



VCx[®] WINTER PEAK DEMAND CASE STUDY

Utility: East Coast Winter-Peaking Utility

Timeframe: December 2024 – February 2025

Solution: Power TakeOff's Virtual Commissioning (VCx) Program



**308 kW
Reduction**

Overview: Testing a Critical Hypothesis

During winter mornings, utilities face intense grid stress as lighting and HVAC systems start up before occupancy. An East Coast winter-peaking utility partnered with Power TakeOff to test whether smarter HVAC scheduling could reduce load — or risk making it worse.

The utility's concern: delaying startups might force systems to "catch up," inadvertently increasing peak demand during the critical 7–9 AM window. Managing these peaks is vital to maintaining grid stability and avoiding costly impacts on customers.

Opportunity: Data-Driven Insights at Scale

Analysis of AMI data from 65 small-to-medium businesses and public institutions across the utility's service territory revealed a consistent problem: morning start-up routines of HVAC systems were carrying into the peak window alongside other building start-up sequences, resulting in increased demand peaks during that critical time.

This created a system-wide opportunity to achieve two key objectives simultaneously: enhance grid stability through proven peak demand reduction and provide tangible value to business owners and public sector customers by optimizing their energy use without sacrificing comfort, fostering greater satisfaction and trust.



**4.2%
Demand
Reduction**



**88% HVAC
Optimization**



**65% Projects
Savings**



Action Plan: Smart Scheduling with Continuous Verification

Power TakeOff deployed its AMI-first VCx platform to optimize HVAC schedules while maintaining comfort and mitigating risk. The strategy included:

1. **Predictive Analytics:** Machine learning algorithms identified optimal HVAC scheduling opportunities for each site.
2. **Staggered Startups** – Introduced 15-minute intervals to avoid simultaneous load spikes.
3. **Strategic Timing** – Shifted equipment startup later, but still ahead of peak hours.
4. **Setpoint Optimization** – Fine-tuned occupied and unoccupied heating/cooling setpoints.
5. **Real-Time M&V:** Continuous monitoring to ensure sustained peak demand benefits and tracking of performance to provide participants with a feedback loop to optimize results.

Outcome: Grid Benefits Delivered, Utility Scale Impact

The results proved that responsible scheduling reduces — not increases — winter peak demand across a utility portfolio segment:

308 kW

reduction across the morning peak period

4.2%

average morning peak demand reduction per site

65%

65% of projects achieved verified peak savings

88%

included HVAC scheduling optimization

To ensure accuracy, savings were measured using advanced regression models on hourly AMI data, isolating coincident peak impacts.

What began as a potential grid risk became a scalable demand-side resource. By engaging dozens of SMB and institutional facilities simultaneously, the program delivered portfolio-wide reductions that strengthen grid reliability while providing direct comfort and cost benefits to participating customers.

Since 2007, Power TakeOff has been an industry leader in data-first, virtual utility products and efficiency programs. Specializing in Energy Information Software, Power TakeOff transforms complex utility AMI data into personalized energy efficiency recommendations with proven measurement and verification results. Utilities across North America rely on Power TakeOff to enhance customer experiences, increase revenue, meet efficiency goals, and reduce greenhouse gas emissions. Learn more at www.PowerTakeOff.com.