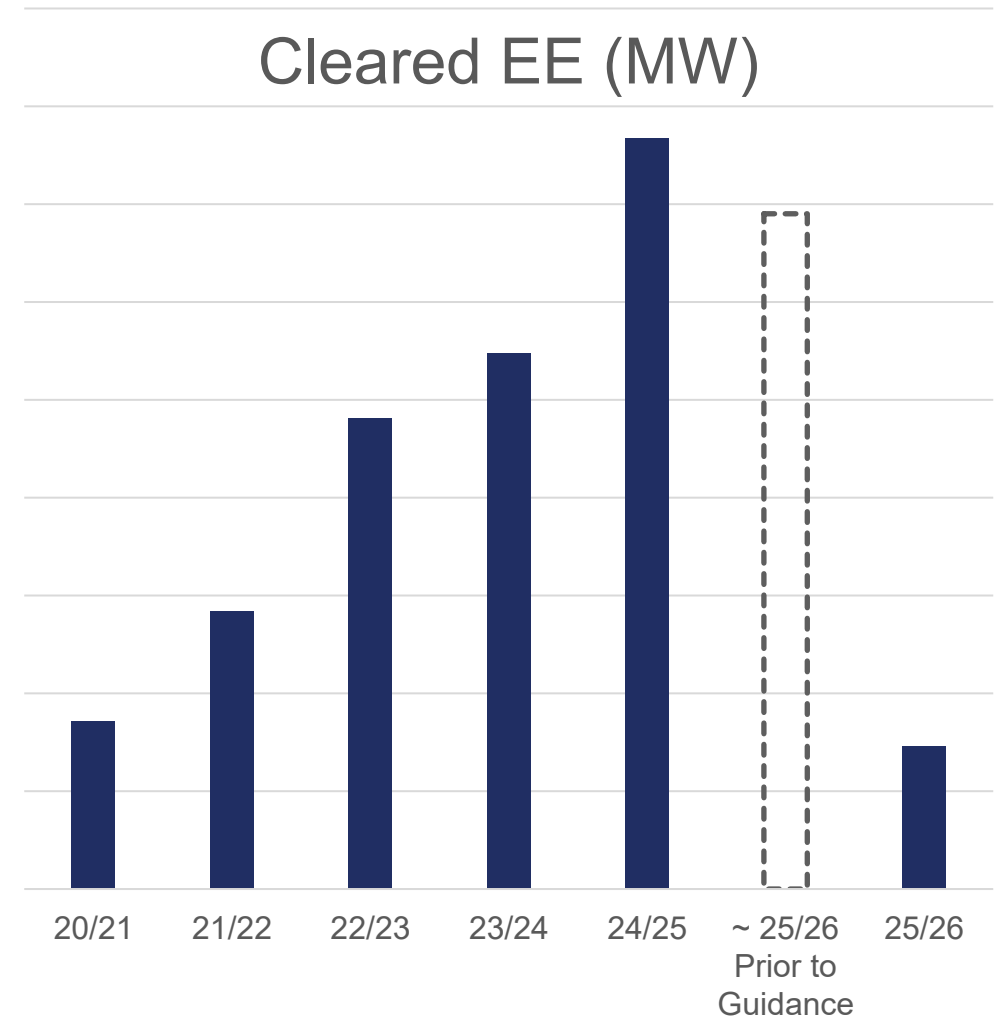


Affirmed Energy Package for MIC

August 2024 MIC

Update on Energy Efficiency from BRA

- 24/25 BRA Auction cleared 7,668.7 MW of EE (5.5% of Total)
- 25/26 BRA Auction cleared 1,459.8 MW of EE (1.1% of Total)
- Why did EE shrink by 6,208.9 MW over one year?
 - Install Year eligibility rule changes (through PJM's Guidance issued 6/13/24, 4 days before M&V Plan due date)
 - New PJM Lighting Guidance (more stringent than any TRM, federal or local codes in PJM territory)*
 - PJM-induced loss of confidence from investors



* Without the Guidance changes, lighting was naturally diminishing due to Federal Standards. Total BRA EE participation would likely have shown a material reduction in total EE. PJM could quantify this difference by comparing 2023 submissions for the 25/26 BRA to the resubmittals from 2024 for the same auction.

Appendix (previously shared at MIC meetings)

Addressing Comprehensive Energy Efficiency Reform

- IMM filed 206 complaint against several EE providers
 - PJM suspended Report review; stopped payment to EE resources; released some payment; reversed course on Report review
- PJM issued two rounds of new EE "guidance" outside of Manual, Tariff, or MIC purview
- Consumer advocates filed 206 complaint against PJM re: Addback calling for technical conference
- Affirmed and Cpower filed additional, separate 206 complaints against PJM

The MIC/MRC risks putting the cart before the horse

- PJM is advocating for a slate of Energy Efficiency reforms that are incompatible with the vast majority of EE Resources currently operating.
- The changes will have the effect of **almost completely eliminating EE from the market.**
- PJM's approach presupposes a solution without engaging in earnest education and exploration of the options. We and others have identified opportunities to improve upon the status quo that would greatly benefit customers and support reliability.
- Demand is growing. EE should be enabled to be a bona fide capacity resource.

So, what should we do next?

- The Problem Statement cites 7,668.7 MW of EE (~5% of total capacity) as a primary catalyst for this topic.
- It will take months, if not years, for EE providers to recover and implement new programs with new rules.

Let's simplify: We agree on many, noncontroversial reforms. Let's file those and give FERC time to wade into the complexities of the other issues already filed.

We have two options:

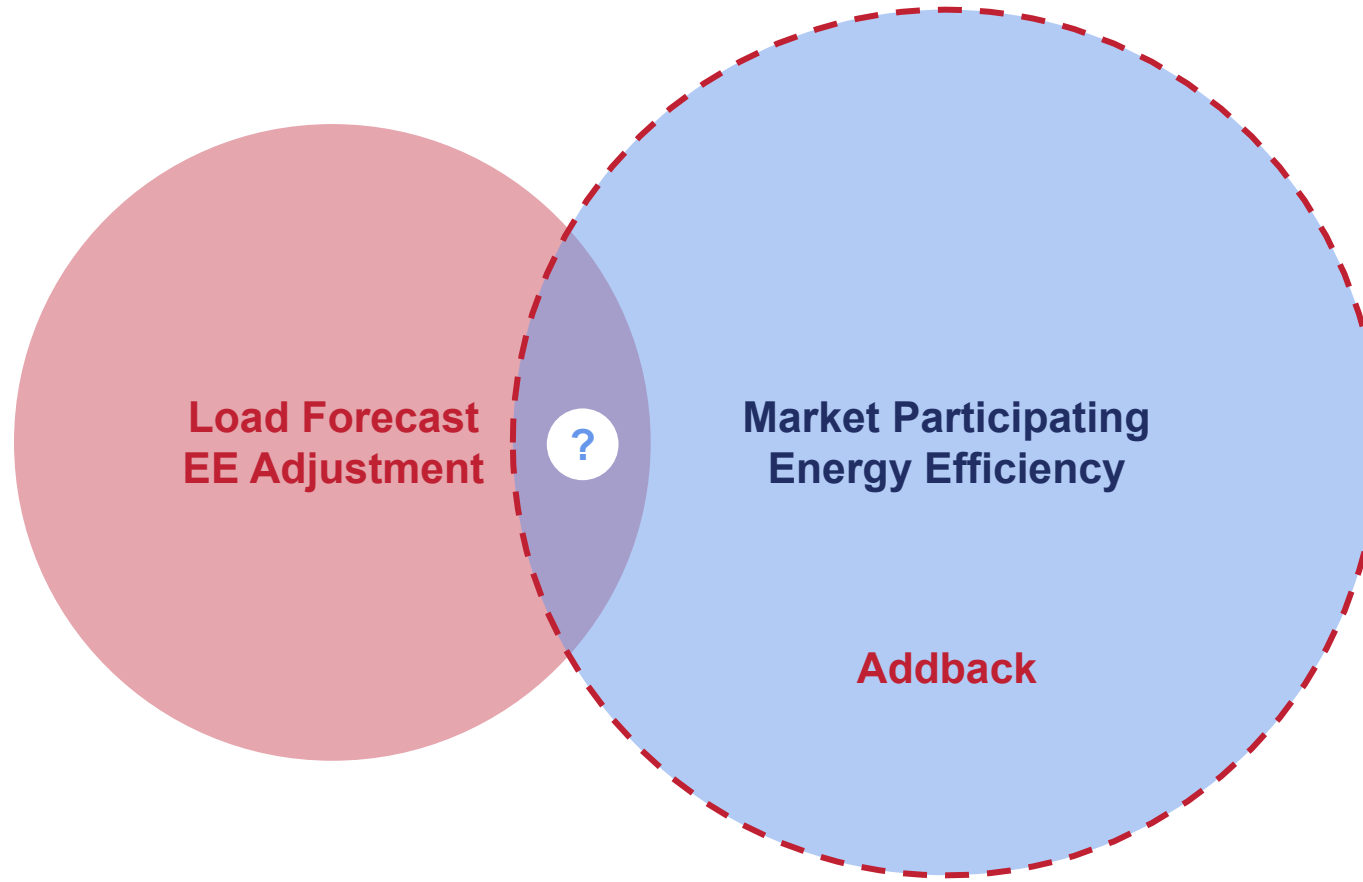
PJM & IMM Proposals:

- Eliminate or arbitrarily compress EE in the market.
- Less EE will materialize.
- The load forecast will over-estimate future EE and reliability will suffer.

Affirmed and Other Proposals:

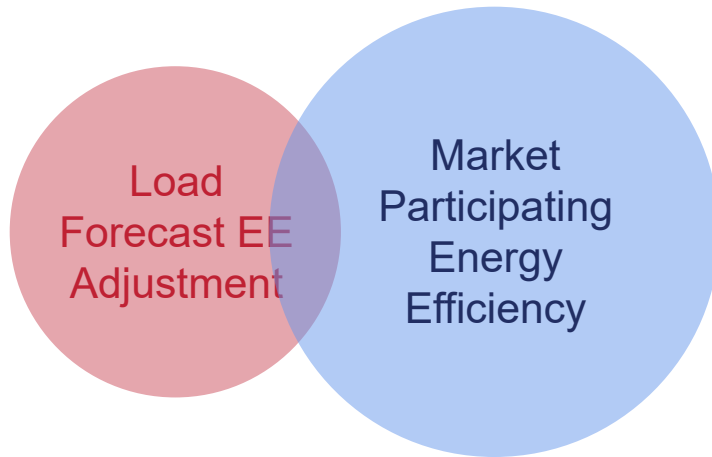
- **Eliminate or repair the Addback as soon as practical.**
- Only incremental EE will be counted and compensated.
- Reliability will improve and capacity costs will be reduced for consumers.

Addback Status Quo. Because of “?” we add back - - -

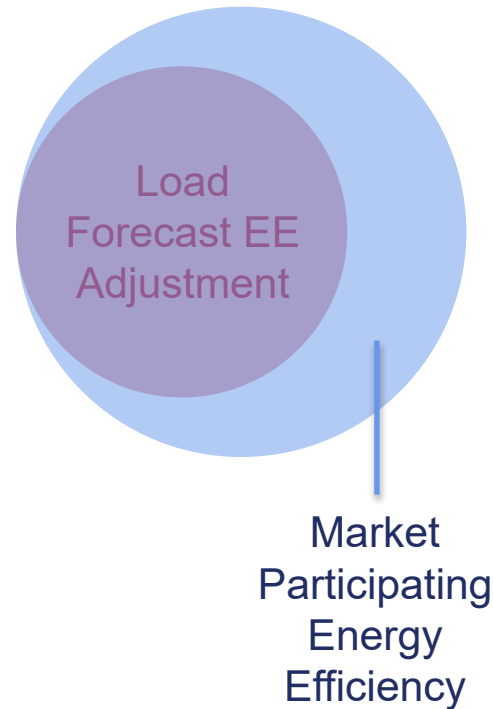


There are 3 potential scenarios:

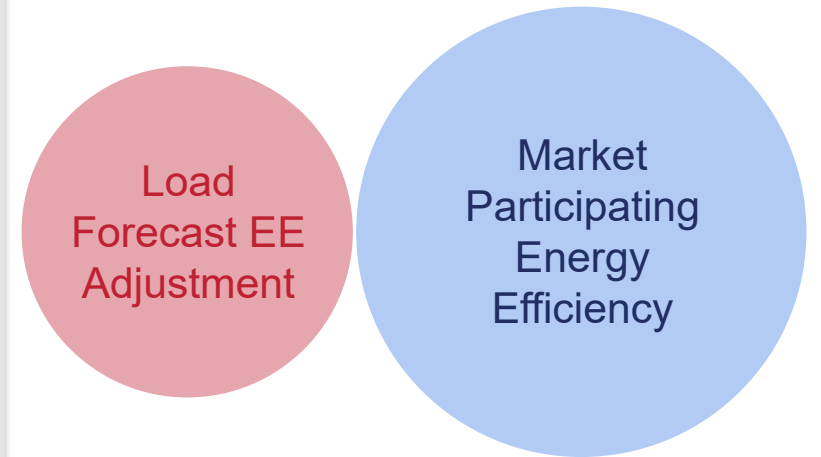
Some Overlap



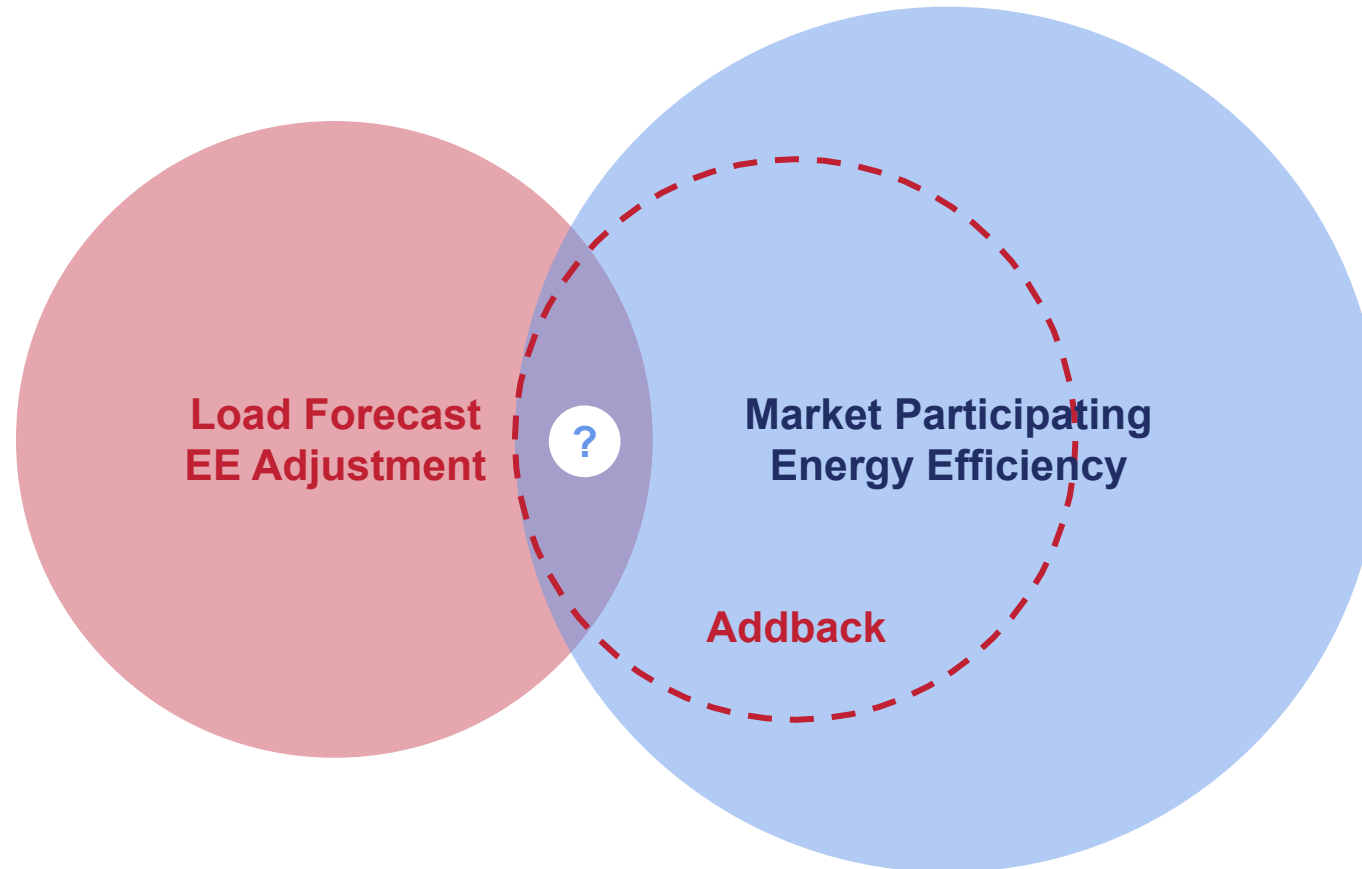
Complete Overlap



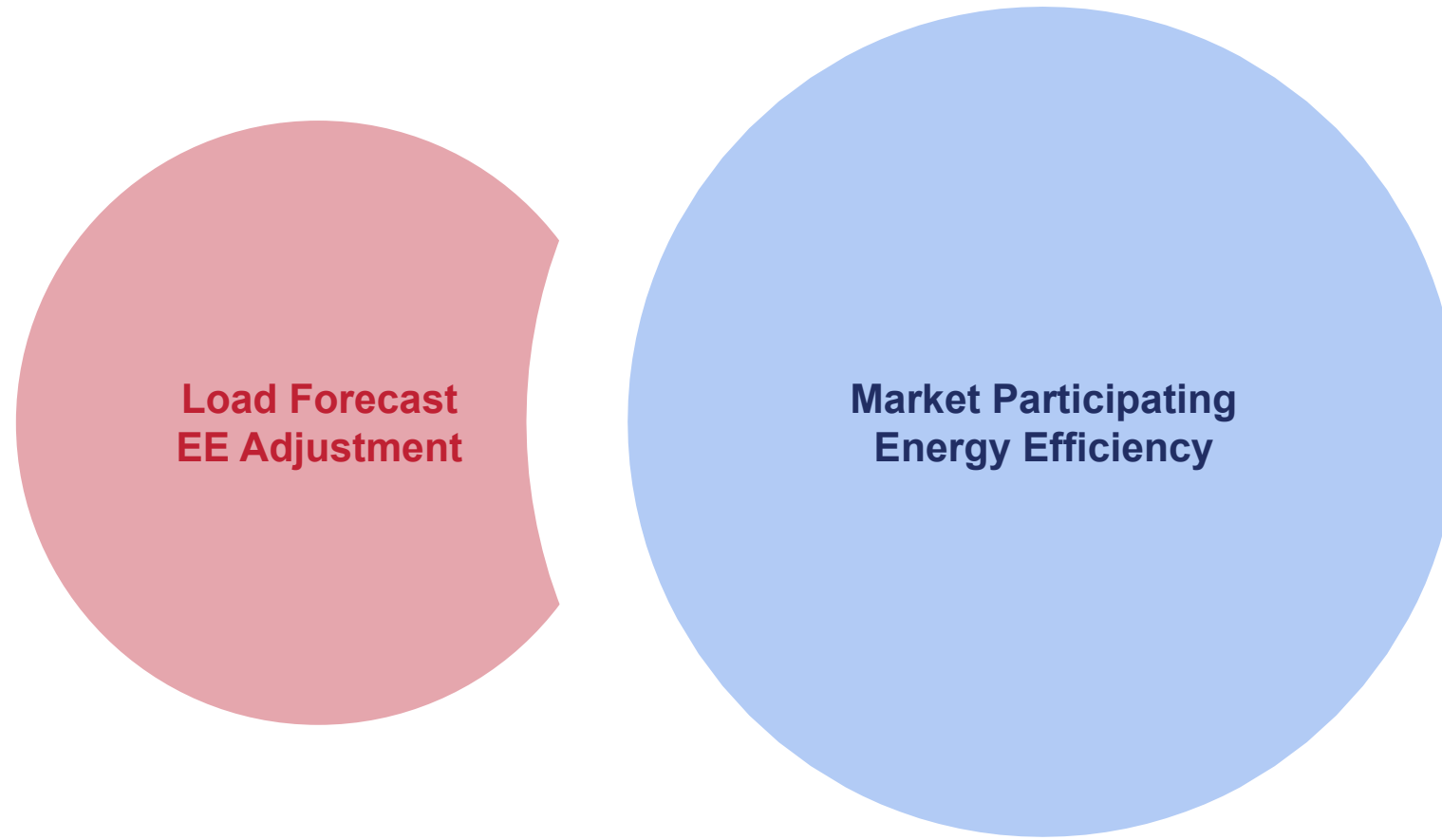
No Overlap



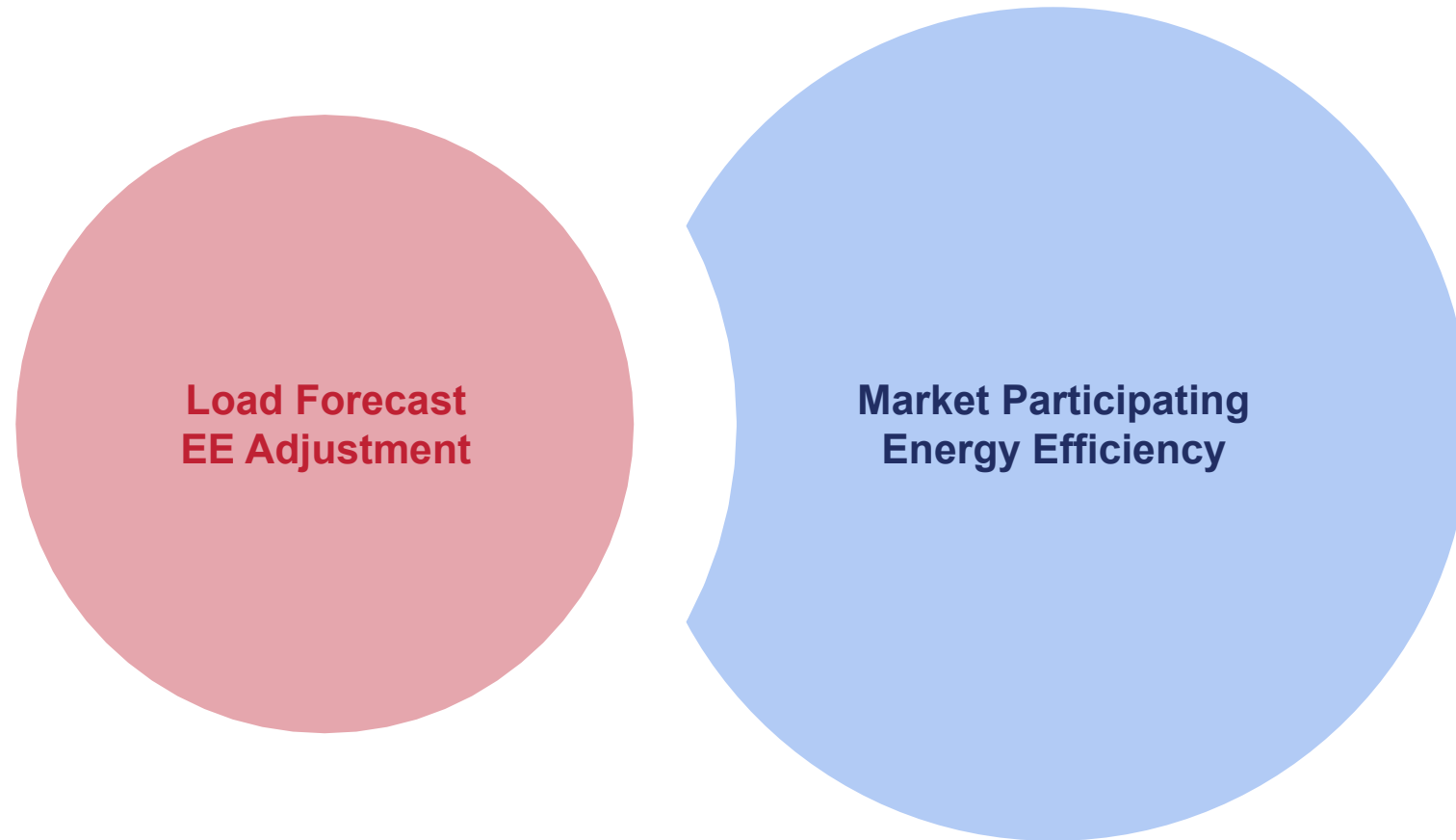
Option 1: Add back the lesser of the EE adjustment or the Market EE. Because of “?” we add back - - -



Option 2: Eliminate the Addback by Changing the Load Forecast EE Adjustment



Option 3: Eliminate the Addback by Limiting Market EE, using the Load Forecast EE as Baseline



Option 3: Eliminate the Addback by Limiting Market EE, using the Load Forecast EE from NEMS as Baseline

- Big Picture: Use the inputs to the Annual Energy Outlook, the basis for PJM's load forecast EE adjustment, to create baselines for all Market Participating EE. ***Only qualify EE that is not already in the load forecast.***
- How: Derive baselines from the EIA-maintained, freely available, open source model published as the “**National Energy Modeling System (NEMS)**.” This is the source data for the AEO.
- Limitations: Some state programs are included in the AEO model so those programs would either reduce their qualified projects to the incremental ones or we would need to establish a (much smaller) addback for those programs.

Option 3: What's in the NEMS

- Four supply modules:
 - Renewable Fuels Module (RFM)
 - Natural Gas Market Module (NGMM)
 - Oil and Gas Supply Module (OGSM)
 - Coal Market Module (CMM)
- Four demand modules:
 - Residential Demand Module (RDM)
 - Commercial Demand Module (CDM)
 - Industrial Demand Module (IDM)
 - Transportation Demand Module (TDM)
- Two conversion modules:
 - Electricity Market Module (EMM)
 - Liquid Fuels Market Module (LFMM)
- Four other modules:
 - Macroeconomic Activity Module (MAM)
 - International Energy Module (IEM)
 - Emissions Policy Module (EPM)
 - Integrating Module

“NEMS calls each supply, conversion, and end-use demand module in sequence until the modeling system reaches an equilibrium between supply and demand. The AEO offers a solution for each year through 2050.”

Option 3: E.g. what's in the NEMS Residential Data?

- Space Heating
- Space Cooling
- Water Heating
- Cooking
- Clothes Drying
- Clothes Washing
- Dishwashing
- Refrigeration
- Freezing
- Lighting
- TV and Set-Top boxes
- PC's and Related Equipment
- Secondary Heating
- Furnace, Fans and Boiler Circulation Pumps
- Ceiling Fans
- Coffee Makers
- Dehumidifiers
- Microwaves
- Pool Pumps
- Pool Heaters
- Portable Electric Spas
- Non-PC Rechargeable Electronics
- Tablets
- Smartphones
- Smart Speakers
- Security System
- Wine Coolers
- Small Kitchen Appliances

Option 3: What type of data is available?

Lighting

General Service – Incandescent and Halogen	GSL-INC	Lighting	lumens per watt
General Service – Compact Fluorescent Lamp (CFL)	GSL-CFL	Lighting	lumens per watt
General Service – Light-Emitting Diode (LED)	GSL-LED	Lighting	lumens per watt
Reflector (Incandescent)	REF-INC	Lighting	lumens per watt
Reflector (Halogen)	REF-HAL	Lighting	lumens per watt
Reflector (CFL)			
Reflector (LED)			
Linear Fluorescent (T12)			
Linear Fluorescent (T8)			
Linear Fluorescent (LED)			
Exterior (Incandescent and Halogen)			
Exterior (CFL)			
Exterior (High-pressure Sodium)			
Exterior (LED)			

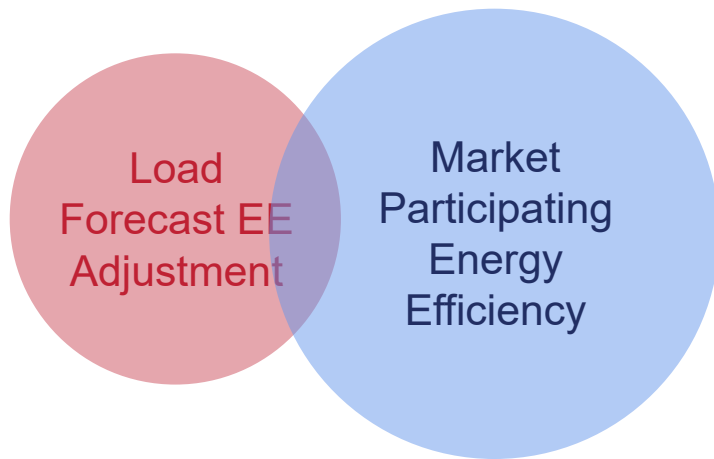
- By relying on bottom-up modeling for most of the critical end-uses, NEMS requires the same data EE Providers currently measure and study for PIMV Reports and Plans.
- This includes **market penetration over time** and **all essential stipulated values** for things like Residential and Commercial Lighting.

```

1 FILE NAME: RSMLGT
2 DATE MODIFIED: November 9, 2022
3 USED BY: RSMLGTREAD subroutine of the National Energy Modeling System (NEMS) Residential Demand Module (RDM)
4 DEFINITION: Self-contained lighting technology and usage database for the RDM
5 UNITS: See specific sections and headings below
6 DIMENSION: year, census division, bulb application, bulb type
7 SPECIAL CONSTRAINTS: non-negative values; each group of 11 lines (equipment classes per CD) must sum to 1
8 ORGANIZATION OF DATA: See specific sections and headings below
9 Current parameters allow 4 lighting applications with up to four bulb technologies in each
10 Data starts on row 21 of this file as per RDM convention.
11 SOURCES: EIA - Technology Forecast Updates - Residential and Commercial Building Technologies - Reference Case,
12 EIA/Guidehouse, October, 2022; 2015 RECS; 2015 U.S. Lighting Market Characterization, EERE, Nov 2015;
13 Residential Lighting End-Use Consumption Study: Estimation Framework and Initial Estimates, EERE, Nov 2015; NEMA Lamp Indices Report
14 COMMENT: updated utility energy efficiency subsidies (EE_Sub1 to EE_Sub9), revised technology cost and performance characteristics per new technology report, updated
15
16
17
18
19
20 Dollar Year for Cost Data (RLGTDOLLARYR)
21 2022
22
23 Number of Applications (NumApps) (i.e., GSL, reflector, linear fluorescent, exterior)
24 4
25
26 Application Labels AppIDs(-) Char#3 Data and Order in Data File AppIndex()
27 GSL REF LFL EXT
28 1 2 3 4
29
30 Number of BulbType by Application (NumTypes); Number of usage bins (i.e., hours used) by application (NumAppBins)
31 GSL REF LFL EXT
32 3 4 3 4
33 6 1 1 1
34
35 Technology Cost and Performance (years assumed not to overlap within an application bulb type)
36 (Note read this section until 9999 is encountered for FirstYear)
37 FirstYr LastYr Cost EE_Sub1 EE_Sub2 EE_Sub3 EE_Sub4 EE_Sub5 EE_Sub6 EE_Sub7 EE_Sub8 EE_Sub9 Sub1 Sub2 Sub3 Sub4 Sub5 Sub6 Sub7 Sub8 Sub9 LmV
38 2015 2019 2.36 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 17.
39 2020 2021 4.90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 17.
40 2022 2022 5.92 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 17.
41 2023 2050 999.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 17.
42 2015 2019 2.55 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 63.

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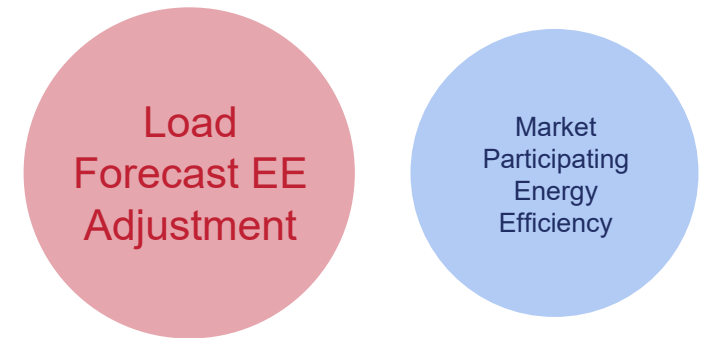

Status Quo



Remove Overlap (by shrinking Market EE)



Future State without Addback



Next Steps (in normal times):

- PJM and Stakeholders - Engage with the EIA, Itron and others to establish load forecast-informed baselines.
- PJM - Figure out whether reduced qualification or modified addback is more appropriate for state and federal programs that leverage capacity market as a source of funding
- PJM - Publish new load forecast compatible baselines
- Market Participants - Update M&V Plan and Reports using new baseline values.

Rather than arbitrarily compressing EE through qualification changes, PJM should work toward realizing all of the benefits of EE.

Problem Statement and Issue Charge (for reference)

Evaluation of Energy Efficiency Resources

Problem / Opportunity Statement

Energy Efficiency (EE) Resources have participated in the PJM capacity market since the 2011/2012 Delivery Year (DY). The original reason for these resources to participate in the capacity market was to reduce the load forecast and therefore reduce the amount of capacity procured to meet the reliability requirement. Since their introduction in the capacity market, many significant changes have occurred and stakeholders have not had an opportunity to review their participation. The amount of EE in the PJM capacity market has dramatically grown from 78.1 MW in 2011/2012 DY to 7,668.7 MW in the 2024/2025 DY. This represents ~5% of total capacity procured.

- The following are the key reasons why this is the right time to discuss this topic:
 - Energy efficiency, as a capacity resource, has dramatically grown and now represents 7,668.7 MW.
 - The IMM has continued to make recommendations in their State of the Market Report regarding the participation of EE in the PJM capacity market.
 - PJM also made recommendations in the Demand Response (DR) Strategy Report to review EE participation in the wholesale market.
 - Building standards which are the benchmark to determine energy efficiency savings continues to increase thereby reducing the savings associated with energy efficiency.
 - The existing measurement & verification rules have not been updated since the inception of EE resource participation. It is good practice to review, refine and update the practice to improve the accuracy of the energy efficiency savings that may be claimed.
- This is an opportunity to make EE participation more effective by refining EE resource qualifications.
- This work will address issues concerning the measurement and verification of energy efficiency plans.

Evaluation of Energy Efficiency Resources

Issue Source

PJM is bringing this forward for consideration.

Issue Content

This work is intended to make Energy Efficiency (EE) participation more effective by refining EE resource qualifications

Key Work Activities and Scope

- 1) Provide education, including forecast changes to incorporate EE and history of EE in PJM
- 2) Evaluate EE participation and consider opportunities to eliminate ambiguity regarding what qualifies as an EE resource and ensure the energy saving attributed to the EE resource through M&V is non-biased, accurate and reasonably consistent across providers.
- 3) Consider solution options for addressing the opportunities and enhancements identified under KWA #2 as necessary.
- 4) Review, discuss and refine proposed solutions.

Expected Deliverables

Proposed solution to address opportunities and enhancements identified

Corresponding revisions to the PJM Tariff and/or other governing document provisions consistent with the solution proposed will be brought to the MRC and MIC for review and endorsement as appropriate.

Decision-Making Method

Tier 1, consensus (unanimity) on a single proposal (preferred default option).

Stakeholder Group Assignment

It is proposed this work be done at the MIC (or Special Sessions of the MIC).

Expected Duration of Work Timeline

It is expected this work will take 9 months to complete and therefore be completed in August 2024.

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