

Retail Plug-Load Portfolio (RPP): Proposed Process for Updating Key Parameters

EM&V and Residential Program Teams

September 24, 2015





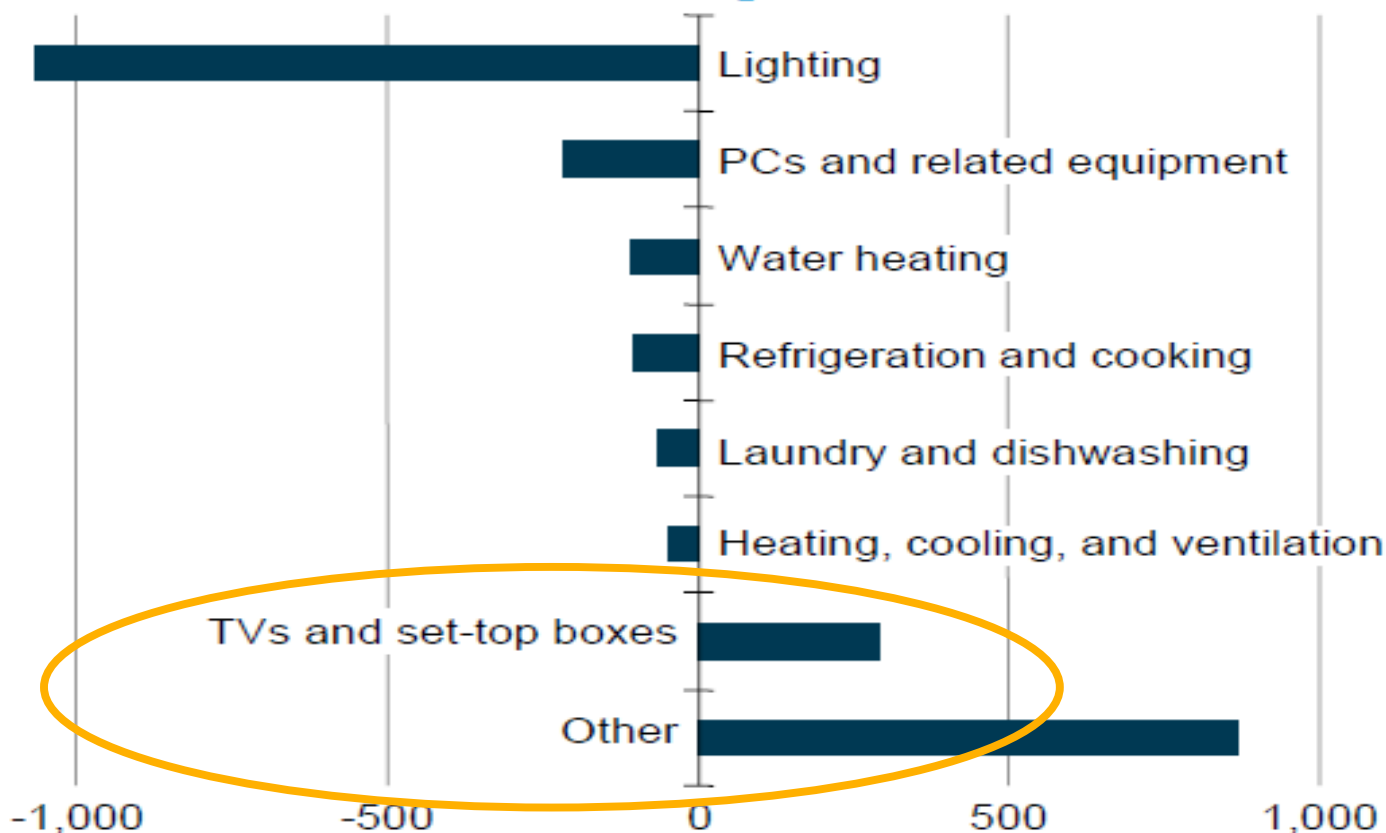
Key Discussion Topics

1. Residential Plug Load Challenge
2. Cal TF Involvement in RPP Workpaper
3. Duration of Pilot
4. Initial and Updated Parameter Values
5. Updating and Recalibrating the Diffusion Models and E3 Calculator Inputs
6. Monitoring Program Performance
7. Workpaper Updates
8. Further Discussion and Consensus



Challenge of Residential Plug Loads

Figure MT-11. Change in residential electricity consumption for selected end uses in the Reference case, 2012–40 (kilowatthours per household)



Forecasted Change in Residential Electric Consumption, 2012 – 2040.

Source: U.S. Energy Information Administration Annual Energy Outlook 2014



Cal TF Involvement in RPP Workpaper

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1. Initial presentation of RPP program design (7/23/2014)
2. Proposed UECs and modified work paper template to accommodate market transformation objectives (9/25/2014)
3. Proposed methods for NTGRs, EULs, and IMCs (10/23/2014)
4. Bass diffusion model for estimating NTGRs (11/21/2014)
5. Web harvester approach for estimating IMCs (12/4/2014)
6. Presentation of the interim workpaper (2/19/2015)
7. Presentation of the phase two draft evaluation plan (3/20/2015)
8. CalTF endorsement of methods for estimating key parameters (UES, NTGR, EUL and IMC) (5/28/2015)
9. Phase one trial evaluation results (6/25/2015)
10. Approval of NTGR values (7/23/2015)
11. Presentation of proposed basic tier product UESs (9/24/2015)
12. Presentation of proposed advanced tier product UESs (planned Oct 2015)



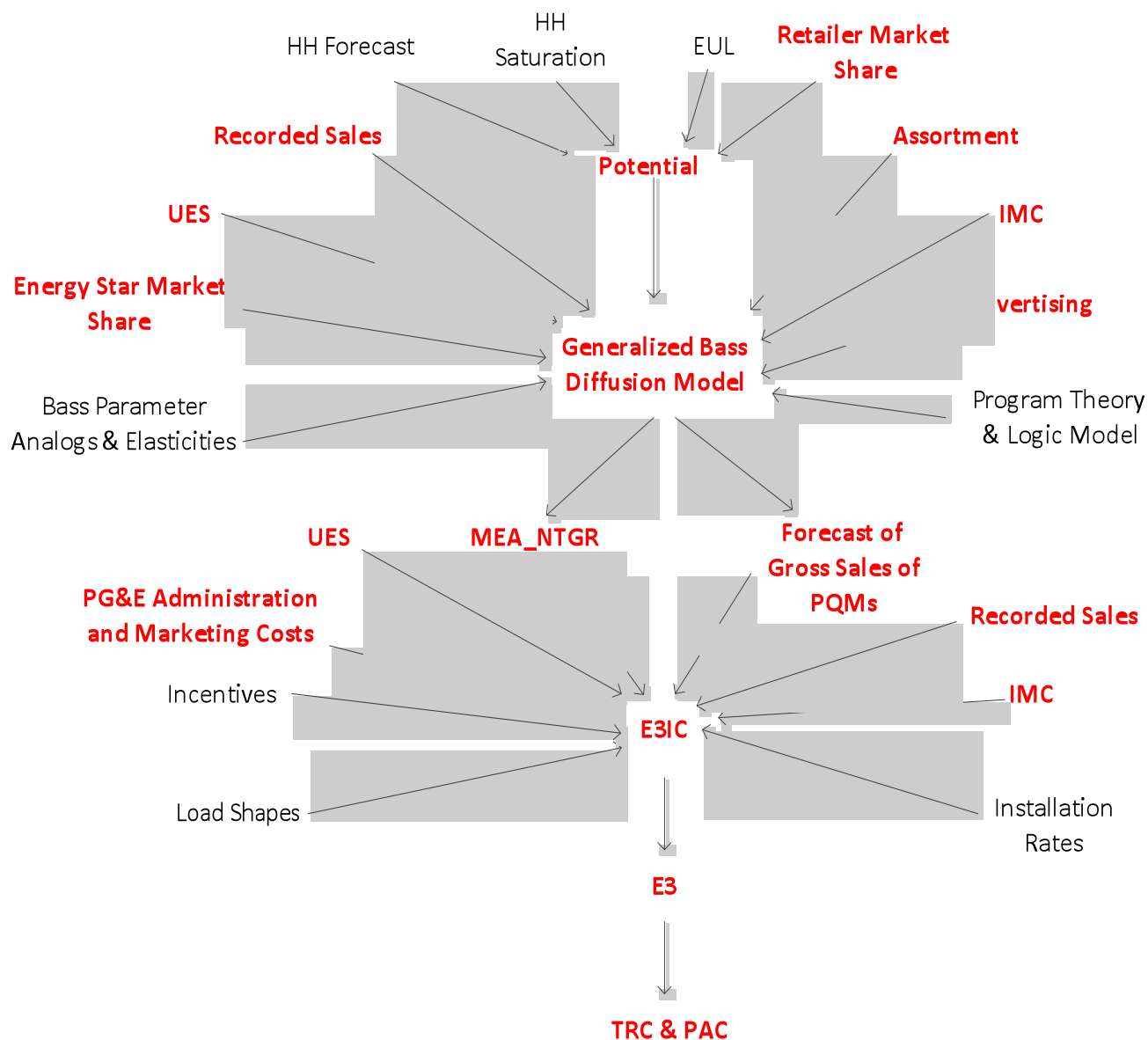
Duration of RPP Pilot

- PG&E proposed a **five-year pilot**
- ED staff proposed a **three-year pilot** “so that unsuccessful programs have a limited impact on the overall portfolio.”
- PG&E now suggests a **four-year pilot** as a good balance
 - Provides time to assess sales shifts for the three (approx. half of the total) major retailers who are slated to sign on in 2017.
 - Provides a stronger incentive for retailers to put forth a good faith effort to change assortment.
 - Allows for interim course corrections to work.
 - Consistent with Commission directives on pilots.
 - Minimizes risk of shutting down a promising program design prematurely



Updates to Parameters Critical to Assess Program Performance and Mitigate Risk

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Updates will be made to all parameters, with those **in red** updated at least annually. Updates will be based on:

- Results of Theory-Driven Evaluations
- Recorded sales
- Results of parameter-specific studies (i.e., IMC, UES, EUL)
- Market characterization and assessment studies
- Literature review



Updating and Recalibrating the Diffusion Models and E3 Calculator Inputs ⁷

- The market effects-adjusted Net-to-Gross Ratios (MEA_NTGRs) and TRCs will be **re-forecasted yearly** to incorporate long-term benefits and costs.
- Each yearly re-forecast will be more accurate than the prior one because it will include:
 - Revised IMCs, UESs, and EULs (products in DEER will use current DEER values)
 - Actual sales of program-qualified products by participating retailers, and
 - Total market sales estimates from third-party providers.



Monitoring Program Performance

- The theory-driven evaluation approach relies on examining the preponderance of evidence to assess program effectiveness.
- Regular monitoring of a set of IOU-CPUC-agreed primary metrics vs. milestones is expected
 - PPIs are the best measures of short term-progress.
 - MTIs are the best measures of mid-and long-term progress.
 - Long-term forecasts of MEA_NTGRs and TRCs are the best measures of expected overall program performance.



Aligning Key Program Performance Metrics with NEEA

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- PG&E and NEEA are working toward a core set of short-, mid-, and long-term metrics that will be consistent for these key program administrators.
- Possible joint short-, mid-, and long-term metrics include:
 - Gross and net **kWh and kW** impacts by product category (short/mid/long term)
 - Changes in participating retailer **assortments**
 - Changes in participating retailer **market share** of program-qualified products
 - Changes in state and federal minimum efficiency **standards**
- Program staff will convert key PPIs and MTIs into SMART objectives for review by CPUC staff.



MEA_NTGR and TRC Estimates Start Small and Increase Over Time

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- Current estimates of market effects-adjusted NTGRs (MEA_NTGRs) for short-term (1-2 years), mid-term (3-6 years) and long-term (7-10 years) impacts are shown below. **These values are non-linear.**
- Estimates will be revised annually. We caution over reliance on these estimates as benchmarks.
- We recommend the theory-driven approach (PPIs and MTIs) as more useful to determine program effectiveness.

	Second-Year Values		Sixth-Year Values		Tenth-Year Values	
Product Categories	MEA_NTGR	TRC	MEA_NTGR	TRC	MEA_NTGR	TRC
Freezers	0.106	0.128	0.213	0.328	0.470	0.956
Room Air Conditioners	0.239	0.210	0.420	0.469	0.812	1.091
Gas Clothes Dryers	0.241	0.157	0.365	0.312	0.830	0.743
Electric Clothes Dryers	0.093	0.246	0.220	0.707	0.660	2.129
Home Audio	0.157	0.196	0.309	0.508	0.780	1.614
Air Cleaners	0.114	0.408	0.278	1.096	0.948	2.421
Overall		0.221		0.547		1.471



Updating the Workpaper

- ED Staff proposes annual workpaper updates for key parameters (UECs, IMCs, MEA_NTGRs, and forecasted TRC).
 - PG&E agrees.
- ED Staff proposes new workpapers when new products are added to the product portfolio.
 - PG&E agrees that each new measure needs to be characterized through workpaper updates.
 - PG&E proposes that the workpaper remain a portfolio-level document with yearly updates with changes clearly marked for:
 - a) Updated product parameters (MEA_NTGR estimates, IMCs, UESs, EULs, qualifying tiers, and TRCs)
 - b) Additional products proposed
 - c) Products to be retired
 - d) Changes to qualifying tiers
 - e) Recalculation of the portfolio TRC



Key Questions for Discussion

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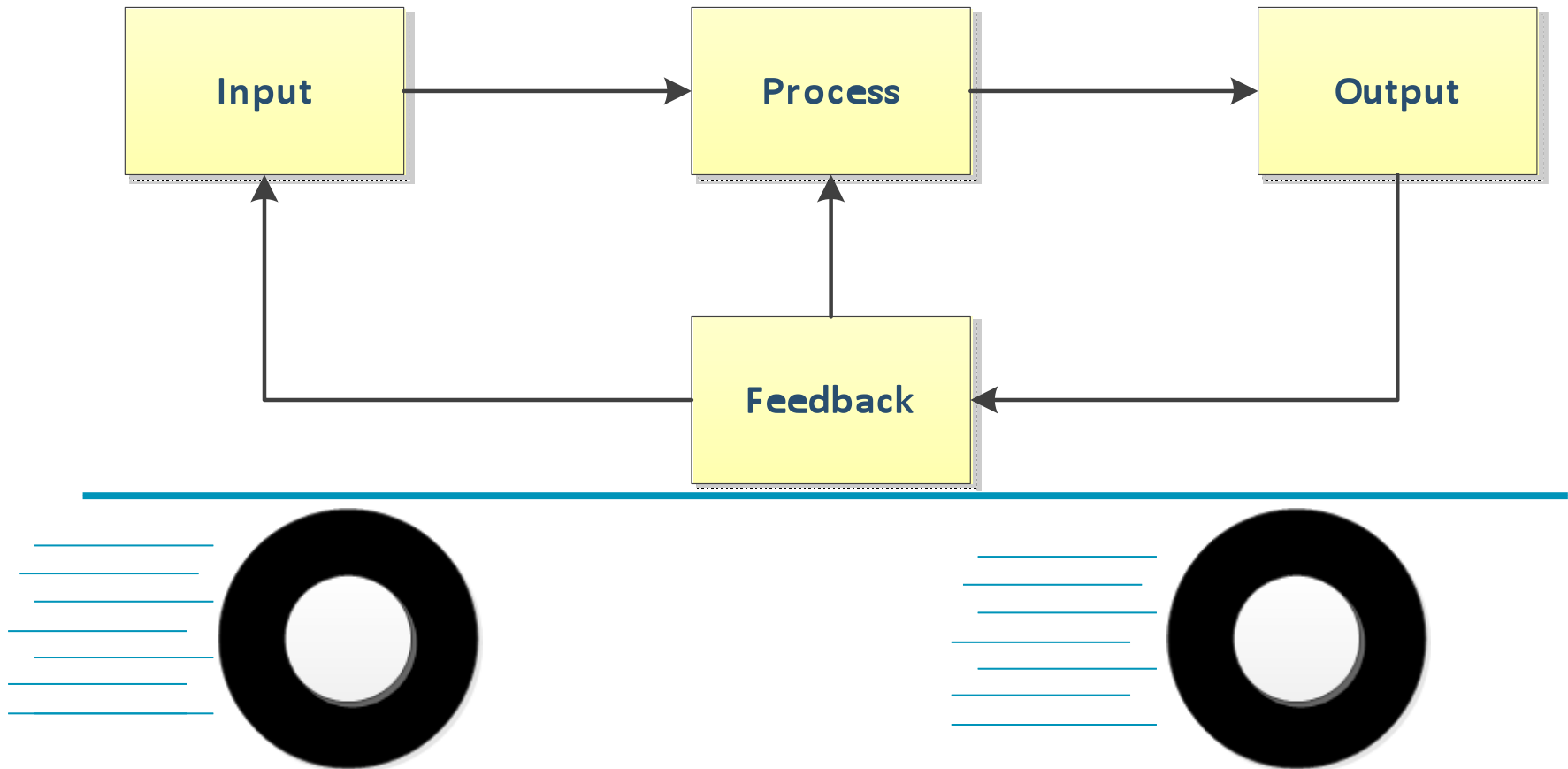
1. **Duration.** Is a four-year pilot reasonable?
2. **Plan for Updating Parameters, NTGRs and TRCs.**
Annual updates of IMC, UES, EUL (when necessary);
NTGRs and TRC forecasts. Is this forecast update plan reasonable?
3. **Diffusion model and cost-effectiveness updates.** Is tracking the NTGRs and TRCs based on annual recalibrations of the diffusion models and E3 Calculator a reasonable measure of expected long-term program performance?
4. **Workpaper updates.** Is plan for workpaper updates reasonable, specifically:
 - Retaining a portfolio-level workpaper
 - Updating annually to reflect changes to product parameters, new products, retired products, and qualifying tiers



Additional Materials



Risk Mitigation Machine





Recalibrating the Diffusion Curves

- Sales data from participating retailers and from third-party estimates of total market sales will be used to update the diffusion curves annually.
- UESs, IMCs and EULs will be updated yearly (products in DEER will use those values)
- Updated values will be reflected in annual workpaper updates.
- Short-, medium-, and long-term TRC estimates will be updated annually.



NTGR Documentation: Appendix 8

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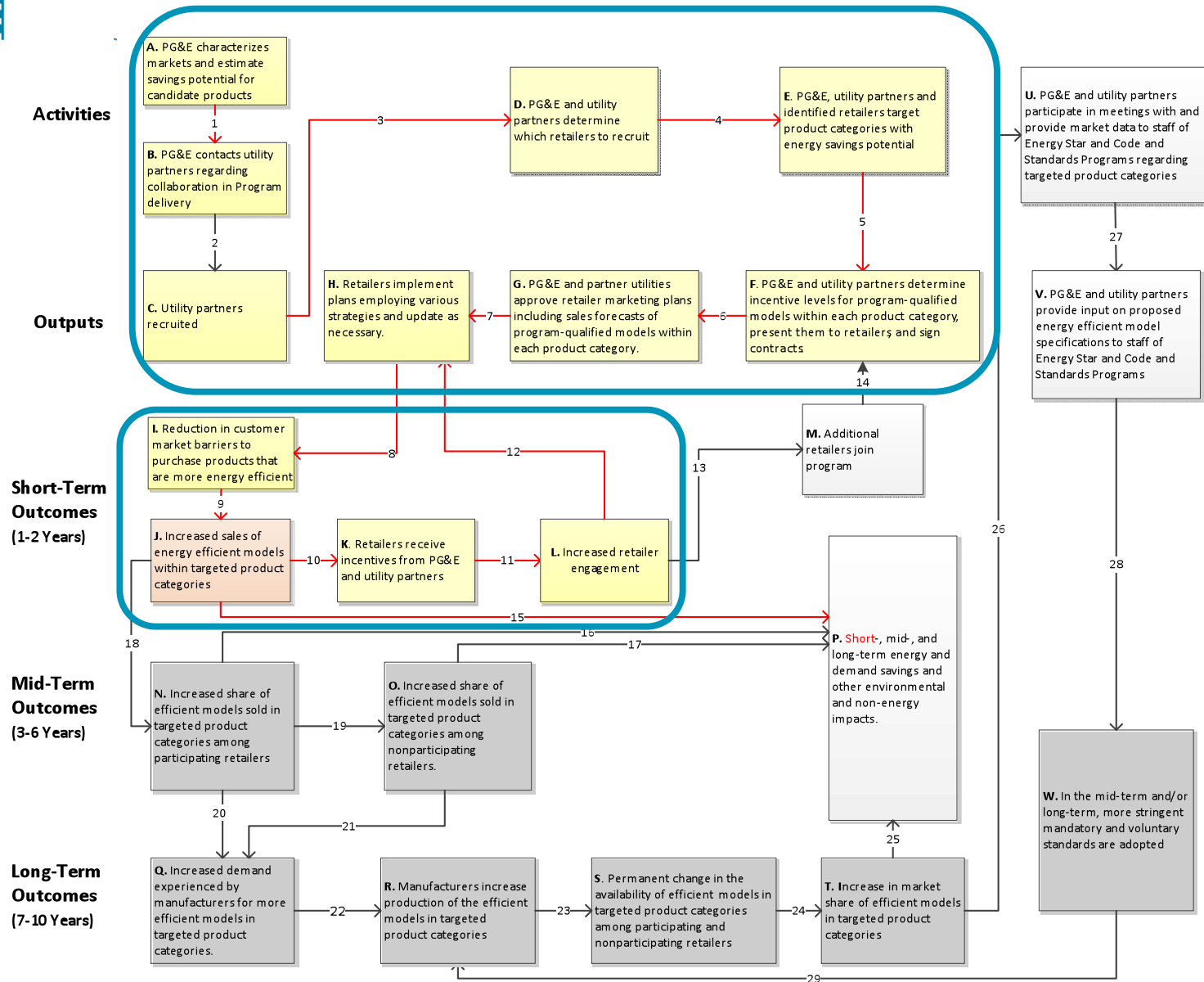
Short-Term Performance Indicator

- Partial-Leading-Indicator Net-to-Gross Ratio (PLI-NTGR):
 - Short-term program performance indicator for participating retailers
 - Not a long-term indicator of program performance based on all elements in the logic model because all components of program were not implemented
- $(\text{Net savings} / \text{Gross savings}) =$
 $6,665 \text{ kWh} / 126,172 \text{ kWh} = 0.05$
- 5% lift in sales due primarily to short-term promotional interventions (price and placement promotions)



PLI-NTGR Does Not Assess Entire Program

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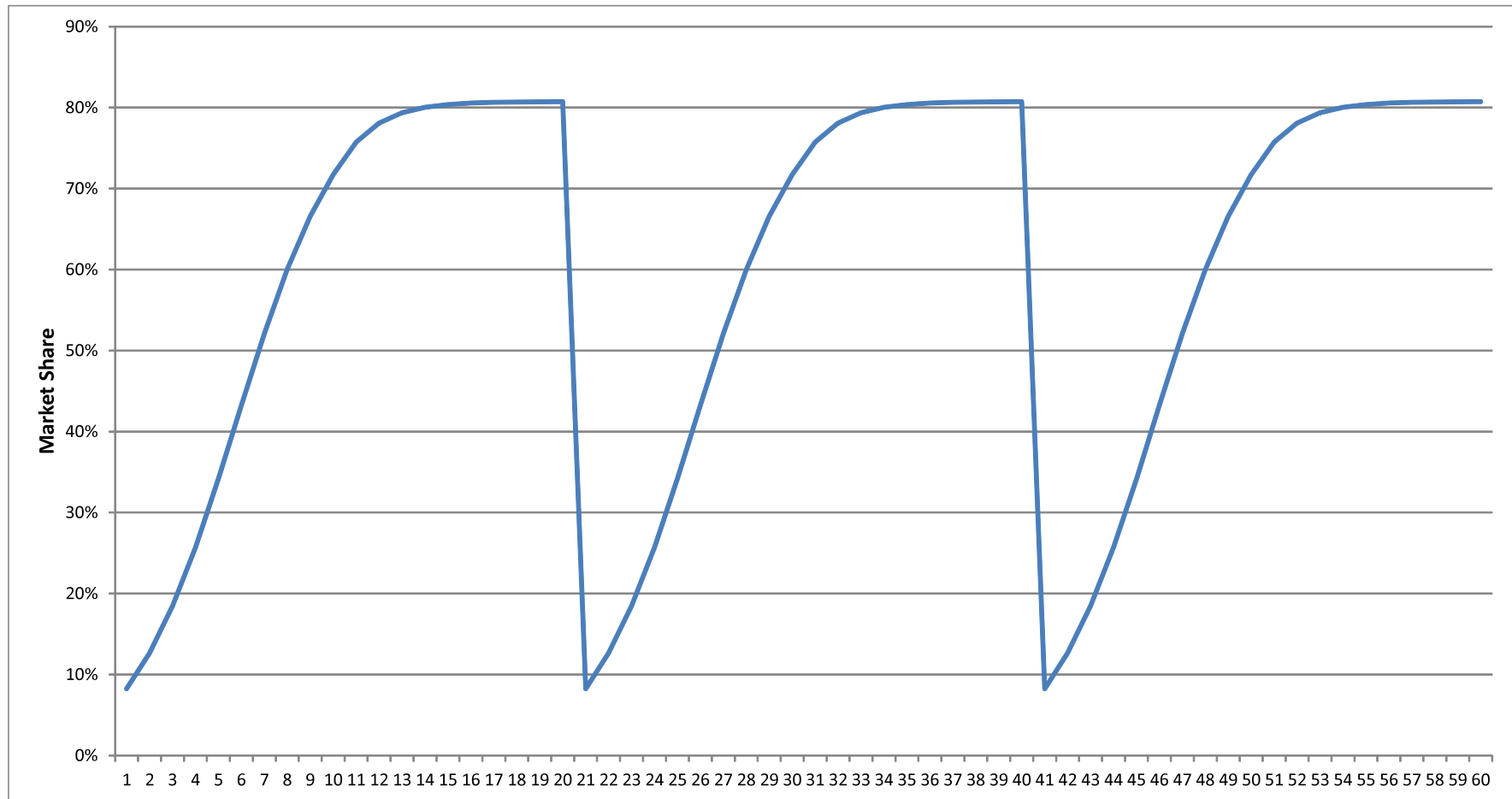


Another Way To Look At It





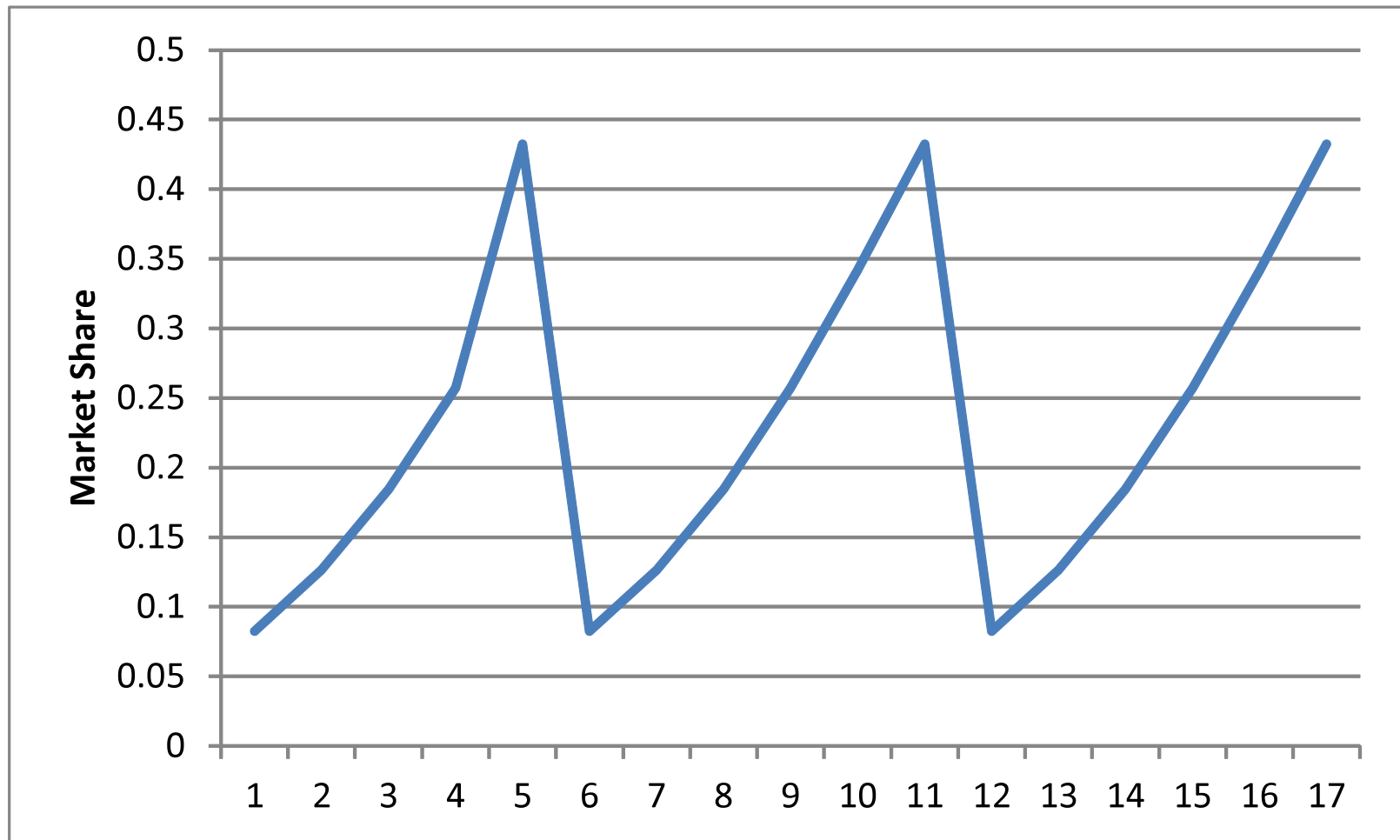
Reset Threshold Set at 80%



Note: Each period of time represents 2 months



Reset Threshold Set at 40% to 45%

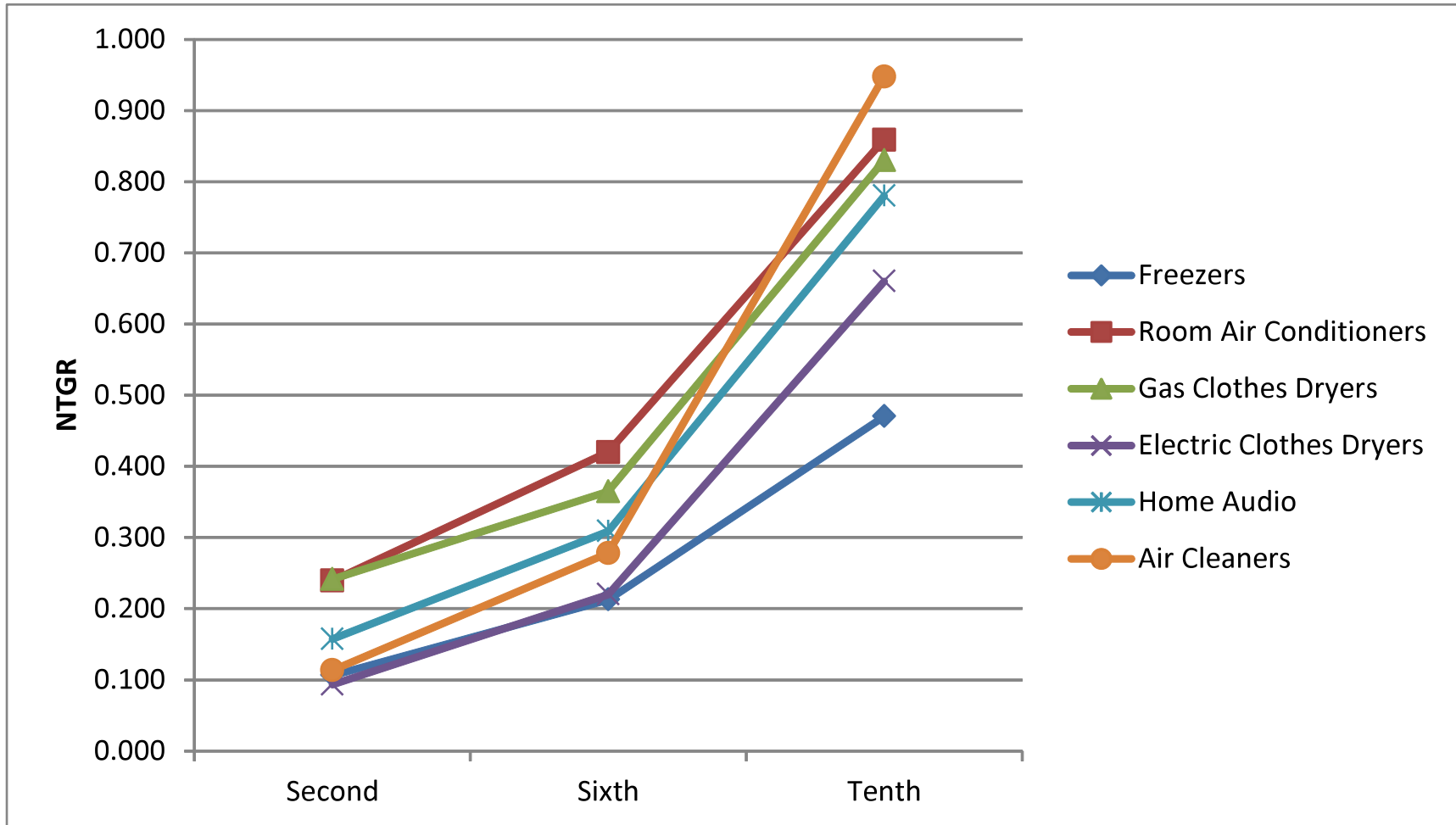


Note: Each period of time represents approximately 7 months



NTGRs and TRCs Expected to Increase Over Time

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Uncertainty Analysis: Distribution of MEA_NTGRs for Air Cleaners

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