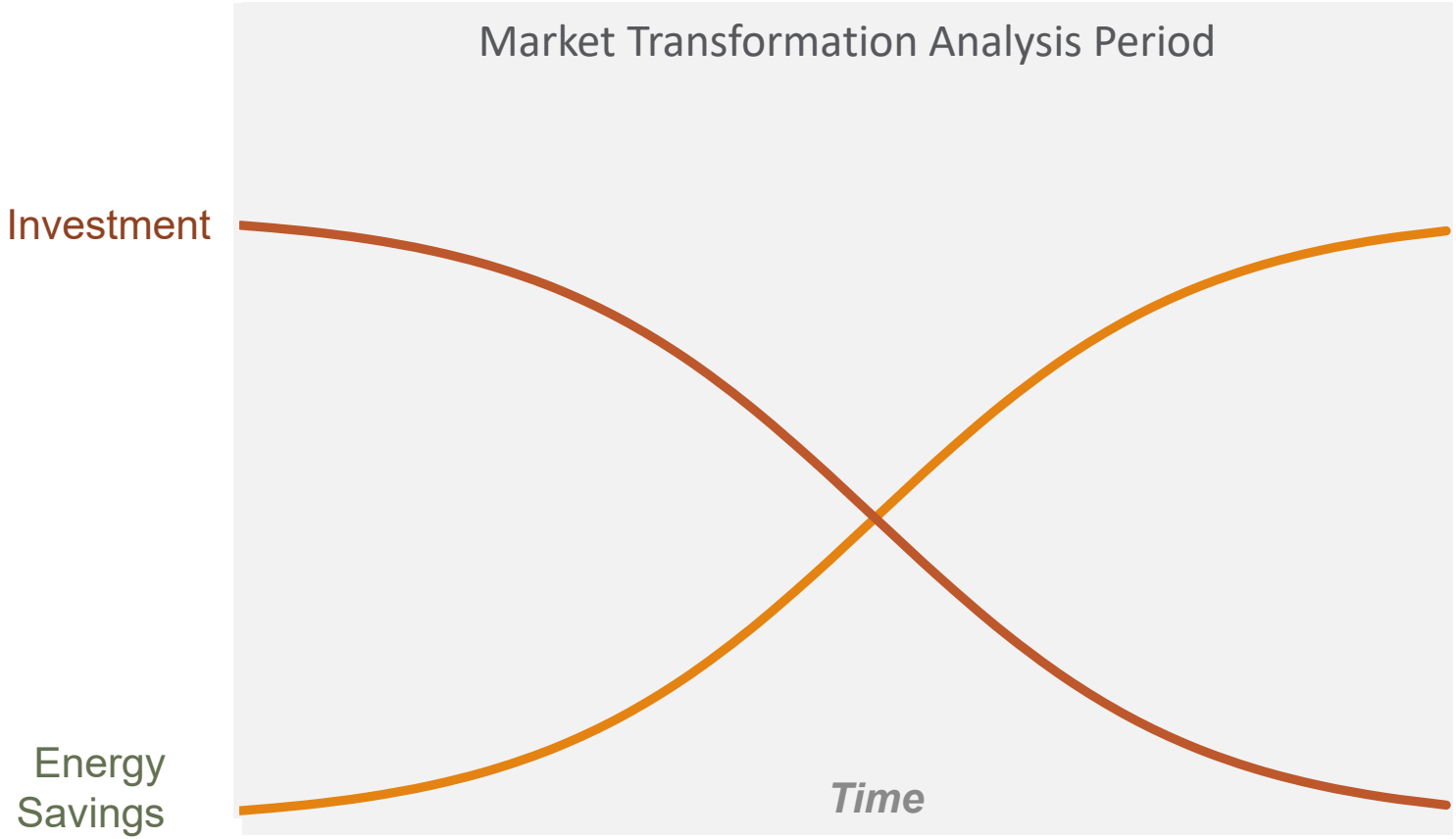
Investment and Efficiency Disconnect
MT programs show less direct connection between investment and outcomes compared to RA programs.

Broad Program Scope
MT program activities cover multiple measures, broad applications, and wide ranging impacts complicating evaluation.

S-curve lifecycle and investment/efficiency gains timing



Extended Analysis Time-Frame



Market progress indicators and logic model alignment

Cost-Effectiveness Analysis

Evaluating cost-effectiveness varies by market phase, with early phases showing less efficiency gain benefits.

20-Year Analysis Period

A 20-year period captures the full lifecycle costs and benefits, balancing short-term and long-term impacts.

Market Progress Indicators

Indicators track program activities and outcomes, aligning with the logic model and aiding risk mitigation.

Aggregation of measures and impacts in Market Transformation programs

Diverse Efficiency Measures

MT programs influence a wide range of efficiency measures through various activities, unlike targeted RA programs.

Challenges in Incentivizing Specific Applications

Mid-stream incentives cover multiple applications, making it difficult to select specific uses to incentivize.

Program-Level Cost-Effectiveness Analysis

Aggregating all measures allows MT programs to capture comprehensive impacts for accurate cost-effectiveness evaluation.

Broad scope and participant/non-participant distinction in Market Transformation

Participant Clarity in Resource Acquisition

RA programs clearly define participants versus non-participants, supporting varied test perspectives.

Broad Scope of Market Transformation

MT affects all consumers and technologies, making participant distinction complex.

Societal Test Perspective

A societal perspective evaluates total regional impact considering all costs and benefits from market changes.

Example: Heat Pump Water Heaters Initiative

Early technology development and market preparation efforts

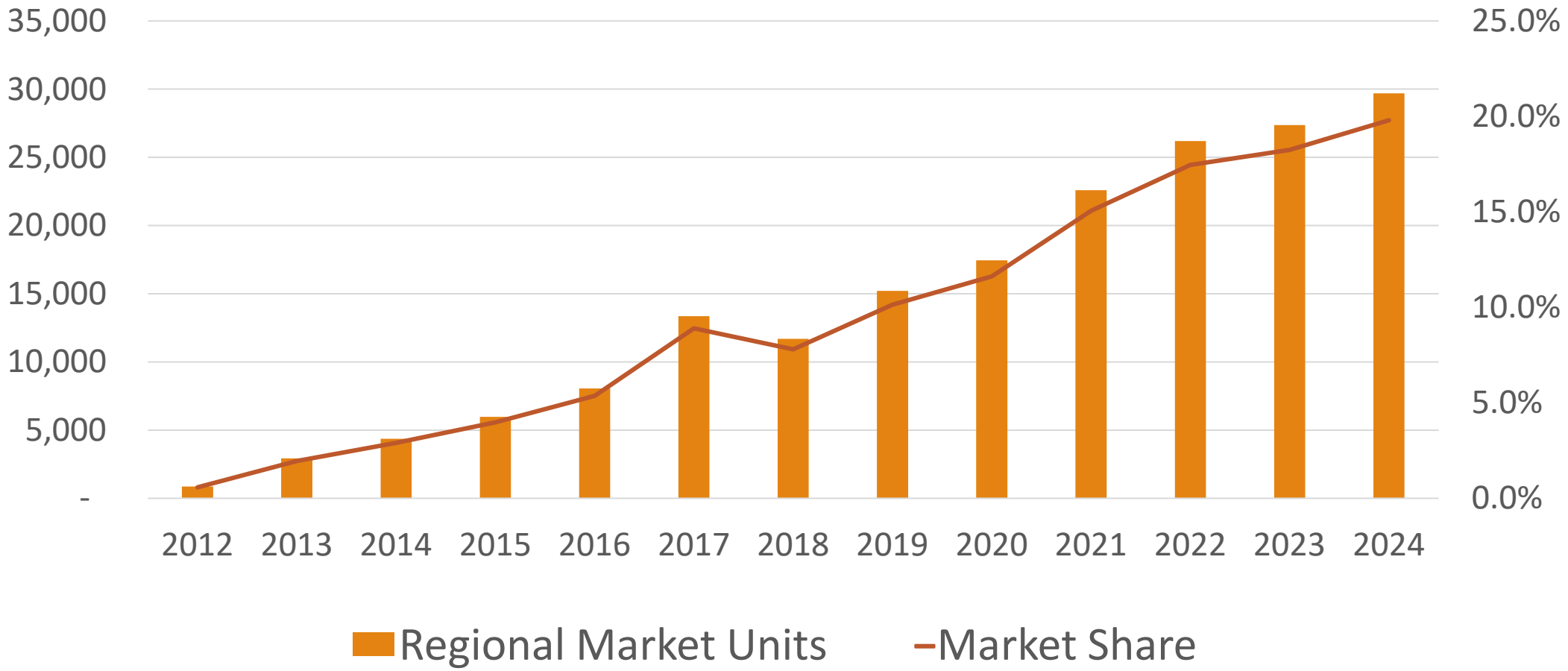
Long-term Technology Advancement

NEEA has worked since 2005 to develop and advance Heat Pump Water Heater technology overcoming market barriers.

Market Adoption Challenges

Despite years of effort, market share for Heat Pump Water Heaters was only 2% by 2013

Market adoption progress and program strategy



Federal standard adoption and long-term cost-effectiveness realization

Federal Standard Implementation

In 2024 Department of Energy set a federal standard making Heat Pump Water Heaters standard in 2029.

Cost-effectiveness Over Time

Most savings from this initiative will accumulate after traditional cost-effectiveness evaluation is meaningful.

Conclusion

Tailored Cost-Effectiveness

Market transformation programs need specific cost-effectiveness frameworks considering long-term effects and broad impacts.

Integration of Diffusion Theory

Using diffusion theory helps understand how innovations spread and influence market transformation over time.

Broad Evaluation Perspective

Evaluations at the program level ensure initiative evaluations are optimized for systemic and societal benefits.