Hard Times for an Honest Logger?

Optimizing a Small Business Direct Install Logger Study in an M&V 2.0 Landscape

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NMR Group, Inc.

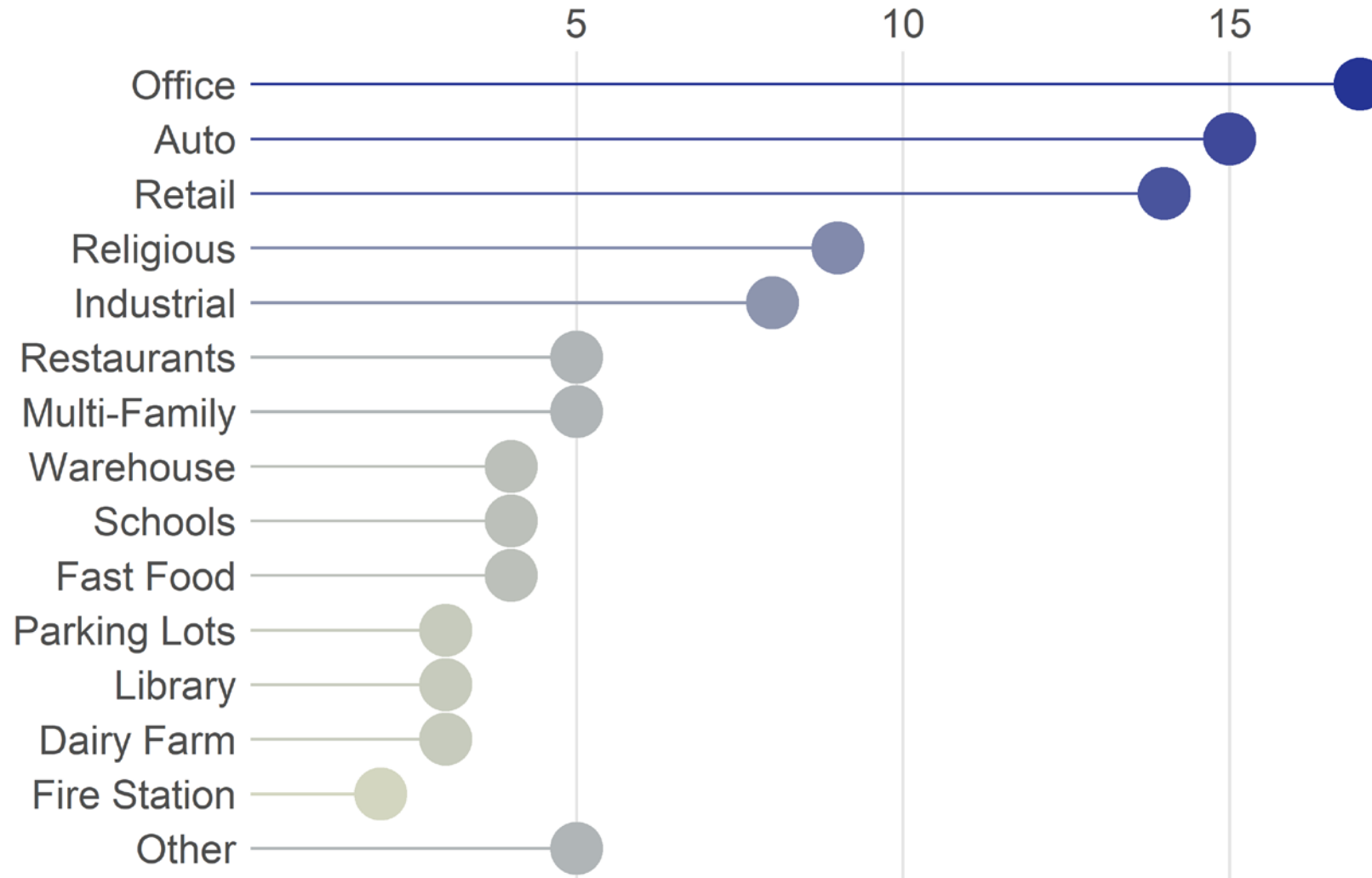How might traditional M&V techniques be used to
test,

validate,

complement

emerging or more-recently established ones?

Small business program in NY

- Average demand ≤ 110kW

- Free energy audit

- Savings analyses

- Direct installation services

- On bill customer project repayments

Businesses visited

Goals

Comparing alignment & variability of savings estimated using

- **photocell lighting loggers**

- **program tracking data**

- **TRM-prescribed hours of use (HOU)**

- **whole building meter data (hourly, daily)**

- **subcircuit meter data (subhourly)**

Not available at all sites

Assessing results by business end-use and duration of data collection too

How can we deliver insights from logger data so they can be integrated with evolving M&V methods?
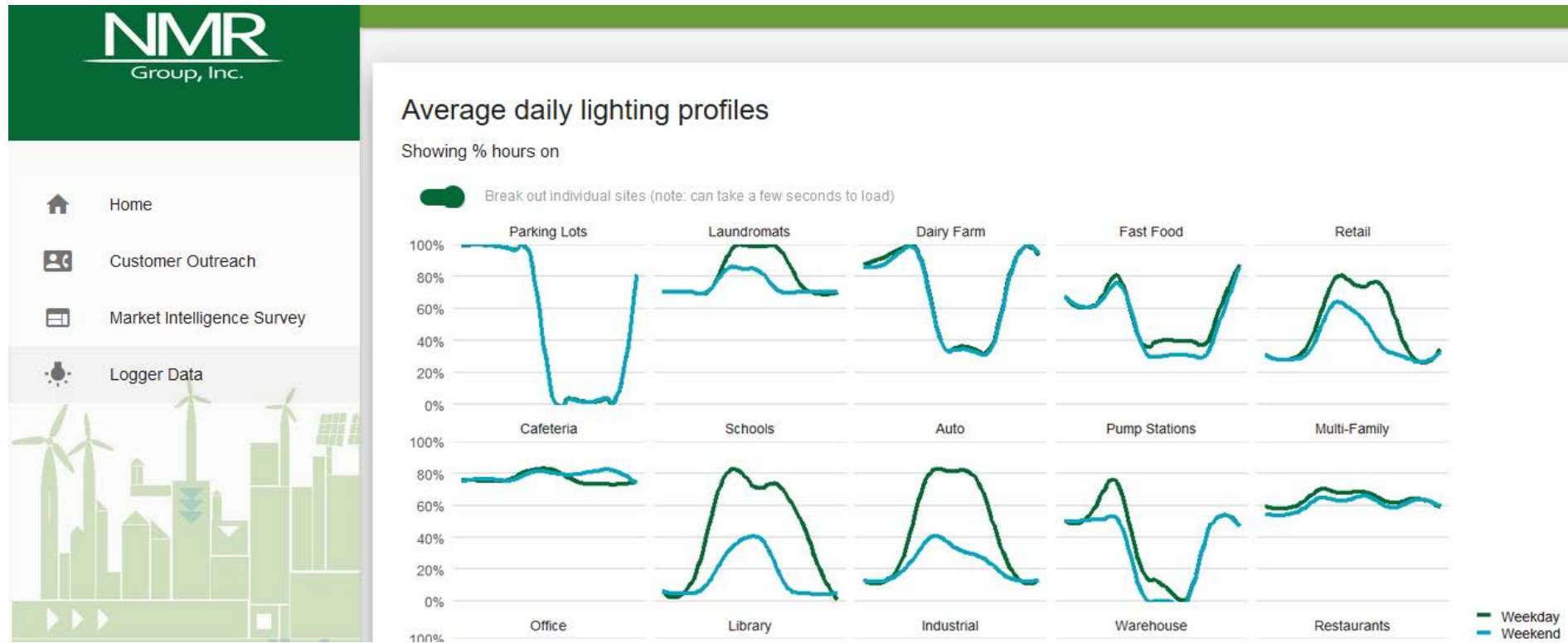
What makes it "2.0"?

- Increasingly automated analytics
- Increased data granularity & volume

Source: Franconi et al., LBNL, 2017

Dashboarding evaluation progress

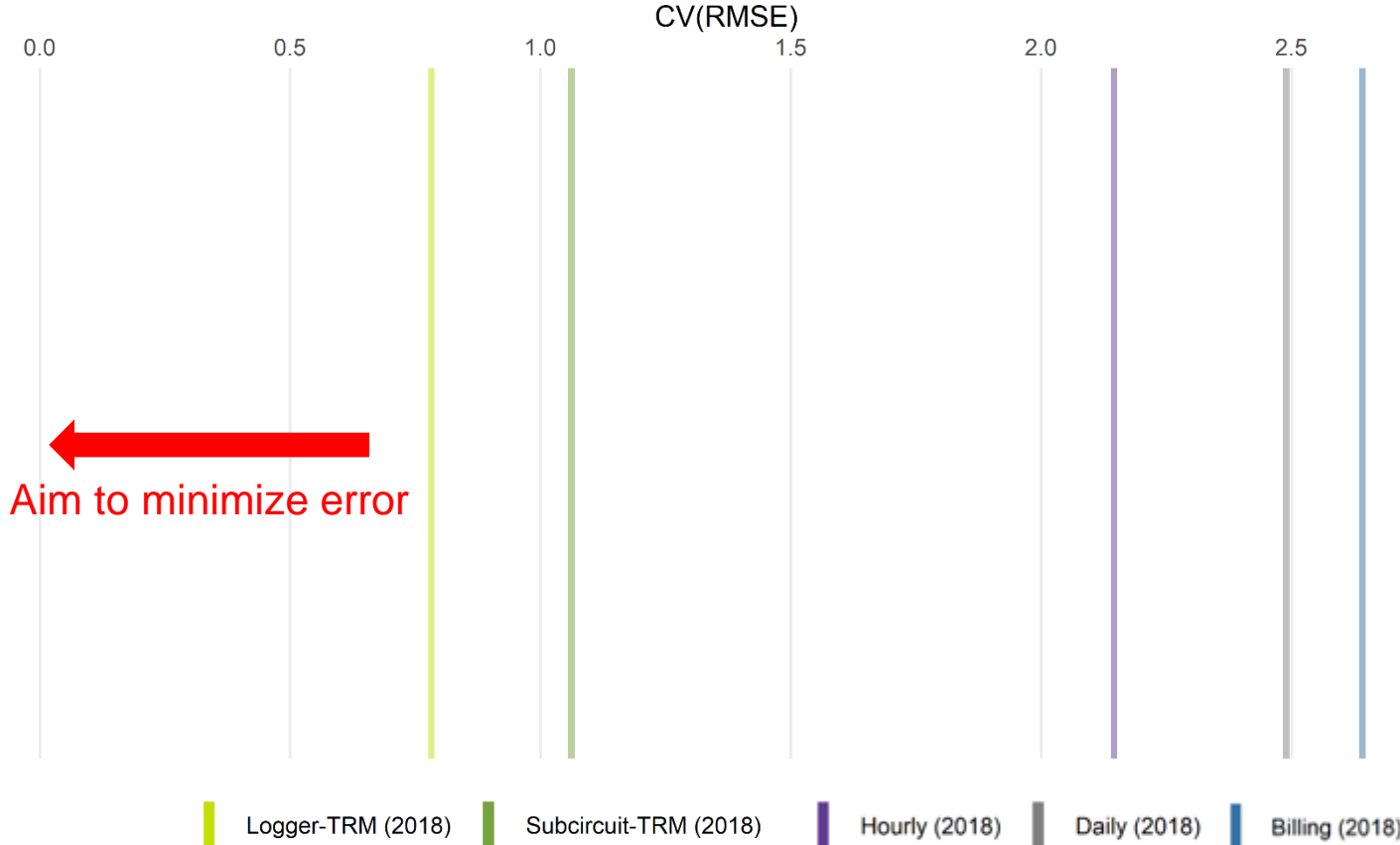# Dashboarding evaluation progress

How do we determine reliability of baseline savings estimates to compare with piloted M&V results?

How should the maturity of M&V methods in a given territory influence our recommendations?

Comparing normalized model error (study phase I)

CV(RMSE)

| 0.0 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 |

← Aim to minimize error

Logger-TRM (2018)　Subcircuit-TRM (2018)　Hourly (2018)　Daily (2018)　Billing (2018)
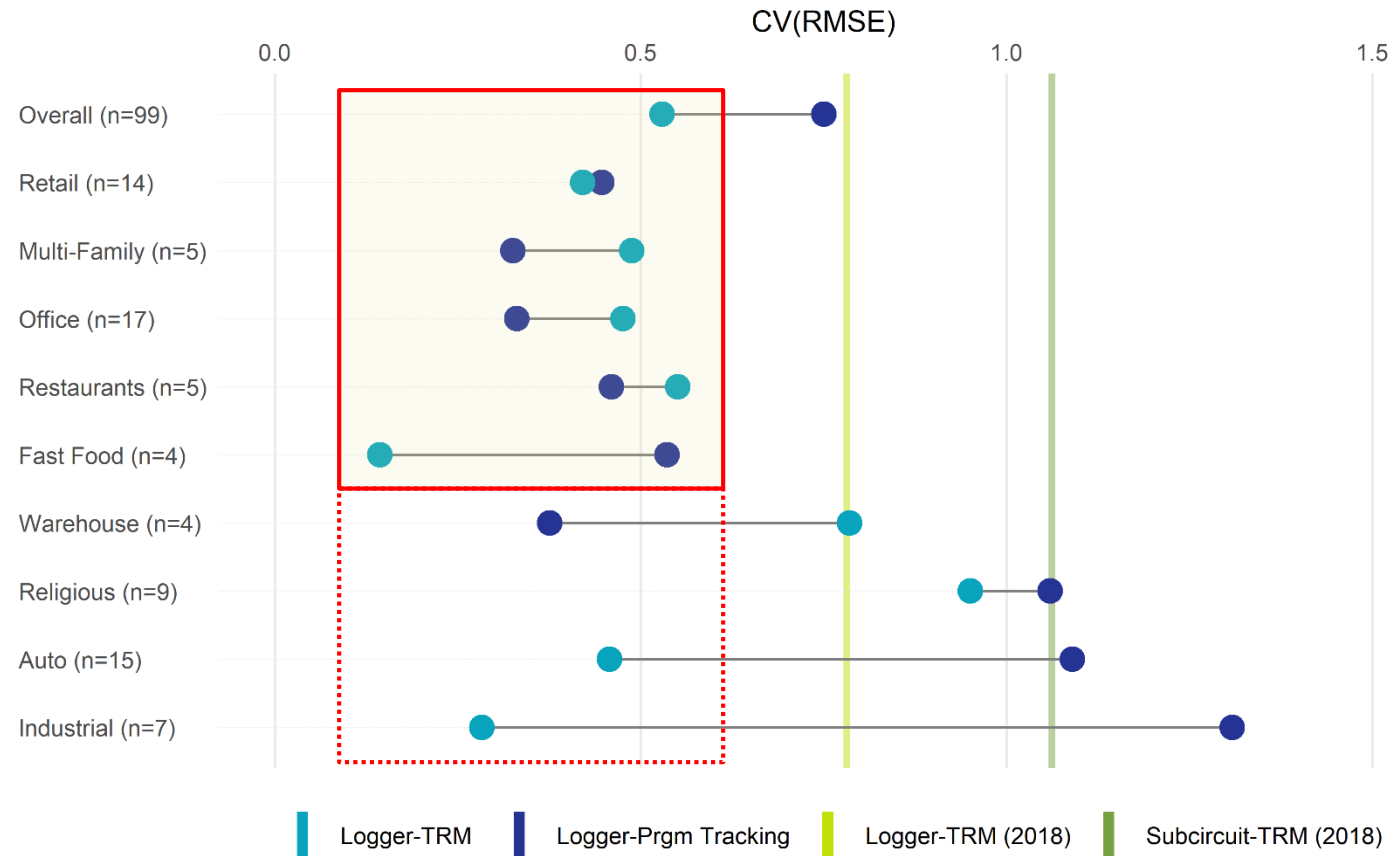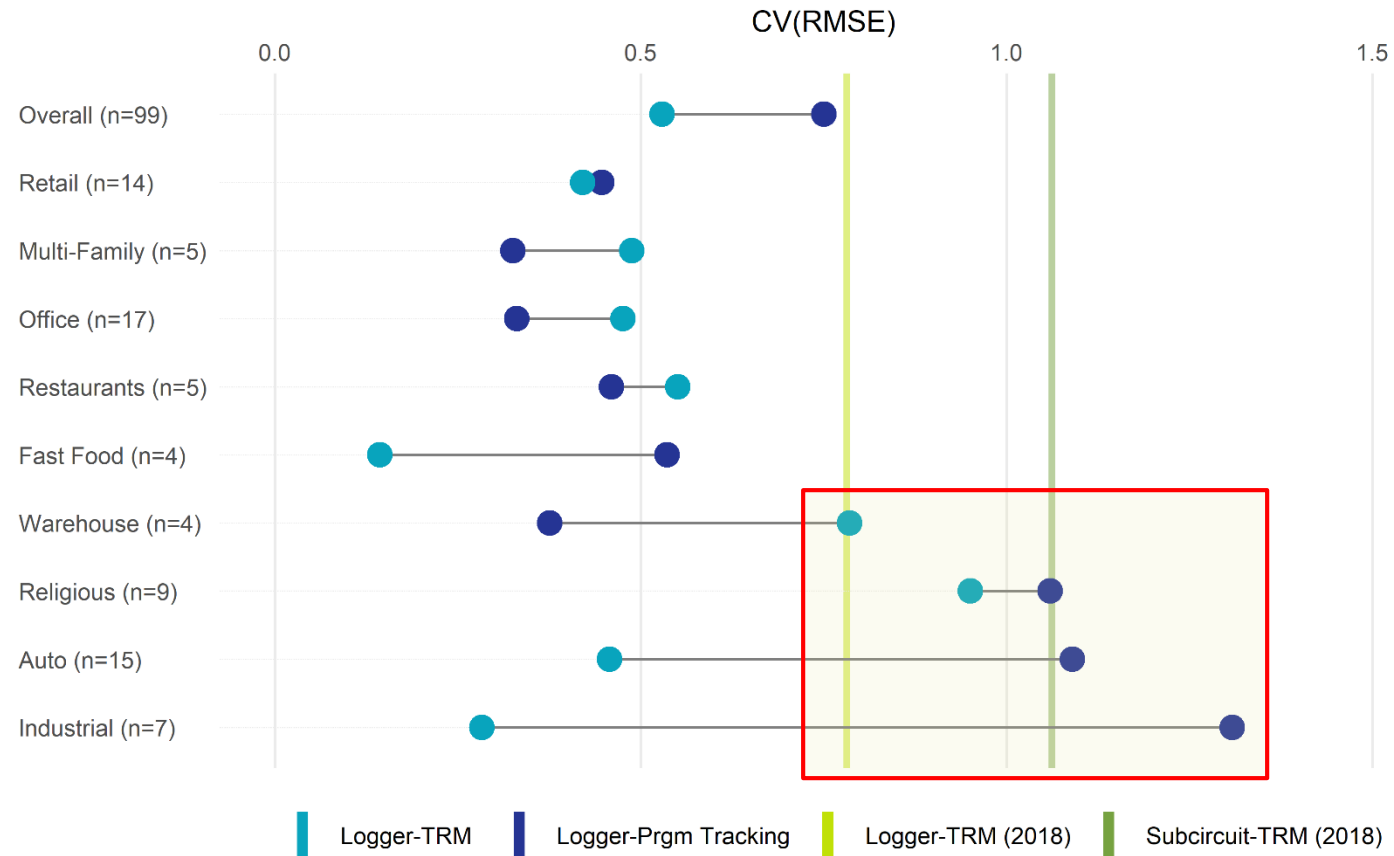
Coefficient of variation (CV) of root mean square error (RMSE)

Note that results presented here are preliminary; finalized results will appear in a forthcoming impact evaluation report to National Grid

Piloting new M&V 2.0 / validating mature M&V 2.0

CV(RMSE)

Legend: Logger-TRM | Logger-Prgm Tracking | Logger-TRM (2018) | Subcircuit-TRM (2018)

Coefficient of variation (CV) of root mean square error (RMSE)

Note that results presented here are preliminary; finalized results will appear in a forthcoming impact evaluation report to National Grid

Improving logger deployment using M&V 2.0 data

Coefficient of variation (CV) of root mean square error (RMSE)

Final Thoughts

Loggers may increasingly be complementary M&V tools

- As additional inputs to true up adv. M&V models, or replace where not implementable

- Need to integrate with larger, more-automated data flows characterizing adv. M&V

Final Thoughts

Evaluation + program admin should continue looking for ways to

- **Extend advantages of emerging tools and techniques to existing methods**

- **Generate rapid insights from logger data reproducibly, accessibly (e.g. web app)**

Thank you

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