Framework for Estimating MT Savings

DRAFT MT Framework Whitepaper

Presentation to SAG NTG Working Group – June 14, 2019
Comments Due: June 27, 2019

Margie Gardner, Resource Innovations
Jeff Harris, NEEA
Dulane Moran, NEEA,
Ralph Prahl, Prahl and Associates

MT Savings Framework Paper--Overview

- Purpose
  - Serves as a framework for evaluating MT initiatives and estimating MT savings
    - Anticipate future development of unique protocols for individual initiatives if needed (not part of this phase)
- Approach
  - Based on best-practices nationwide
  - Review through SAG MT Saving Working Group
  - Organized in two primary sections:
    - Section 1: Background/Context Information
    - Section 2: Estimating MT Savings

resource innovations

neea

Section 1: Background and Context

Purpose of the Paper

- Develop framework for estimating MT savings in IL
  - Could be used with adjustments for other states
- Possible that unique protocols for individual initiatives will be needed
- Incorporate in IL TRM – Volume 4, Cross-Cutting Measures and Attachments as Attachment C
  - Analogous to Attachment A, NTG calculations in Volume 4

resource innovations

neea

Section 1: Background/Context

Illinois Context

- Future Energy Jobs Act (FEJA) brings MT to Utilities
- Utility Midwest MT Collaborative
  - Catalyzed by Nicor and ComEd – other utilities joining
  - First initiatives for review in Illinois are “legacy” programs: Building Operator Certification (BOC); Illinois Home Performance (IHP) and Codes
  - Other initiatives in the queue
  - MT Business Plan with Logic Model are key tools

Business Plan Content (appendix A)

Documents the strategy, assumptions and data at the time of launch

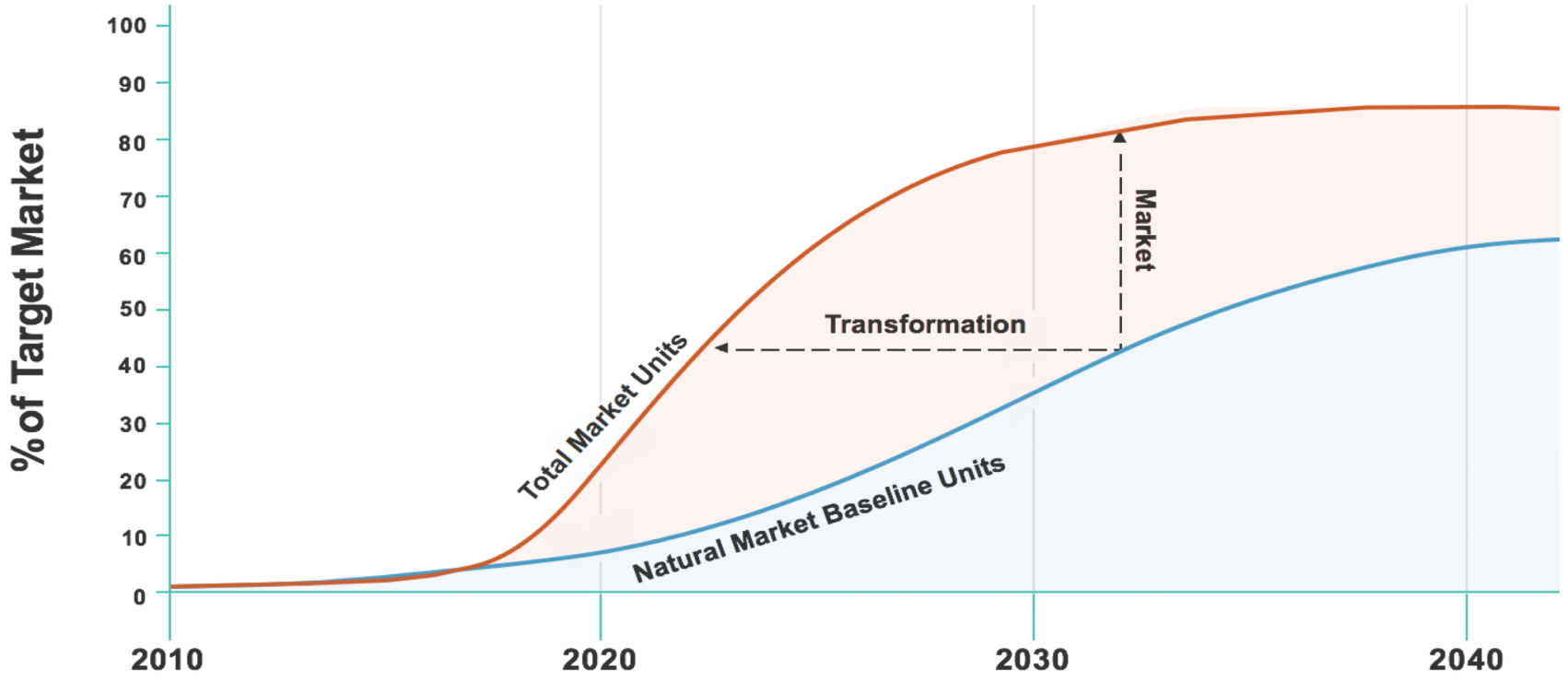
- Changes as knowledge of the market evolves

Contains

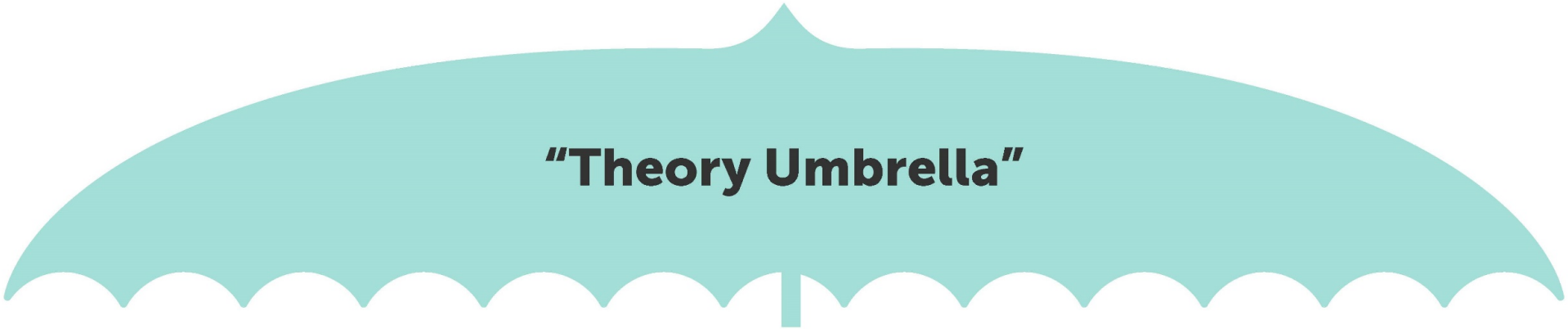
- Specified target market and description of product/service
- Logic Model – Theory of Change
  - Barriers; Opportunities; Activities/Interventions; Outputs; Market Outcomes; Ultimate Desired Impact
- Suggested Market Progress Indicators including: data collection/management plan; input from Evaluators
- Multi-year estimated budget; savings; other c-e parameters (e.g. lifetime)
- Other items as needed for that market or utility

Definition of Market Transformation

- Market Transformation (MT) is the strategic process of intervening in a market to create lasting change that results in the accelerated adoption of energy efficient products, services and practices.



Market Transformation =



- Emerging Technology
- Pilots and prep *(e.g., spec development)*
- Implementation *(including rebates, marketing, training, relationship development, etc.)*
- Market research and assessment
- Codes and standards

- MT serves as a "Theory Umbrella", combining multiple activities to drive market change per the initiative's logic model
- Activities are often funded from multiple areas within a utility's budget

Comparison of RA and MT (Prahl and Keating, 2014)

	Resource Acquisition	Market Transformation
Scale	Program	Entire defined market
Target	Participants	All consumers
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	Results from effects of multiple programs or interventions
Level of Program Administrator Control	PAs can control the pace, scale, geographic location, and can identify participants in general	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 control of the program administrators
Evaluation and Measurement	Energy use and savings, participants, and free-ridership	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

What makes an MT Initiative Recognizable?

- MT Business Plan developed in advance
  - Grounded in MT hypotheses that accelerates market's adoption of EE
  - Clear intent to drive lasting market change in chosen market
  - Theory of change documented in a logic model that links barriers/opportunities to key activities with anticipated, lasting market changes (Logic Model)
  - Defined market progress indicators

resource innovations

neea

MT Evaluation

- Evaluation Approach: Theory-Based Evaluation
  - Are observed market changes consistent with the logic model?
  - Multiple metrics for market progress that are linked to MT activities
  - Is there a “preponderance of the evidence” across metrics that indicate that Initiative was influential?

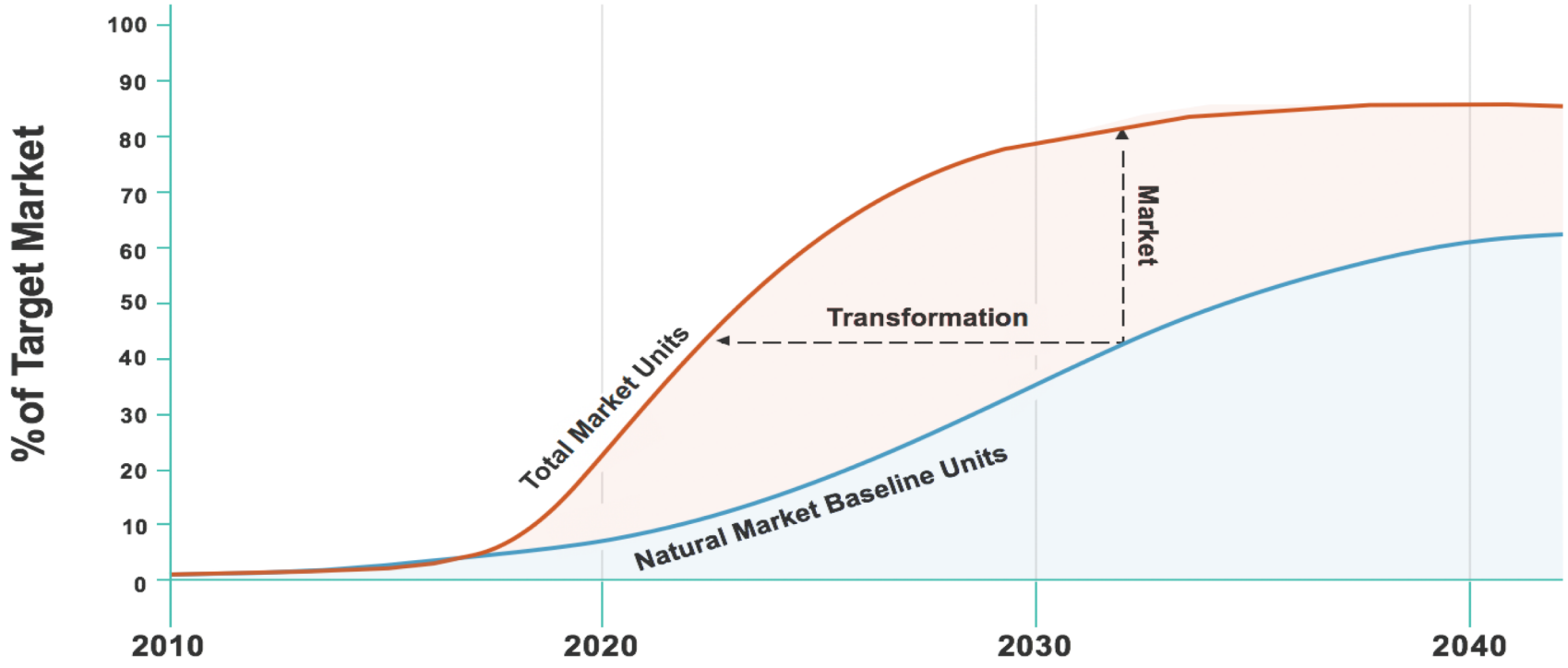
- Evaluation Products
    - “Market Progress Evaluation Reports” (MPER): developed on regular basis
        - Recurring efforts to understand the changing market
        - Track the market including “Market Progress Indicators” (MPI)

resource innovations

neea

Section 2: Estimating Savings for MT Initiatives

Overall Framework for the Calculation



resource innovations

neea

Total Market Transformation Energy Savings

- ***Total Market Energy Savings= Unit Energy Savings (UES) x # MT Units***
    - *# MT Units = Total Market Units minus Natural Market Baseline Units;*

    Note: # MT Units are then adjusted for 'accounting' and 'allocation'

resource innovations

neea

Total Market Units

- Data from
  - Public sources (e.g. housing starts)
  - Market actors (e.g. manufacturers or distributors)
- Extrapolation/Inference to match geography often needed

Unit Energy Savings

- Measured in kwh/unit; therms/unit, kW/unit
- Pull from available sources:
  - TRM
  - Other program documents
  - Other states/regions, adjusted
- Use proxy and improve estimate as initiative is developed

resource innovations

neea

Attribution and Estimating Natural Market Baseline

- Key adjustment for "what would have happened without utility intervention" is the Natural Market Baseline
  - Developed as an "S" curve, consistent with innovation diffusion theory
  - Draw from:
    - Market and sales data in the past
    - Industry forecasts; trade association materials
    - Research institutions (such as LBNL)
    - Manufacturers and Distributors
  - Identify data gaps that are possible and feasible to fill
- Ensure initial Natural Market Baseline is included in the Business Plan

resource innovations

neea

Reviewing Natural Market Baseline over Time

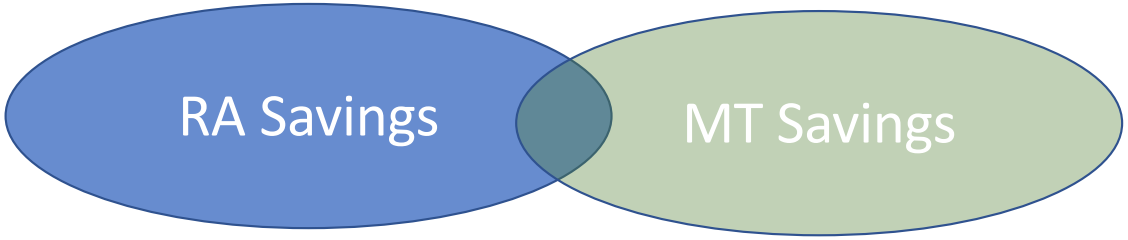
- Keep tabs on what's happening through MPERs
- Change the baseline if significant impacts
- Examples of "significant"
  - Key assumptions in initial forecast were incorrect
  - Timing of anticipated events changed significantly
  - Exogenous conditions changed
  - New sales data changes assumptions
  - Criteria for "efficient" changes
  - Substitute products change the market

resource innovations

neea

Accounting for RA & MT in same market

- Goal is to prevent double counting of savings between RA and MT



How should Illinois adjust savings to prevent double counting, ensure both RA and MT are reasonably treated, and enhance cooperation between RA and MT to achieve the greatest benefit?

resource innovations

neea

Example of issues that arise

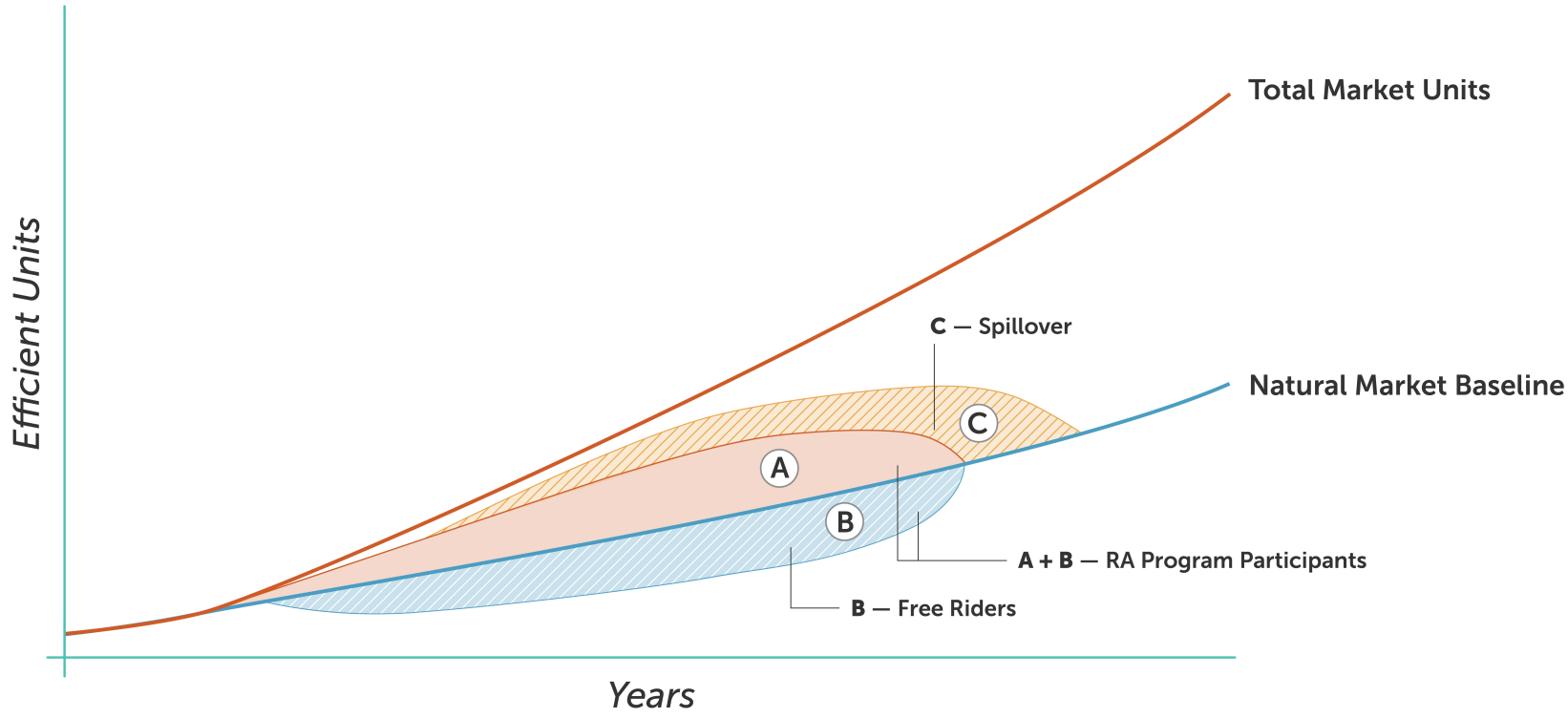
- Remove Units?
- Remove Savings?
- Free-Ridership vs Natural Market Baseline?
- Where does Spillover belong when both RA & MT are operating in the same market?
- If UES (or other key inputs) differ between RA/MT (or even among utilities participating in the program), which is used?

Authors recommend selecting one of the options described next or deriving a new one for the final TRM

resource innovations

neea

Different Conceptual Frameworks for MT & RA



Options to Prevent Double Counting

Option 1: Meld the RA and MT Frameworks

Step 1: $MT\ Units_{AdjustedRA}$ = MT Units – [Gross RA Units * (1-(Natural Market Baseline Units/Total Market Units))]

- Where MT Units = Total Market Units – Natural Market Baseline Units
  - Incorporates "what would have happened" as percent reduction
  - Any spillover becomes part of MT units

Step 2: $MT\ Savings_{AdjustedRA}$ = $MT\ Units_{AdjustedRA}$ * UES_{MT}

- In some cases, UES for RA and MT activities can be different; if they are, MT UES is used

resource innovations

neea

Options to Prevent Double Counting

Option 2: **Existing Rules for RA Take Priority**

- $\text{MT Savings}_{\text{AdjustedRA}}$ = MT Savings – (Gross RA Savings – Free Riders + Spillover)
  - Where MT Savings = (Total Market Units – Natural Market Baseline Units) * UES_{MT}
    - All savings counted through RA are removed from MT savings
    - Bias against MT market effects (like Spillover) since all are counted in RA

resource innovations

neea

Allocating Savings to Individual Utilities

- Allocation by sponsor funding shares
- Allocation by service territory delivery
- Allocation by customer proportions

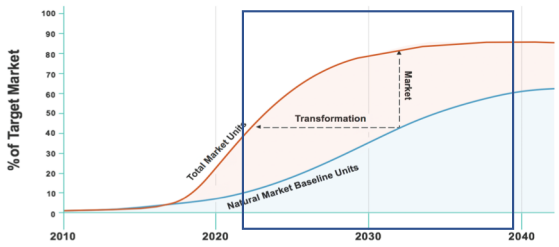
- Recommend developing the factor ahead of time and use it consistently throughout the program, unless compelling data becomes available that would justify a change in the methodology.

resource innovations

neea

Tracking Savings Following Active MT Activity

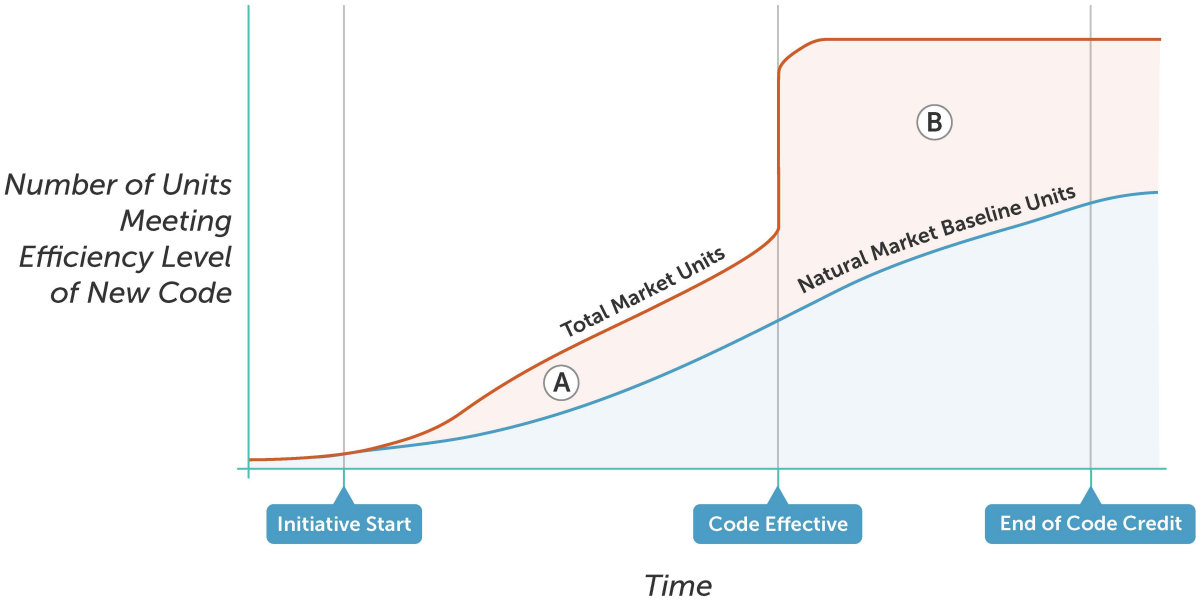
- MT evaluation efforts shift to passive, long-term market monitoring
- But need to continue to track:
  - Total market adoption of efficient units
    - Can become more challenging depending on relationship with market actors
  - Unit energy savings
    - Given broader adoption, there may be better data about actual performance
  - Natural Market Baseline
    - Exogenous variables may become more obvious



resource innovations

neea

The Effect of Energy Code Adoption



resource innovations

neea

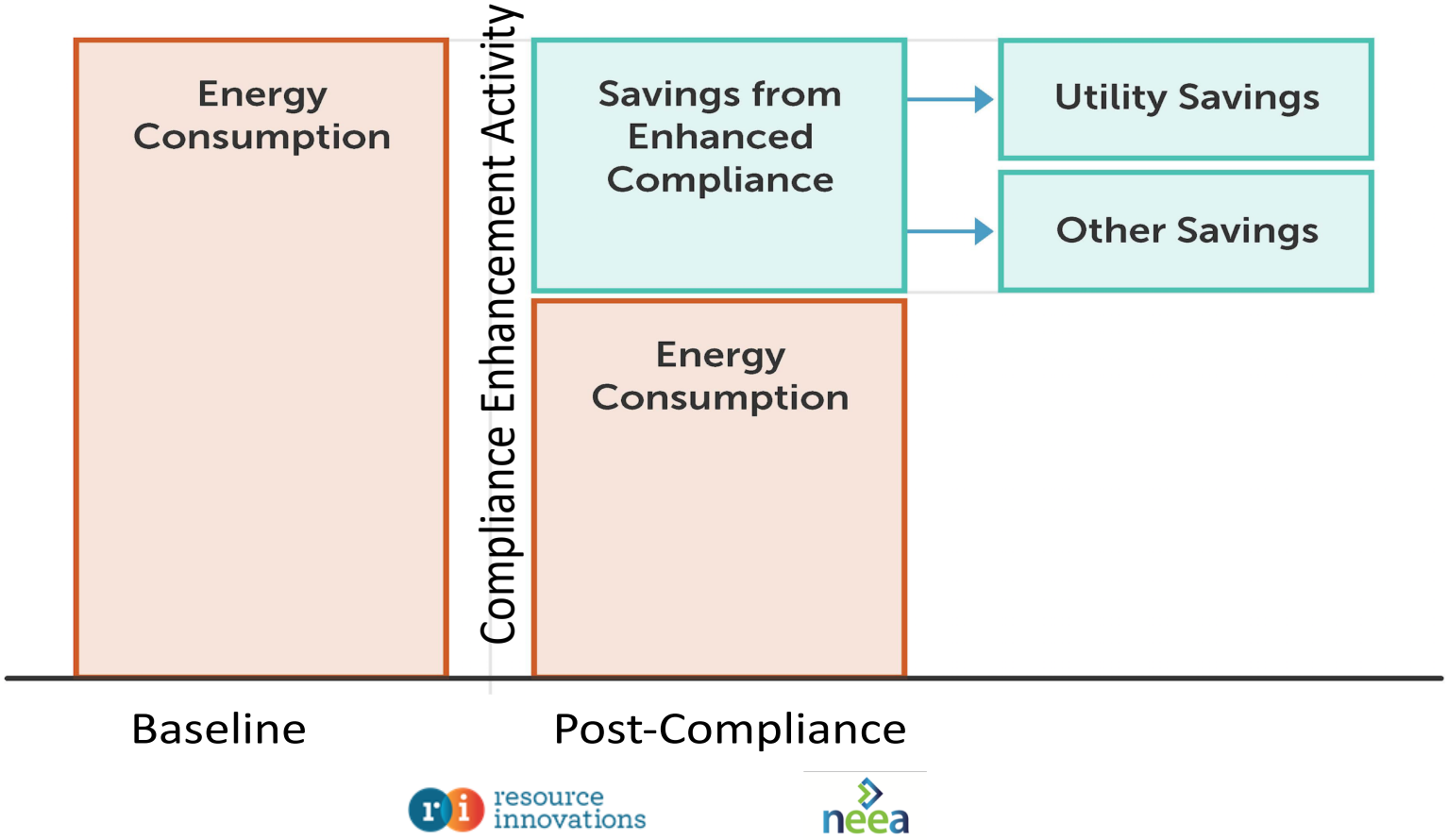
Considerations for Estimating Savings from C&S

- Compliance factors need to be included
- Attribution addressed through post-adoption baseline; needs special consideration
- Accounting between RA/MT is no longer applicable
- Allocation adjusted for utilities and/or other parties engaged in adoption process
- How long utility can claim savings? Duration is likely a judgement call made early in process.

resource innovations

neea

Energy Savings from Enhanced Compliance



resource innovations

neea

Appendices

- Outline of MT Initiative Business Plan
- Glossary of Terms
- References

Proposal for Incorporation into the TRM

- Will become "Attachment C" of Volume 4: Cross-Cutting Measures and Attachments in the updated Illinois TRM
  - Analogous to current "Attachment A", which covers Net-to-Gross issues

resource innovations

neea

Next Steps

- Comments welcome!
  - Due June 27
  - Comments through SharePoint (revision marks please) – Details to be provided by Celia – or
  - Send to Margie Gardner: MGardner@Resource-Innovations.com
  - Updated MT Framework Whitepaper, incorporating comments, will be presented on July 17

- Particularly interested in opinions on the best approach to account for savings between RA and MT (pages 20-23)

resource innovations

neea