DEFENDING ENERGY EFFICIENCY

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AGENDA

- Overview of Brooklyn/Queens Demand Management Program (BQDM)
- A gap between communities
- Closing the gap

THE BQDM PROJECT

❑ Brooklyn Queens Demand Management

❑ Install $200 million customer side resources to defer building a $1 billion substation

❑ 52 MW targeted reduction from ~300,000 customers
  ➢ Today's focus – 10 MW Small business direct install (SBDI)

SUMMER PEAK OVERLOAD PERIOD
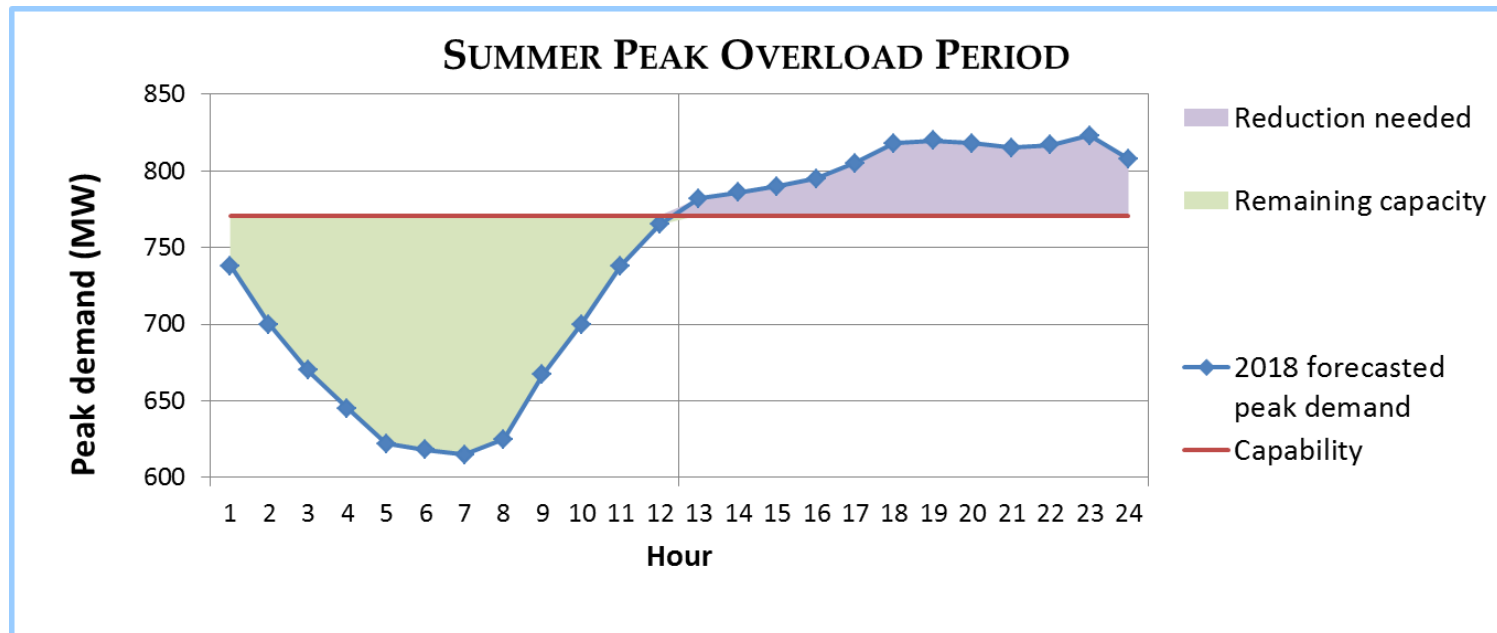
MIND THE GAP

Energy efficiency community

- ❑ Program evaluation
- ❑ Realization rate with 90/10 confidence and precision

Heard by system planning community

- ❑ Reliable peak demand savings
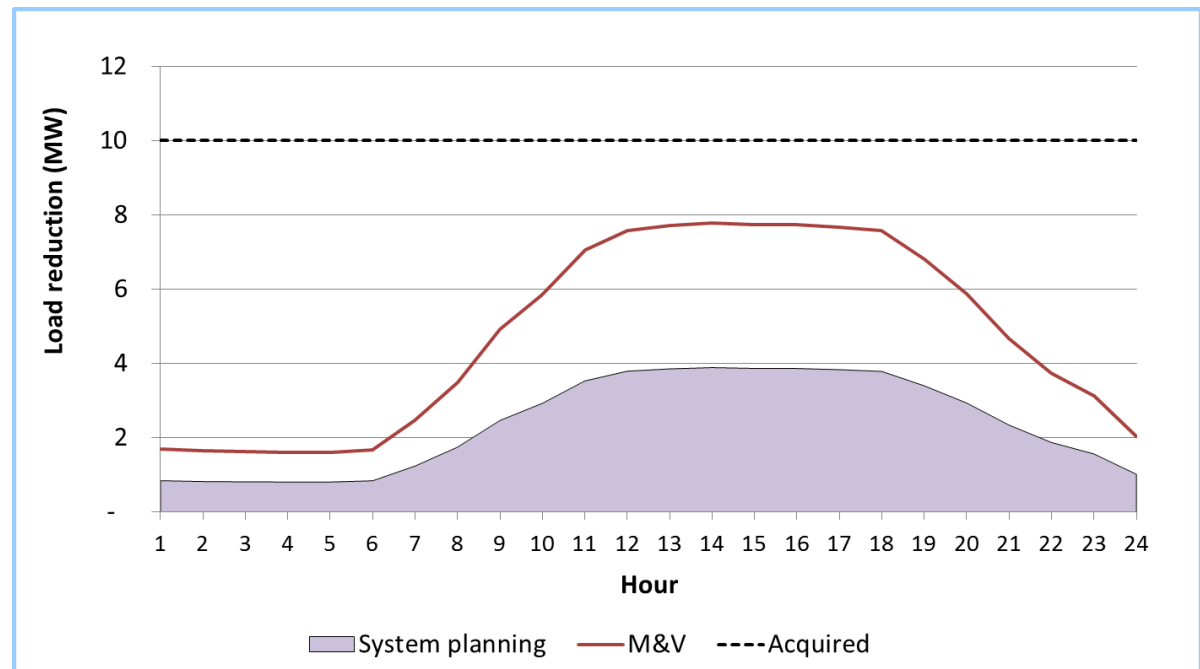- ❑ Five sigma – 1 in 3.5 million
- ❑ 10% chance of blackout?

WHAT'S THE IMPACT?

❑ **Requires a measurement and verification (M&V) approach that bridges the gap between communities**

❑ Acquired

❑ M&V

❑ System planning

❑ Can EE be defended as a cost effective resource?

CLOSING THE GAP

THE DEFENSE

- Comprehensive M&V is the bridge
- Updated models to represent:
  - Daily variation
  - Sampling error
  - Persistence
- Leverage results during planning stages

DATA SOURCES

- BQDM meters currently in field
- SBDI impact evaluation dataset
  - Participants between 2010 and 2013
  - Participants across all of Con Edison's territory
  - 157 Sites with full year of light metering

DAILY VARIATION

- Annual energy savings (kWh) vs. peak demand reduction (kW
- Monte Carlo Simulation
  - 3.5 million iterations
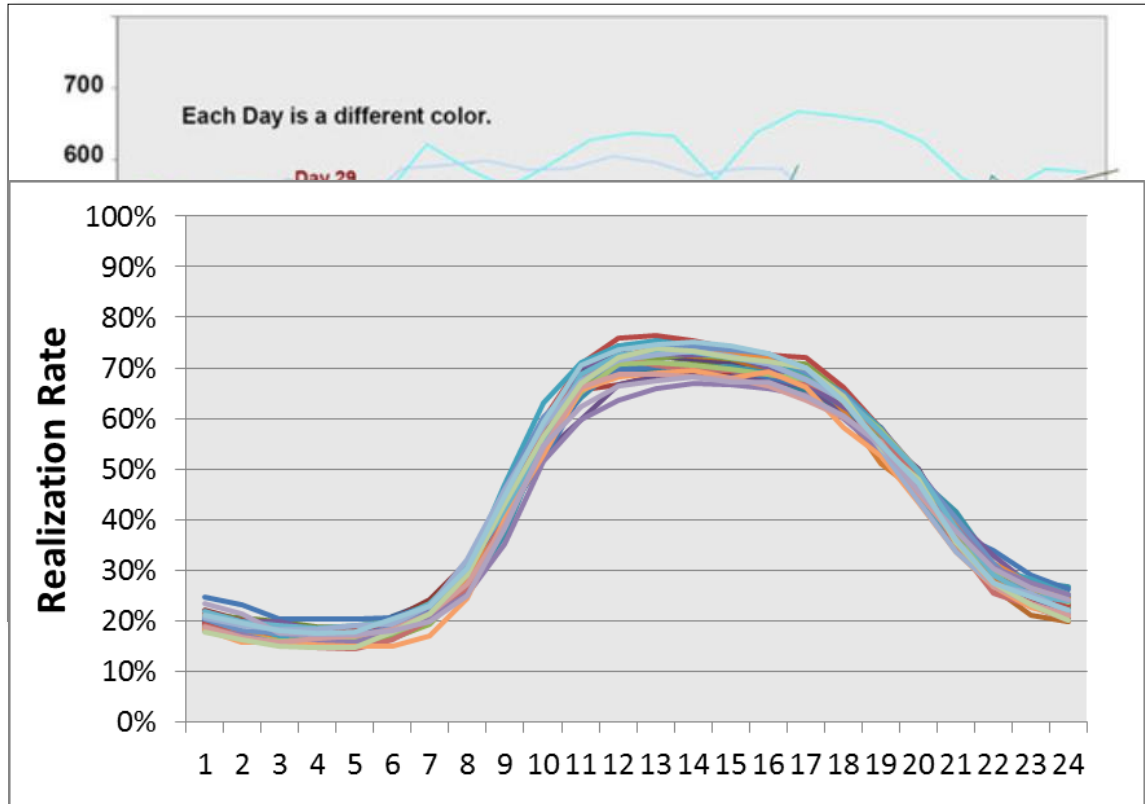- 68% average Coincidence factor
- Five sigma -no less than 66%
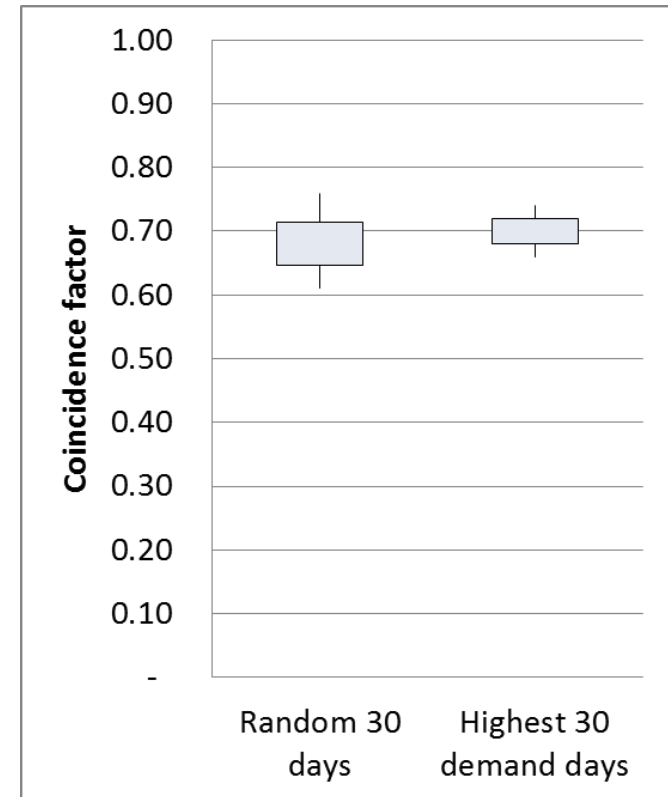
- Box represents 90% confidence interval
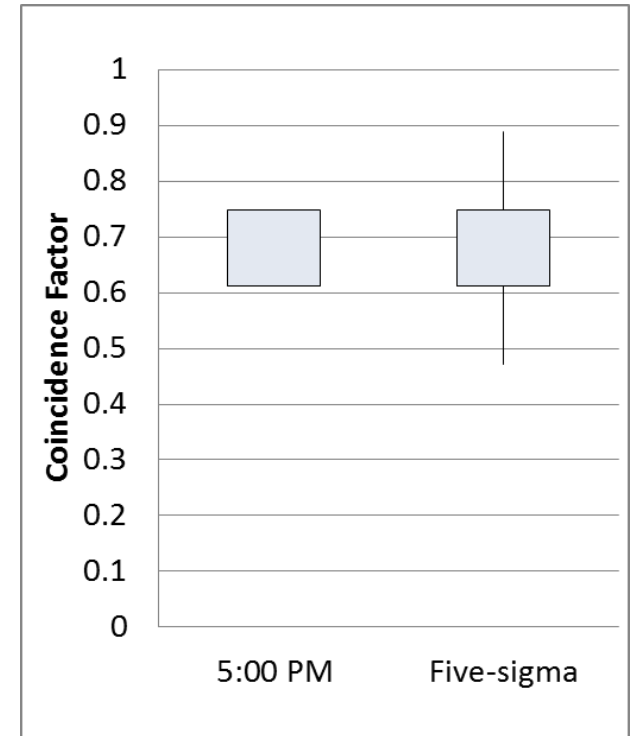- Whiskers represent min and max coincidence factor

FIRST DEFENSE

❑ Wind Generation

❑ Small Business

SAMPLING ERROR

- ❑ 90% Confidence
  - ➢ 68% ±10% relative precision
  - ➢ 68% ±6.8% absolute precision
- ❑ Five-sigma
  - ➢ 68% ±31% relative precision
  - ➢ 68% ±21% absolute precision

- ❑ Box represents 90% confidence interval
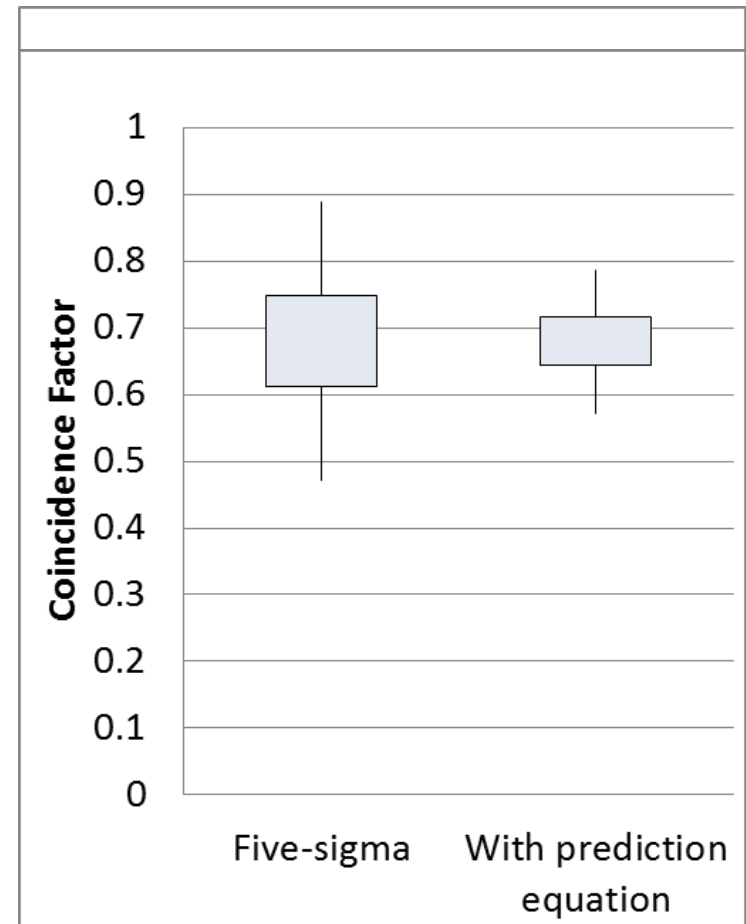- ❑ Whiskers represent min and max coincidence factor

REDUCING SAMPLING ERROR

❑ Increase or sample size

❑ Reduce variability

> Prediction equation (Business type, Business hours, kW savings)
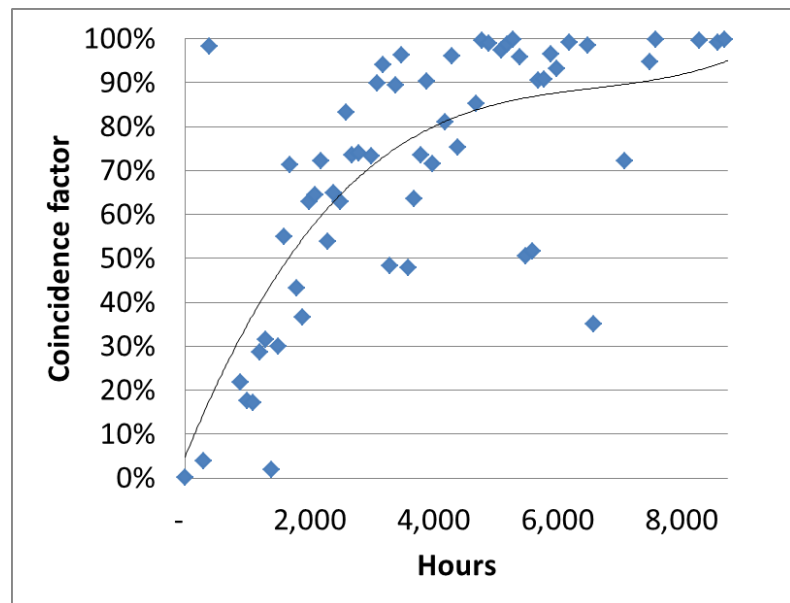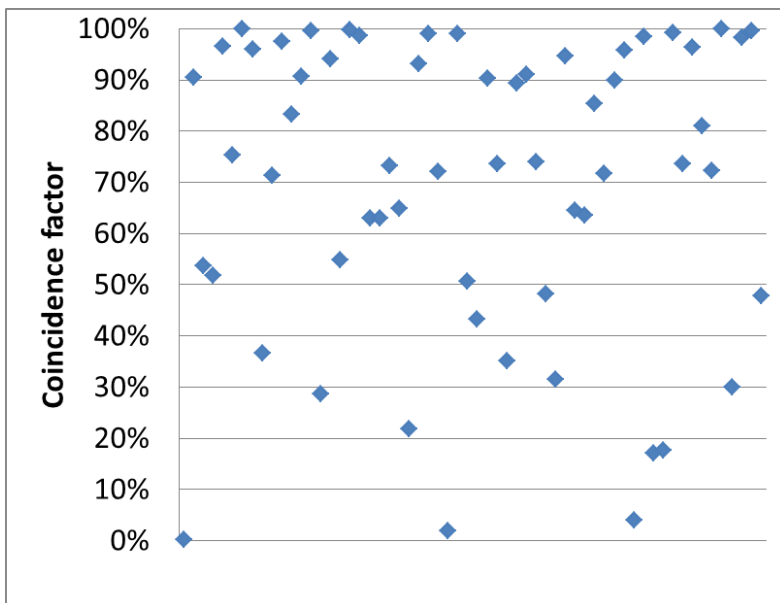
SAMPLING ERROR

- Typical M&V approach
  - 68% ±21% absolute precision
- Predict coincidence factor
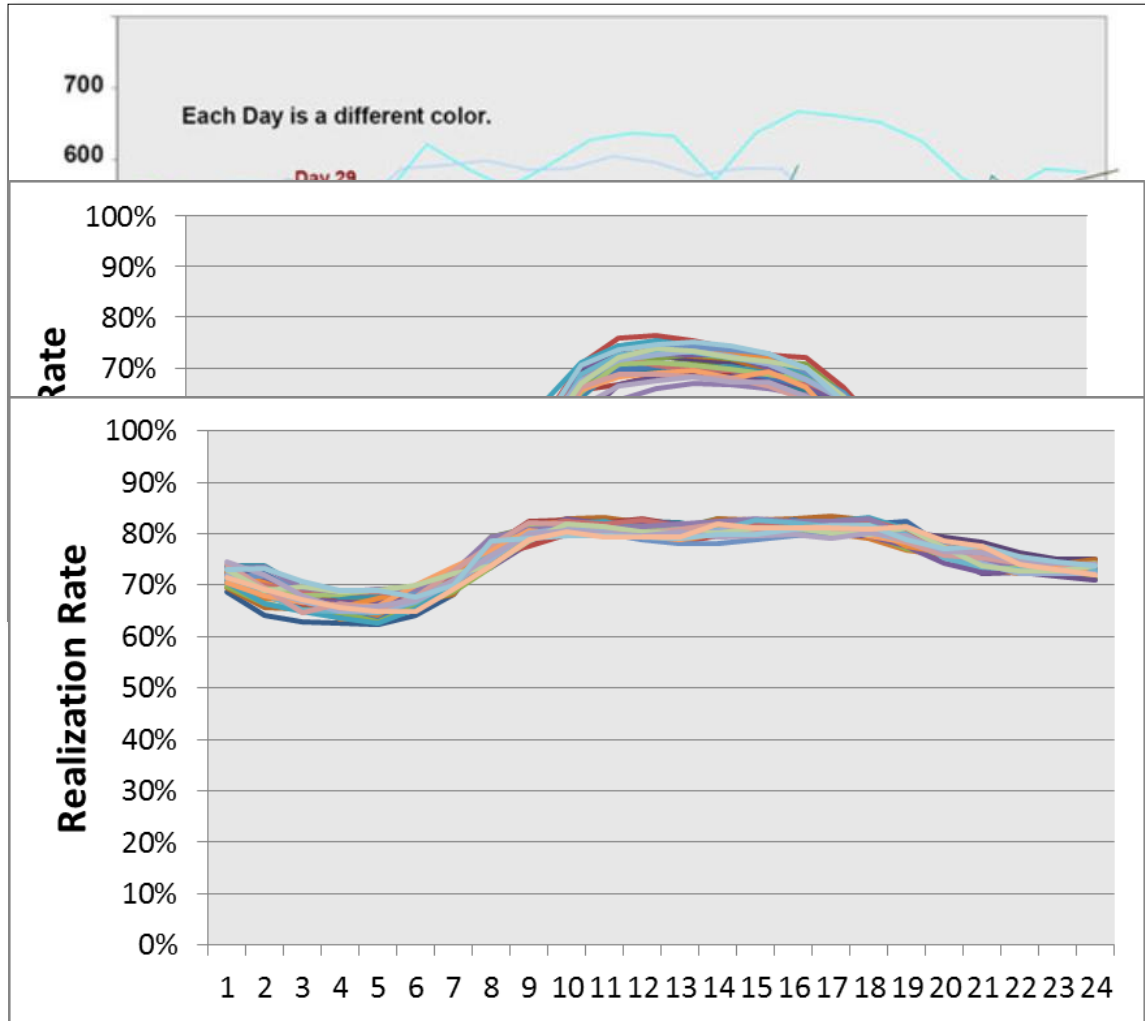 - 68% ±11% absolute precision
- Coincidence factor is no less than 57%

WHAT'S NEXT?

❑ Additional variables are being collected
  ➢ Metering of additional business types
  ➢ Detailed customer survey
❑ Optimally design programs

A NEW GRID RESOURCE

❑ Wind generation

❑ Small business

❑ Parking garages

STAY TUNED

- Results of BQDM adder programs using specific territory metered data to defend reliability of SBDI and Multifamily adder programs to defer $1 billion substation

- Predictive models to design effective programs in future networks

- Incorporation of persistence into the uncertainty model

- Key aspects for designing M&V effort and modeling reliability with goal of justifying peak demand reduction

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