CT DEEP

Demand Resource Informational Meeting

Paul Gray

October 27, 2016

UI Demand Response Programs

Table of Contents

Purpose:

Overview of UI DR efforts for 2016 - 2018

Agenda:

- Residential Window AC Pilot - **UI Smart AC Program**
- Residential Central AC Pilot - **UI Smart Savers Program**
- Small Business Pilot - **UI Smart Savers Business Program**
- Commercial & Industrial Pilot
- Peak Time Rebate Pilot

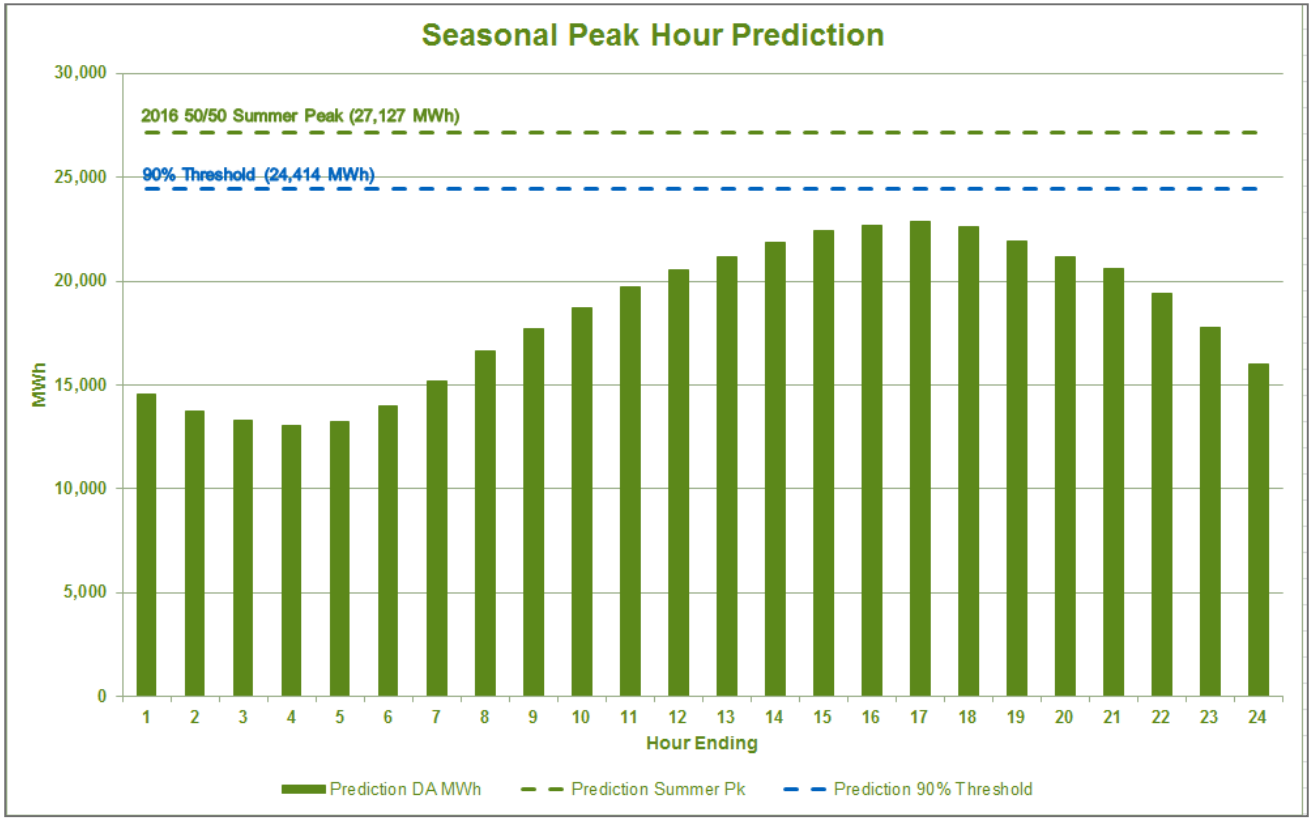
TIME: 15 Minutes

UI Smart AC Program

- 3 year pilot launched in the Summer 2016 with Think Eco
- Pilot is an opt in program that was marketed to all UI customers with window AC Units (approx. 54 % of UI's customers)
- 1,250 Customers enrolled in just 2 week at http://uismartac.com
- Participating customers receive free smartAC Kit that gives the customer remote controllability of HVAC schedules and temperatures
- Customers self-install smartAC Kit (w/window AC) and receive an annual $5 enrollment
- Customers who remain online 80% of the summer also receive a $15 end of summer season incentive
- Participating customers will grant UI permission to make brief, limited adjustments to their room air conditioner's settings
- All participants have the ability to opt-out of any DR event with no reduction in incentives
- The ThinkEco smartAC kit collects the following on each window AC unit:
  - 1 minute interval energy consumption data
  - 10 minute interval inside temperature data

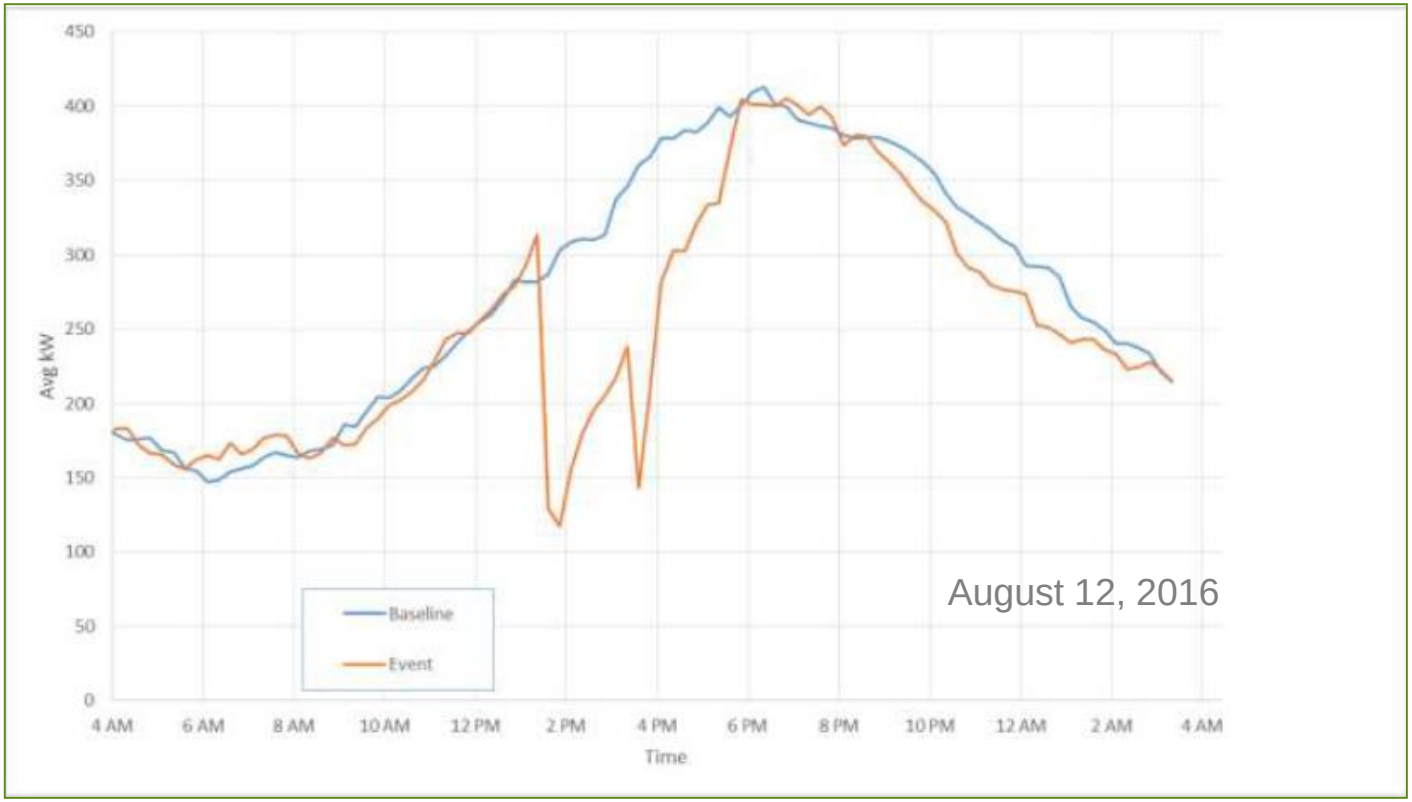
Residential Window AC Pilot (2016 – 2018)

- DR Events called during predicted ISO-NE Summer Seasonal Peak hours (90% of the 50/50 Summer Peak)
- UI Prediction model uses the ISO-NE 3 Day System Load Forecast
- 2 test events & 2 summer seasonal peak events were called in 2016



Residential Window AC Pilot (2016 – 2018)

- Example of typical 4 Hour DR Event
- 2016 ISO - NE Summer Seasonal Peak Hours generally occur between 1 - 6 pm
- UI Window AC peak usage generally occurs between 5 - 7 pm



- Average load reduction per event is the area between the baseline curve and the event day curve during the hours of the event

Residential Window AC Pilot (2016 – 2018)

2016 Preliminary Results

- Customer event opt-out rates averaged 17%
- Average customer reduction per final event increased to 161 w

Date/Time	Outside Temp (F)	Offset (F) degrees	Participating ACs	Opt Outs	% opt-outs	Average reduction (W/AC)
7/25/16, 2-6 PM	84	5	320	73	23	108
8/11/16, 2-6 PM	88	5	580	88	15	118
8/12/16, 1-5 PM	90	7	571	97	17	136
8/26/16, 3-5 PM	90	7	534	69	13	161

- UI will work with the Vendor over the next 2 years to:
  - Continually re-engage participants
  - Reduce opt outs rates through customer education and messaging
  - Increase demand reductions through optimizing temperate setbacks
  - Reduce program costs

UI Smart Savers Program

- 2 year BYOT Demand Response pilot targeting Central AC (CAC)
- Pilot is an opt in program and will target UI residential electric customers with CAC (approx. 43 % of UI's customers) and internet connected thermostat
- UI has selected Energy Hub and will start enrollment in 2nd quarter 2017
- Pilot will enroll 2,000 Smart Thermostats for Summer 2017
- Customers will have the choice to enroll with leading internet connected thermostats currently available at local "Big Box" stores
- Customers can self-install connected thermostat and have the choice of thermostat and features that are best suited for them
- Customers are given a one time $25 enrollment incentive plus a $25 end of summer season incentive
- Participating customers will grant UI permission to make brief, limited adjustments to their central air conditioner's settings Customers have the ability to Opt-Out of DR events
- Expected average participant reductions of 1 kW per event
- Final results will be determined by a independent third-party reviewer of vendor supplied event data analytics.

UI Smart Savers Business Program

- The Small Business DR Pilot will kick off for the Summer 2017
- UI will look to utilize the same Energy Hub BYOT software and platform for a similar offering at little additional costs
- Final pilot size is yet to be determined and will enroll up to 50 small business Smart Thermostats for Summer 2017
- Pilot is an opt in program that will be target marketed to select types of UI Small Business customers with qualifying Wi Fi Thermostats
- All participants have the ability to opt-out of any DR event with no reduction in incentives
- Final customer incentives have yet to be determined and will be a simplistic one time enrollment incentive plus a annual end of summer season incentive
- Expected average participant reductions of 1.4 kW per event
- Final results will be determined by a independent third-party reviewer of vendor supplied event data analytics.

Commercial & Industrial DR Pilot (2017 – 2018)

- The UI C&I DR Pilot will kick off for the Summer 2017
- Geo target 2-3 large C&I customers who are serviced by the Woodmont substation
- This DR pilot will look to enhance distribution grid reliability by automating the event dispatch process and thus resulting in quicker response times and higher performance levels by participating customers
- Once several key customers are recruited, UI will then look to contract with a DR Service provider for a turnkey pilot that is scalable for future growth
- When a DR event is initiated, an event signal or notification will be sent to the specified customer(s) to reduce system loads (HVAC, lighting, process, etc.) or to initiate a predetermined control strategy at the facility
- Customers will have the ability to participate in events at various levels of load shed and will also have a web portal to view their own demand reductions and performance
- Verification of demand reductions will be accomplished with real time information to view aggregate and/or individual site reductions during events
- This pilot will look to understand the intersection between the customers facility peak demand and the utility system peak demand to optimize the reductions for both

Peak Time Rebate Pilot (2018)

- Pilot will be a residential Behavioral Demand Response (BDR) DR Program with Peak Time Rebates (PTR) for the summers of 2018
- Pilot will provide PTR to encourage additional customer participation and reductions beyond standard BDR
- Similar PRT Programs have achieved peak reductions near 15%
- Pre-event customer notification provides a call to action with tips and advice to reduce demand during the event
- Post-event communications will show actual participant reductions, rebates earned and comparisons to other similar homes in the pilot.
- PTR requires accurate and timely participant AMI Data to the vendor to calculate demand reductions and incentives
- Peak savings will be determined by a weather normalized baseline calculation of customer using 15 minute AMI data
- Event baseline for each household are planned to be calculated by averaging the 3 highest usage days within the past 14 non- holiday, weekend and peak event days
- Rebate per event will be based on event reductions and paid to the customer at the end of each summer season
- Final pilot size YTD
- PTR hold the potential for additional energy efficiency savings