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Michigan Energy Waste Reduction

# State Approaches to Claiming and Adjusting Home Energy Report Savings

Developed for the Michigan Energy Waste  
Reduction Technical Subcommittee

February 3, 2020

# Objectives and Context



Document how other states allow utilities to claim savings for HER programs

In Michigan, Home Energy Report (HER) programs use a **quasi-deemed approach** to claim annual energy savings: A deemed percentage savings estimate (in the BRM) is applied to program-specific inputs.

In the September 17, 2019 Energy Waste Reduction (EWR) Collaborative meeting, the Consumers Energy and DTE HER teams presented observations that most other states **do not use deemed values** for HER programs.

# Agenda

Benchmarking Approach

Key Findings

Discussion

Detailed Findings(4 states)

## *Benchmarking Question: What are final claimed HER savings based on?*

Do utilities claim **Ex Ante** (planned/filed) or **Ex Post** (based on performance?) savings

Do utilities claim **evaluation** results, **implementer-reported** estimates/results, or a combination?

# Glossary of Terms

Term	Definition (for purposes of this study)
HER Program Period	The 12-month period for which an HER program track/cohort is evaluated. Could be a calendar-year or a 12-month period determined by treatment start (e.g., first 12 months)
Ex Ante Savings	Estimates/assumptions made about savings before the program period (could be based on implementer forecasts, prior results or deemed values)
Ex Post Savings	Estimates made after the program period ends, based on performance during the program period (could be estimated by the implementer or evaluator)
Plan/Filed Savings	Estimated savings the utility files with regulators before the program year (a.k.a. planned or goal savings)
Final Claimed Savings	The savings that the utility ultimately claims through reconciliation for a given calendar year, after applicable adjustments are made from evaluation or verification activities
Savings Adjustments	Adjustments to ex ante savings estimates (planned or filed) based on evaluation results or regulatory guidelines (i.e., the general process of adjusting savings)
Implementer-Reported Savings	Net savings estimated by the program implementer for a given track or cohort in a program year (typically through billing analysis or difference-in-differences statistic)
Evaluated Savings	Net savings estimated by a third-party evaluator for a given track or cohort's program year (typically through billing analysis; may be adjusted to account for uplift)
Deemed Savings	Savings estimated using pre-established values that are not specific to the track or time period under evaluation (e.g., values in the BRM)
Custom Savings	Savings that are specific to the track and time period under evaluation and calculated based on that track's performance in a given time period

# Benchmarking Approach

Identified 20 states with largest HER programs (*ex ante* planned electric savings) through E-Source

Assessed how at least 1 utility in each state claims final HER savings

These findings reflect current **\*practices\*** which may differ from written policy

## Sources:

Communication with evaluators, program implementers, and program staff

Regulatory document review (e.g., TRMs)

*E Source* DSM Insights: Home Energy Reports Ex Ante (planned) MWh savings for 2017 and 2018

Evaluation reports



# Findings

Final Claimed Savings

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# Key Findings: Final Claimed Savings

## Among the states we reviewed...

Do utilities claim **Ex Ante** (planned/filed) or **Ex Post** (based on performance?) savings?

- In most states (14), utilities measure and adjust/claim savings after the program period ends (**Ex Post**)
- Four use **Ex Ante** estimates (e.g., filed in EE plans)
- Three (Ohio, Arizona and Michigan) allow **deemed values**, calculated through third-party M&V

Do utilities claim **evaluation** results, **implementer-reported** estimates/results, or a combination?

- Most (12) use **evaluated** estimates/results (including Michigan, where deemed values are determined through third-party evaluation)
- Four **adjust implementer-reported results** based on prior-year evaluation (e.g., realization rate)
- Six allow **implementer-reported** estimates/results \*without\* an evaluation adjustment

\*Ohio and Missouri allow two approaches, so some counts may add to more than 20.



# Key Findings: Final Claimed Savings

Count of states that allow utilities to use each approach<sup>a</sup>

	Source of Savings Estimate <sup>b</sup>	Time Period of Estimate	
		Ex Ante (including deemed savings)	Ex Post
<p><b>The most common approach is Ex Post savings from custom evaluation</b></p> <p>In 9 of 20 states, utilities wait until the program period ends to evaluate, and claim savings based on evaluation results</p>	Evaluation (3 <sup>rd</sup> Party)	3 <sup>c</sup>	9
	Implementer *without* adjustment	4	2
	Implementer *with* adjustment from evaluation	0	4

<sup>a</sup> Classification is based on current practices per communications with evaluators, implementers and program staff, and may not always reflect written policy.

<sup>b</sup> Ohio and Missouri allow two approaches, so the table counts add to more than 20

<sup>c</sup> Deemed savings approaches fall here: Values are typically based on third-party evaluation, but they are used on an *ex ante* basis.

# States that claim Ex Post results from Evaluation

In 9 of 20 states, utilities wait until the program period ends to evaluate, and claim savings based on evaluation results

State	Size-Rank <sup>a</sup>	Utilities Assessed	Final Claimed Savings <sup>b</sup>
IL	1	ComEd, Ameren IL	<b>Ex Post</b> savings from custom evaluation (of same year), times a persistence factor to estimate “Cumulative Persisting Annual Savings” (that reduces savings after the first program year)
CA	3	PG&E, SCE, SDG&E	<b>Ex Post</b> savings from custom evaluation influence the final Energy Efficiency Shareholder Incentive
NY	7	ConEd	<b>Ex Post</b> savings from custom evaluation (of same year)
PA	9	PPL	<b>Ex Post</b> savings from custom evaluation, subject to review/approval by Statewide Evaluator
UT	10	Rocky Mountain Power	<b>Ex Post</b> savings from custom evaluation (of same year)
MO	12	KCP&L, Ameren	<b>Ex Post</b> evaluated savings from custom evaluation (deemed savings available for planning). KCP&L evaluates bi-annually: In-year-claims those results; Not in-year, claims implementer results X realization rate from evaluation Ameren evaluates annually and claims those results
WA	18	PSE, Pacific Power	<b>Ex Post</b> savings from custom evaluation (of same program year)
AR	19	Entergy Arkansas	<b>Ex Post</b> from evaluation, with persistence adjustment (follows Illinois approach)
ID	20	Rocky Mountain Power	<b>Ex Post</b> savings from custom evaluation (of same year)

<sup>a</sup> Source: E Source DSM Insights. Ranking is based on sum of combined ex ante electric savings for 2017-2018.

<sup>b</sup> Current practices based on communication with evaluators, implementers and program staff; may not always reflect written policy.

# States that claim Implementer-reported savings *\*without\** an adjustment

In 6 of 20 states, utilities claim savings estimated by the implementer:

- Four use **Ex Ante (planned/forecast)** savings
- Two use **Ex Post** savings from implementer M&V

State	Size-Rank <sup>a</sup>	Utilities Assessed	Final Claimed Savings <sup>b</sup>
OH	4	Duke, DPL	Utilities can claim savings on an evaluated or deemed basis (whichever is higher) DPL uses <b>Ex Ante</b> savings from Implementer; no adjustment based on evaluation Duke uses <b>deemed approach</b> ; Evaluated per-household savings from last bi-annual evaluation (which are considered “deemed”)
IA	11	MidAmerican Energy	<b>Ex Ante</b> savings from Implementer (filed in 3-year plans); no adjustments based on evaluation
RI	13	National Grid	<b>Ex Ante</b> savings from Implementer; evaluation results used to inform next three-year plan
CO	14	Xcel Energy	<b>Ex Post</b> savings from Implementer (without adjustment); no evaluation
CT	15	Eversource	<b>Ex Post</b> savings from Implementer (without adjustment from evaluation) Persistence factor is applied after the first year to allow multi-year measure life
MN	16	CenterPoint	<b>Ex Ante</b> filed savings from Implementer divided by three (“Average Savings Method” assumes three-year measure life) Savings are filed in triennial plans; No state requirement to evaluate

<sup>a</sup> Source: E Source DSM Insights. Ranking is based on sum of combined ex ante electric savings for 2017-2018.

<sup>b</sup> Current practices based on communication with evaluators, implementers and program staff; may not always reflect written policy.

# States that claim Implementer-reported savings *\*with\** an adjustment

In four states, utilities claim **Ex Post** savings from implementer M&V, but apply an adjustment factor or realization rate based on prior-year evaluation

State	Size-Rank <sup>a</sup>	Utilities Assessed	Final Claimed Savings <sup>b</sup>
MD	2	BGE, Pepco	<b>Ex Post</b> savings from Implementer, adjusted by prior year's realization rate (from <b>annual</b> evaluation)
MA	5	National Grid, Eversource, Berkshire Gas	<b>Ex Post</b> savings from Implementer, adjusted by historical realization rate from <b>2015-2016</b> evaluation (RRs of evaluated to implementer values were ~95%-105%)
MO	12	KCP&L, Ameren	<b>Ex Post</b> evaluated savings from custom evaluation (deemed savings available for planning). KCP&L evaluates <b>bi-annually</b> : In-year-claims those results; Not in-year, claims implementer results X realization rate from prior evaluation Ameren evaluates <b>annually</b> and claims those results
GA	17	Georgia Power Company	<b>Ex Post</b> savings from Implementer, adjusted by prior year's realization date (from <b>bi-annual</b> evaluation)

<sup>a</sup> Source: E Source DSM Insights. Ranking is based on sum of combined ex ante electric savings for 2017-2018.

<sup>b</sup> Current practices based on communication with evaluators, implementers and program staff; may not always reflect written policy.

# States That Use a Deemed Savings Approach

Ohio and Arizona have deemed savings frameworks that allow results from the most recent evaluation to be used until the next evaluation results are available

Neither has a statewide calibration process

State	Size-Rank <sup>a</sup>	Utilities Assessed	Final Claimed Savings <sup>b</sup>
OH	4	Duke, DPL	Utilities can claim savings on an evaluated or deemed basis (whichever is higher) DPL uses <b>Ex Ante</b> savings from Implementer; no adjustment based on evaluation Duke uses <b>deemed approach</b> : Evaluated per-household savings from last bi-annual evaluation (which are considered “deemed”)
MI	6	DTE Energy, Consumers Energy	<b>Quasi-deemed savings</b> : Deemed percentage savings X track-specific factors
AZ	8	Tucson Electric Power	<b>Ex Post</b> savings from custom evaluation <b>become deemed savings</b> for the next few cycles (2016 evaluation used until 2019; recent results will be used for 2020)

<sup>a</sup> Source: E Source DSM Insights. Ranking is based on sum of combined ex ante electric savings for 2017-2018.

<sup>b</sup> Current practices based on communication with evaluators, implementers and program staff; may not always reflect written policy.

# Other Findings

## Implementer-Reported Savings

- States that allow **implementer-reported ex post** savings generally find these savings align well with evaluated savings (some tested this before allowing implementer-reported savings)

## Monitoring During Program Period

- Most program evaluators and administrators receive **monthly or quarterly savings results** and an annual true-up from the implementer

## Timing of Final Claimed Savings

- Custom evaluation: Results typically available in **4-8 months** after program year ends
- Implementer *ex post*: Results available **~2 months** after program year ends

## Measure Life

- A few states adopt multi-year measure life such that a portion of savings in a given program year is attributed to that year (IL, PA, CT, MN, WA, UT, AR)



# Discussion

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# Discussion

**We found a surprising variety and diversity of utility approaches and state frameworks for claiming HER savings**

- Ex Post approaches are common, either using evaluator or implementer results
- Michigan is not the only state using a deemed approach, and some states rarely/never incorporate evaluation
- The variety of approaches highlights the tension between certainty/predictability, timeliness and costs
- While Ex Post approaches are common, the timing may be challenging in Michigan (waiting for results presents uncertainty for planning and portfolio management)



# Pros and Cons of Approaches

Ex Post methods provide more accurate results, but not the predictability or timeliness program/portfolio administrators may need to plan or adjust for performance

	Number of States	Certainty / Predictability <i>(How well can utilities predict final savings?)</i>	Timeliness <i>(How early do utilities know final claimed savings?)</i>	Accuracy <i>(How close are claimed savings to evaluated savings?)</i>	Typical Cost
<b>Ex Post</b> from Custom Evaluation	9	<b>Low</b>	<b>Low</b> (~4-8 months after program year)	<b>High</b>	<b>High</b>
<b>Ex Post</b> from Implementer <i>without</i> adjustment	2	<b>Medium</b> (results are tracked during program year)	<b>Medium</b> (~2-3 months after program year)	<b>Medium</b> ( <b>High</b> if Implementer M&V is validated)	<b>Low</b>
<b>Ex Post</b> from Implementer <i>with</i> adjustment*	4	<b>Medium</b> (results are tracked during program year)	<b>Medium</b> (~2-3 months after program year)	<b>High</b>	<b>Medium</b> (requires periodic evaluation)
<b>Ex Ante</b> from Implementer <i>without</i> adjustment	4	<b>High</b>	<b>High</b>	<b>Low</b>	<b>Low</b>
<b>Deemed</b> savings <i>without</i> adjustment	3	<b>High</b>	<b>High</b>	<b>Low</b>	<b>Medium</b> (requires some evaluation)
<b>Deemed</b> savings <i>with</i> adjustment*	0	<b>High</b>	<b>High*</b>	<b>Medium</b>	<b>Medium</b> (requires some evaluation)

\* Adjusted based on realization rate from previous evaluation, available before/during the program period

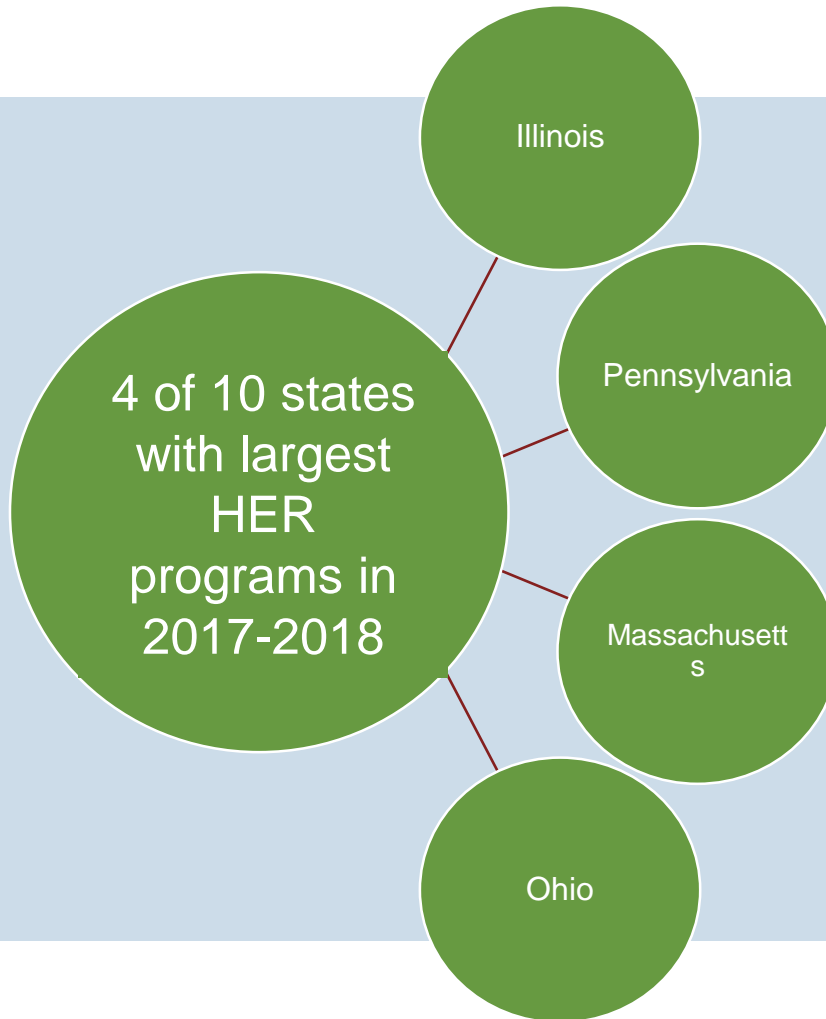


# Appendix

Deep Dive into Four States

# Detailed Findings

A deep dive into four states



Investigated the planning, monitoring, evaluation and adjustment process for each state

# Benchmarking Questions

<b>Forecast/Plan Savings</b>	<ul style="list-style-type: none"><li>• What savings estimates are used in EE plans/filings?</li></ul>
<b>Monitoring</b>	<ul style="list-style-type: none"><li>• What performance information do utilities receive during/after the program period?</li></ul>
<p>--- AFTER HER PROGRAM PERIOD ---</p>	
<b>Evaluation/Verification</b>	<ul style="list-style-type: none"><li>• What evaluation happens during/after the program period?</li><li>• What is the timing/time lag of evaluation?</li></ul>
<b>Adjusting Savings</b>	<ul style="list-style-type: none"><li>• What do evaluation results affect/influence?</li><li>• What adjustments are made based on evaluation or other factors?</li></ul>
<b>Final Claimed Savings</b>	<ul style="list-style-type: none"><li>• What are final claimed savings based on?</li><li>• Do utilities claim Ex Ante (planned/filed) savings, or Ex Post (based on performance?)</li><li>• How do evaluation results influence claimed savings?</li></ul>

# Ohio Summary: *Deemed Approach*\*

<b>Forecast/Plan Savings</b>	Forecast expected customer count X per-household savings from most recent EM&V report. Evaluator estimates the savings that are filed Per-household savings are based on the most recent evaluation and considered “deemed” until the next evaluation
<b>Monitoring</b>	Implementer provides periodic updates (internal M&V) that do not affect claimed savings or forecasts
--- AFTER HER PROGRAM PERIOD ---	
<b>Evaluation/Verification</b>	Bi-annual evaluation, with ~6-9 month lag after the end of the program year
<b>Adjusting Savings</b>	Evaluation results used prospectively: Per-household annual savings from the most recent evaluation used to forecast and claimed savings
<b>Final Claimed Savings</b>	Quasi-deemed approach: Claimed savings based on per-household average annual kWh savings from evaluation available when plan was filed No ex post adjustments, even if a more recent evaluation is available

\* Ohio allows two approaches: Evaluated or deemed savings.  
This slide describes how one utility uses the deemed approach.

# Massachusetts Summary

<b>Forecast/Plan Savings</b>	Implementer-reported <b>prior year performance</b> X Realization Rate. Filed in 3-year plans. Individual programs aren't held strictly to planned goals; portfolio more important.
<b>Monitoring</b>	Implementers provide monthly results from Difference-in-Differences models, and annual true-up
<i>--- AFTER HER PROGRAM PERIOD ---</i>	
<b>Evaluation/ Verification</b>	Implementer provides year-end savings from their DiD models. No annual third-party billing analysis: In 2016 MA determined program was stable and implementer values were close enough (~95-105%)
<b>Adjusting Savings</b>	Implementer-reported current-year savings X Realization Rate. Utilities apply a <b>realization rate</b> from 2015-2016 third-party evaluation Evaluated savings subtract uplift savings, accounted for in realization rate
<b>Final Claimed Savings</b>	Utilities finalize claimed savings <b>after</b> the implementer provides final annual results. <b>File final claimed savings with the state on May 1<sup>st</sup>.</b>

# Pennsylvania Summary

<b>Forecast/Plan Savings</b>	Filed savings based on implementer forecasts Starting in 2021, HER savings will have a multi-year measure life
<b>Monitoring</b>	Implementers must report energy savings to the utilities for each program year (but typically report monthly)
<i>--- AFTER HER PROGRAM PERIOD ---</i>	
<b>Evaluation/Verification</b>	Annual third-party evaluation (billing analysis); must be completed and filed with the PA PUC by November 15, about 5-6 months after the end of the program year (Program year is June – May).
<b>Adjusting Savings</b>	Custom savings from evaluation (verified net savings); based on billing analysis and adjusted for upstream and downstream program uplift.
<b>Final Claimed Savings</b>	Program year runs June-May. Utilities finalize program year claimed savings after evaluation (typically November) and claim verified savings. The Statewide Evaluator (SWE) reviews/approves verified adjusted net savings by January. If the SWE disagrees with the verified results, it can override the utility's claimed savings. The SWE's savings estimates are final.

# Illinois Summary

<b>Forecast/Plan Savings</b>	Ex ante savings estimates in four-year plans based on implementer forecast Plan filings account for “Cumulative Persisting Annual Savings” via framework implemented in CY2018 to allow a longer measure life
<b>Monitoring</b>	Implementers provide monthly and year-end results from their models
<i>--- AFTER HER PROGRAM PERIOD ---</i>	
<b>Evaluation/ Verification</b>	Annual billing analysis (for net savings) and uplift savings analysis for calendar year. Uplift savings subtracted to yield adjusted net savings.
<b>Adjusting Savings</b>	Custom savings from evaluation: Net savings estimated for specific track over the calendar year. While custom savings are used as the *base* for claimed savings, Illinois applies deemed factors to account for persistence.
<b>Final Claimed Savings</b>	Utilities finalize claimed savings when evaluation results are available for the specific track and calendar year, then claim the portion of custom evaluated savings that is unique to that calendar-year (i.e., not attributable to persistence) Final savings filed on April 30th



# Illinois: Multi-Year Measure Life

- The Cumulative Persisting Annual Savings (CPAS) framework took effect in CY2018.
  - Measure life for the program was revised from one to five years.
  - First-year programs claim 100% of custom savings from evaluation
  - Later-year programs (2nd year and later) claim reduced savings: Incremental savings attributable to that year of treatment, less savings attributable to prior-year treatment.
  - Continued treatment of existing participants results in reduced savings over five-year period treatment persistence captured in lifetime savings from CY2018 interventions

## Sources:

Discussion with ComEd HER Program Evaluation lead.

ComEd CY2018 Impact Evaluation Report:

[https://s3.amazonaws.com/ilsag/ComEd\\_HER\\_CY2018\\_Impact\\_Evaluation\\_Report\\_2019-04-08\\_Final.pdf](https://s3.amazonaws.com/ilsag/ComEd_HER_CY2018_Impact_Evaluation_Report_2019-04-08_Final.pdf)

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