INTERNATIONAL ENERGY PROGRAM EVALUATION CONFERENCE

Reduce, Reuse, Recycle, Rethink: Predictive Analytics for Redefining Evaluation

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Reduce
Reuse
Recycle

Non-Wires Alternatives

Pacific Gas and Electric Company®

Began efforts in 2014

SOUTHERN CALIFORNIA EDISON

Announced plans to introduce 125 MW of interventions in 2016

BONNEVILLE POWER ADMINISTRATION

Announced intent to not pursue direct transmission upgrades in 2017

Non-Wires Alternatives

BQDM target: More than **52 MW of demand reduction**

Primarily through **SBDI lighting** projects currently

Over **4,000 businesses** effected so far

Regulator requires **quarterly reporting** of reductions

No significant penetration of AMI

Unique Opportunity

BQDM Load Study + Direct communication with implementation = EDGE M&V Approach

- Completed in 2015
- Over 400 loggers characterizing SBDI lighting behavior
- Structured by space type and business demographics

- Add additional structure to tracking data
- Move to weekly reporting of installations

- An approach centered on predictive modeling

EDGE M&V

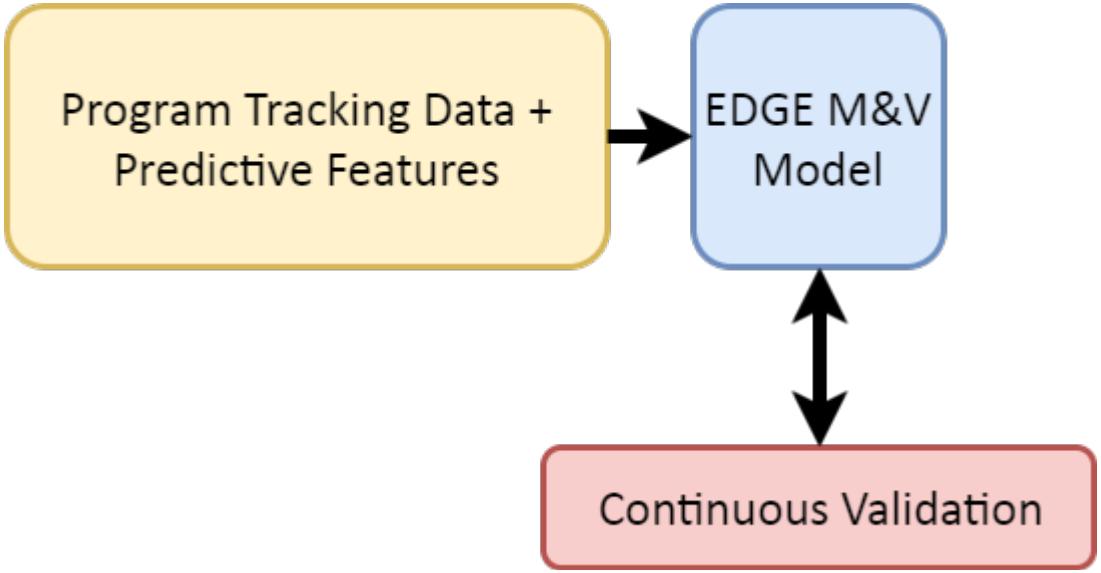
Program Tracking Data +
Predictive Features

- Tracking Data: Coordination with Implementation on format
- Predictive Features: **Flexible** (past M&V, AMI…)
- Combine to create a training dataset that can inform….

EDGE M&V

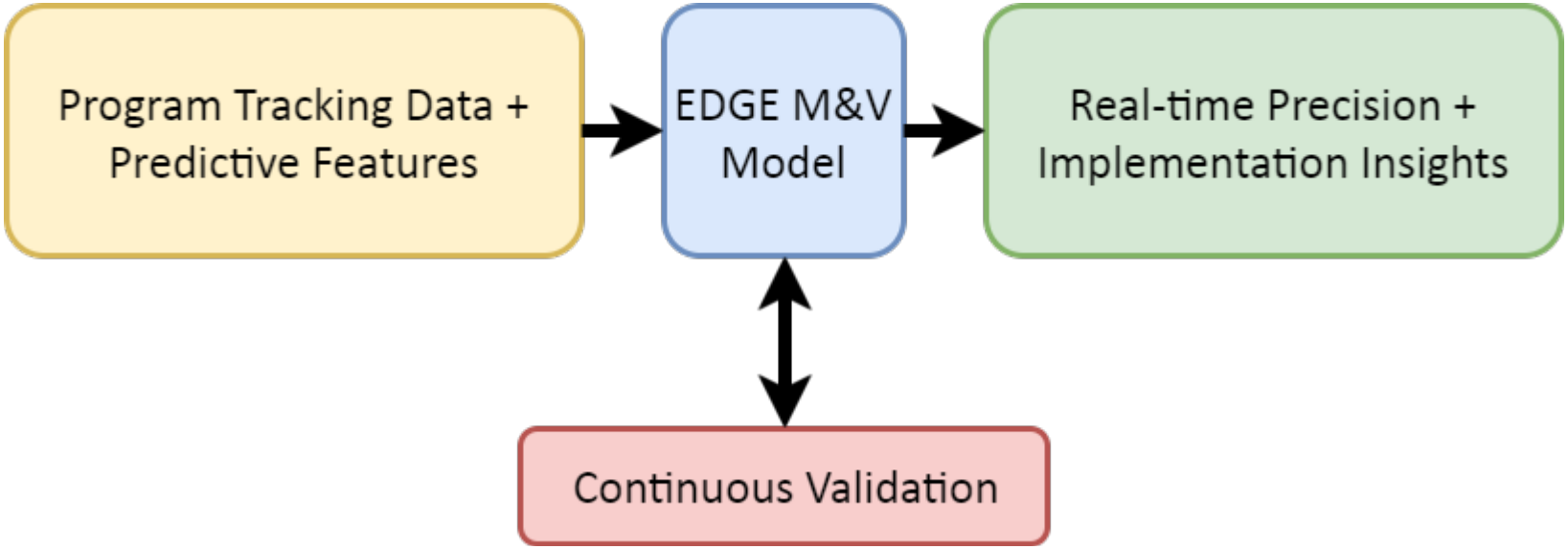
- Take advantage of information that is tracked by implementers
- Trained a machine learning algorithm based on business type, operation hours, and space type
- Model every measure
- Automated processing of tracking data

EDGE M&V



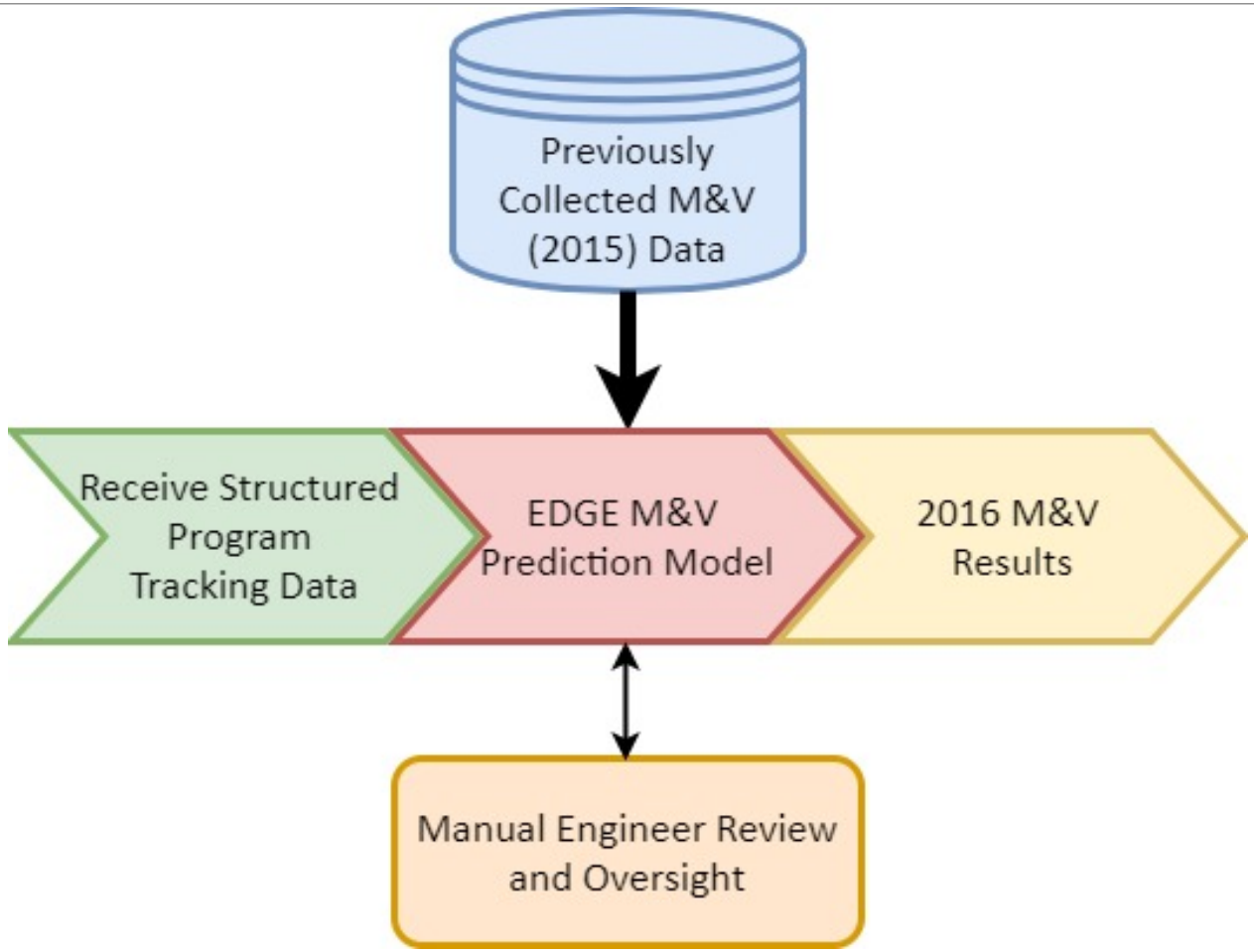
- Initial Validation: Past M&V Data
- In 2016: Additional post-install M&V
- Engineer oversight as model is deployed
- Can we match classic evaluation's statistical precision?

EDGE M&V

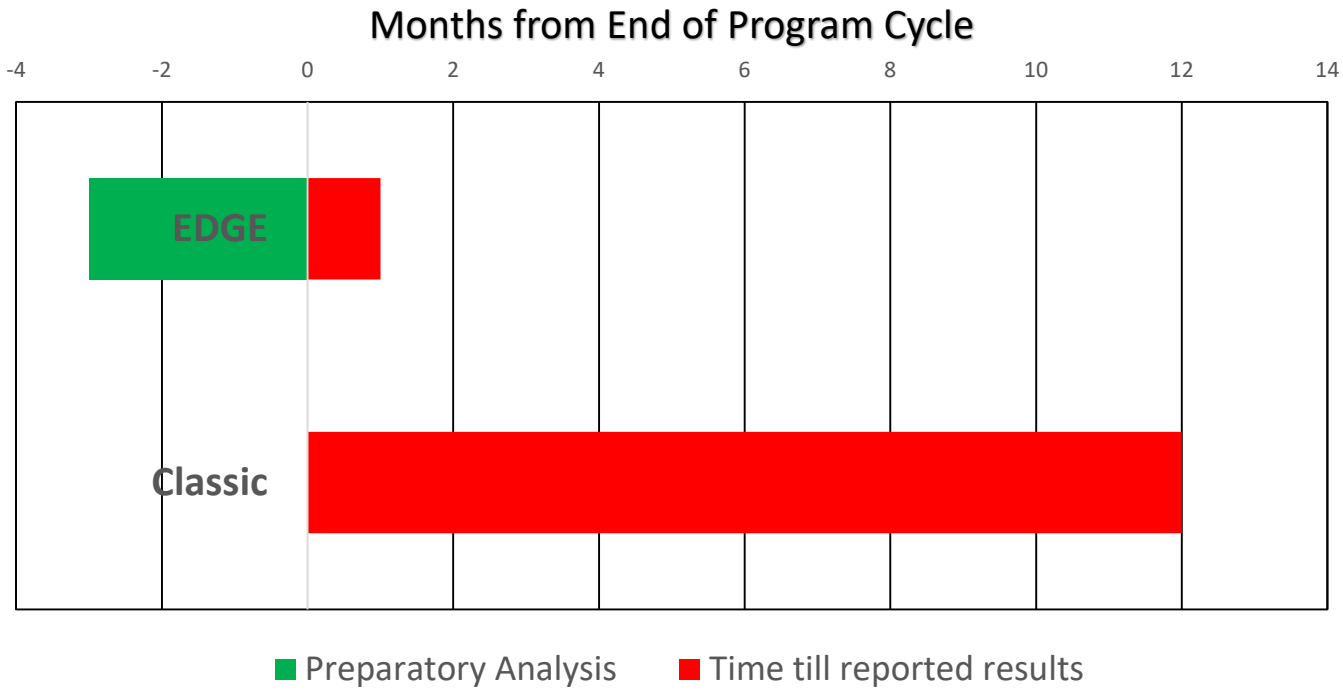


- Results as real-time as Tracking availability
- Analysis work is frontloaded

EDGE Implementation

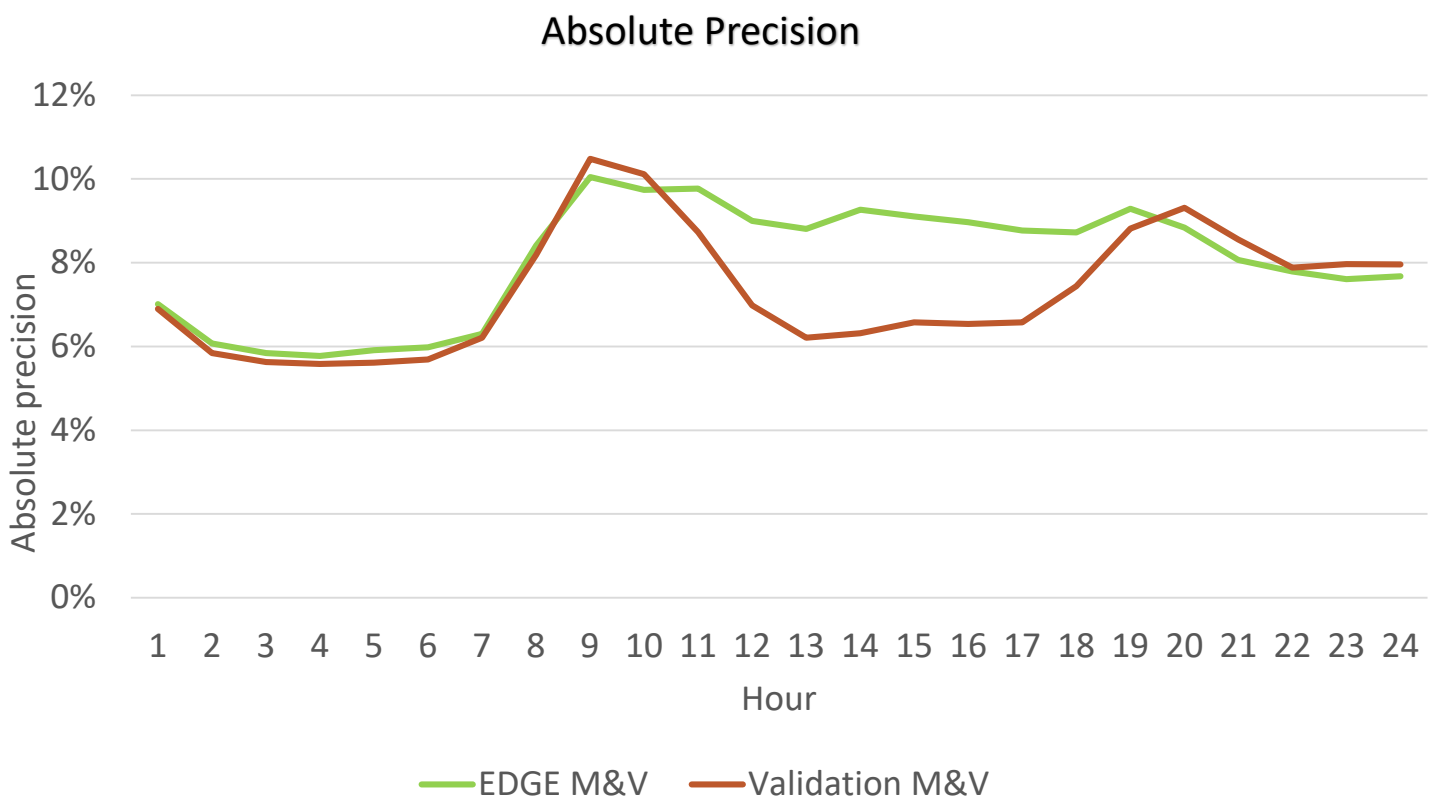


Results – Timeliness

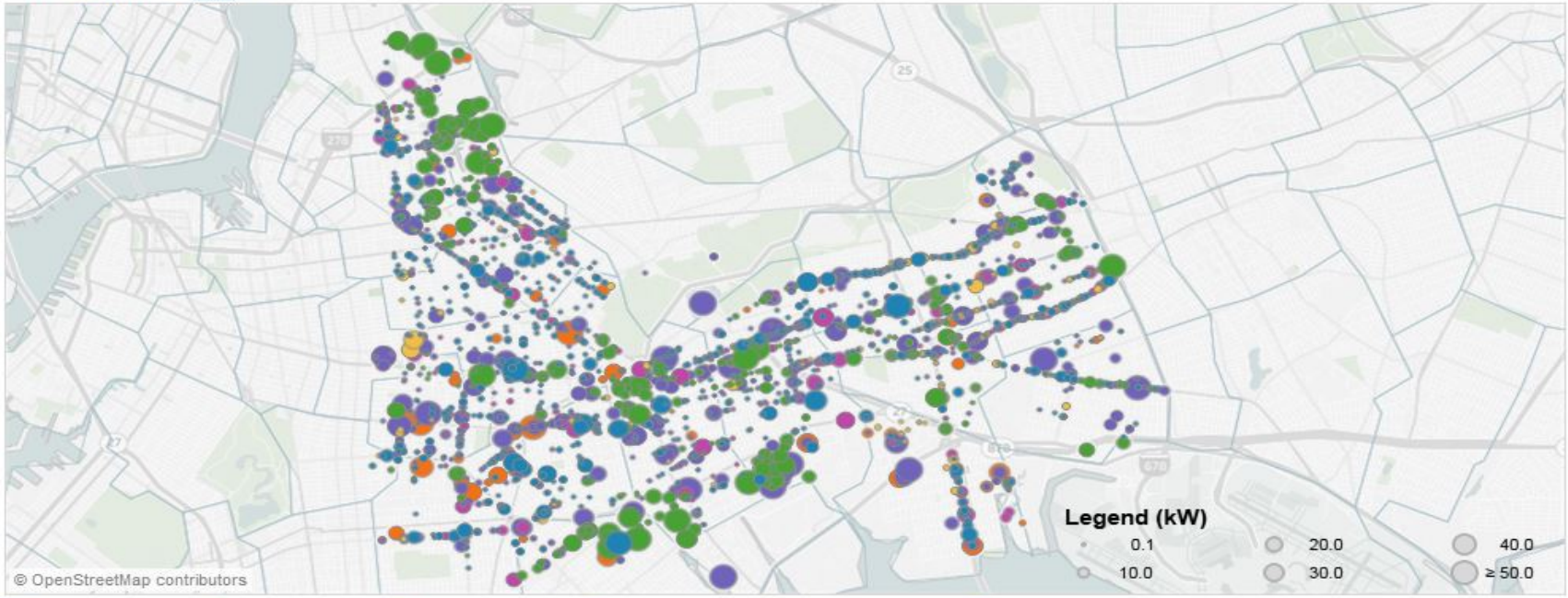


Delivered five-day turnaround on impact of over 1,500 businesses for the 2016 program year

Results – Precision



SBDI Program Overview

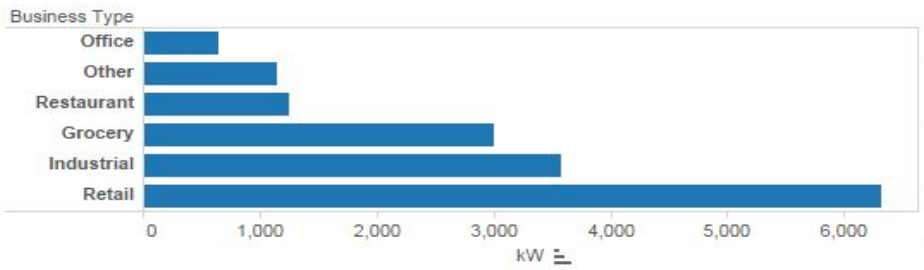


Grocery | Industrial | Office | Restaurant | Retail | Other

kW Type Nameplate kW

Installed Date 7/2/2014 — 6/30/2016

Business Type (All)



Business Type	Quantity	Average kW	Total kW
Office	256	2.5	644
Other	121	9.5	1,149
Restaurant	412	3.0	1,249
Grocery	998	3.0	3,000
Industrial	561	6.4	3,580
Retail	1,693	3.7	6,312
Total	4,041	3.9	15,933

Conclusion

Outcomes

- Able to satisfy quick reporting timeline of NWA efforts
- Modeling was validated through additional metering
- Program realized additional gains in analytics capabilities

Can this work for you?

- Availability of performance data was critical
- Communication with implementation
- Well suited for modern NWA programs
- Consider the idea of piloting this approach backed up with validation M&V that serves as a safety factor

Questions?

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