Long Island Power Authority's LIPA*edge* Program

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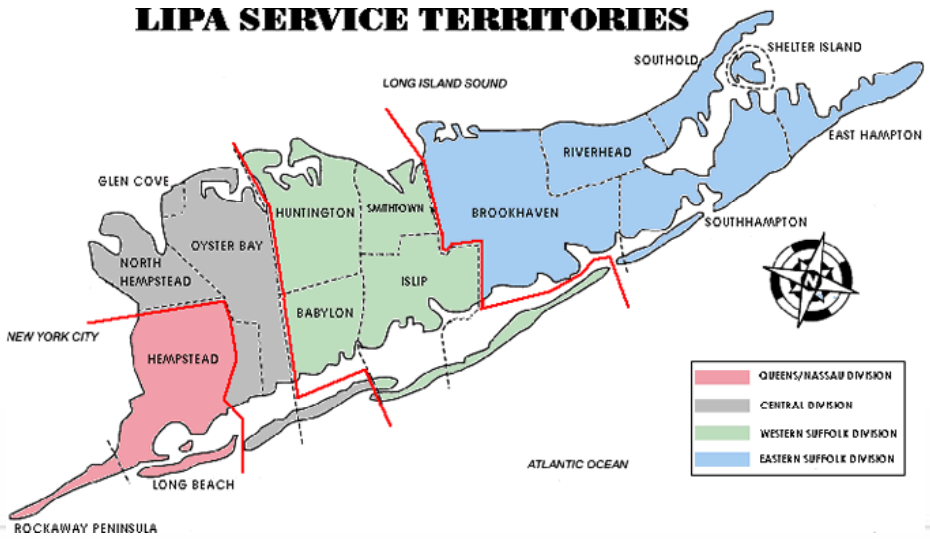
- LIPA background
- What is LIPA*edge*?
- Program description and history
- 2008 and 2009 program
- Carrier system
- Benefits of two-way communications

Long Island Power Authority

- In May 1998, the LIPA became Long Island's primary electric service provider
- LIPA serves approximately 1.1 million customers in Nassau and Suffolk counties, and the Rockaway peninsula in Queens



Long Island Power Authority

- In May 1999, the LIPA Board of Trustees approved the Clean Energy Initiative (CEI)
  - Initially, a five-year, $160 million effort
  - Eventually, 10-year, $355 million dollar commitment through 2008

- The original CEI portfolio contained eleven programs (energy-efficiency, renewable energy, peak load reduction and RD&D)

Long Island Power Authority

- Efficiency Long Island (ELI) is a 10-year, $924 million energy efficiency program that will make a wide array of incentives, rebates and initiatives available to LIPA's residential and commercial customers
- ELI is intended to succeed and expand upon LIPA's Clean Energy Initiative that expired at the end of 2008
- ELI is expected to reduce peak electric demand by 500 Megawatts by 2018

What is LIPA*edge*?

- Demand response program
  - Available to residential and CI customers with CAC, pool pumps
  - Customers receive a free programmable, digital Carrier ComfortChoice™ thermostat with remote capability
    - customers have the ability to remotely view and change the temperature set point in their home or business through the internet - 24 hours a day, 7 days a week

What is LIPA*edge*?

- Two-way communication feature
  - LIPA is able to broadcast a signal to thousands of CAC units on Long Island within minutes and receive confirmation back

- LIPA has the ability to control customer's units in two ways:
  - Temperature adjustment
    - raising the cooling set point by a few degrees and then returning it to the existing setting when the power reserve is no longer needed
  - Cycling the compressor
    - temporarily adjusting the unit's compressor (generally 50% cycling) while allowing the fan to continue to move cool air

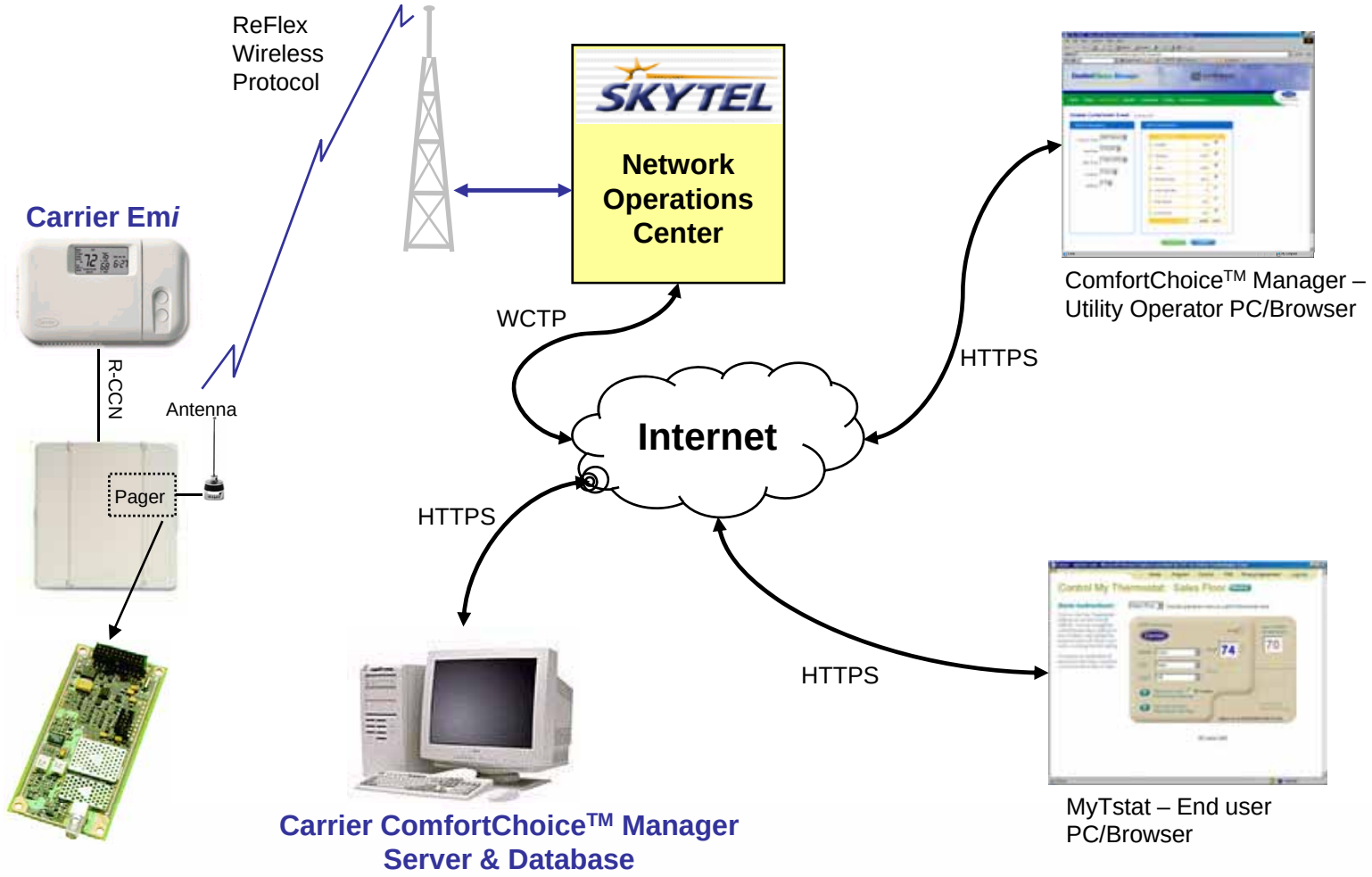
Program Description

- Initiate maximum of 7 event days
  - June 1- September 30
  - 2 pm – 6 pm
  - Override/Refresh
- System peaks
  - Hour ending 5 pm, followed by hours ending 4, 3 and 6 pm

Program Description

- Contractors
  - Applied Energy Group – admin/website maintenance
  - Honeywell Utility Services – installation/service
  - Carrier Corporation – thermostats, IO boards, communications

ComfortChoice™ Overview



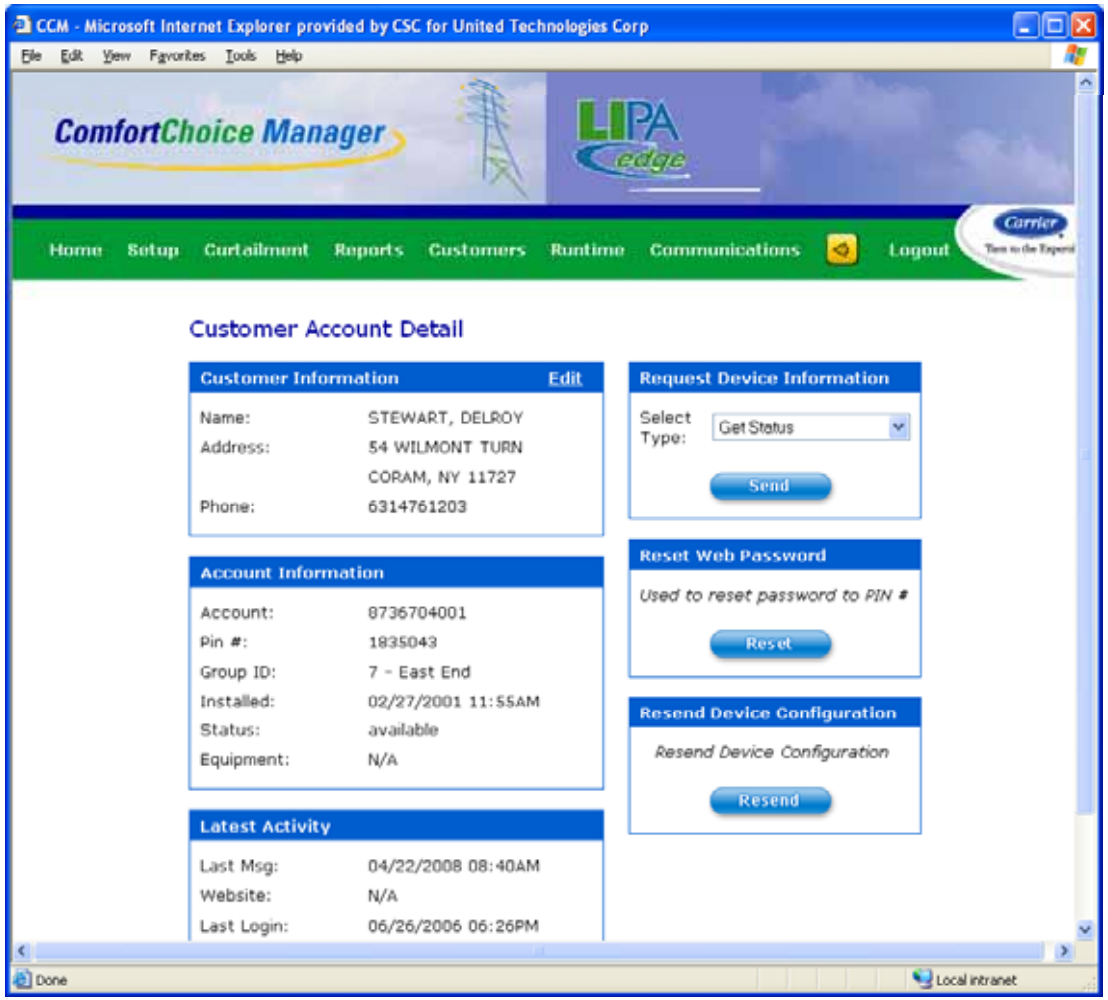
Our First Customer

Customer #1

Installed Feb 27th 2001 (That is almost 8 years ago)

Device has sent over 400 weekly heartbeats

Participated in all curtailment events



Curtailment History

- 2001: 4 days called
- 2002: 3 days called
- 2003: 3 days called
- 2004: 1 day called
- 2005: 1 day called
- 2006: 5 days called
- 2007: 2 days called
- 2008: 0 days called

  - Duration varied, 28 MW-42 MW, 29000-31000 participants

2008 Program

- Program in maintenance mode
  - Did not actively solicit new participants
  - Add customers lost to attrition; over 700 customers on waiting list
  - Update LIPA*edge* Web site application page
    - "At this time, we are not accepting any new LIPA*edge* applications. However, if you would like to file an application for future consideration please..."
  - Continue educational update mailings to existing LIPA*edge* customers to prepare for summer
- 33,859 thermostats
- 50.71 MW

2008 Program Performance

- A curtailment event was not activated in 2008
- First heat wave was June 7-9
  - Early in the season; typically peak in late July or Aug
  - Loads were well below forecasted peaks
  - June 9th – NYCA peak; June 10th – LICA peak
- Second heat wave was July 17-18
  - Loads were lower than June heat wave
- Anticipated hot weather in August which never happened

2009 Program Activities

- Proactive with keeping existing customers
  - Periodic account comparisons to find account change-overs; follow up with informational mailing and phone call

- Using automated phone calls through our Call Center for the summer/winter message

ComfortChoice™ Manager

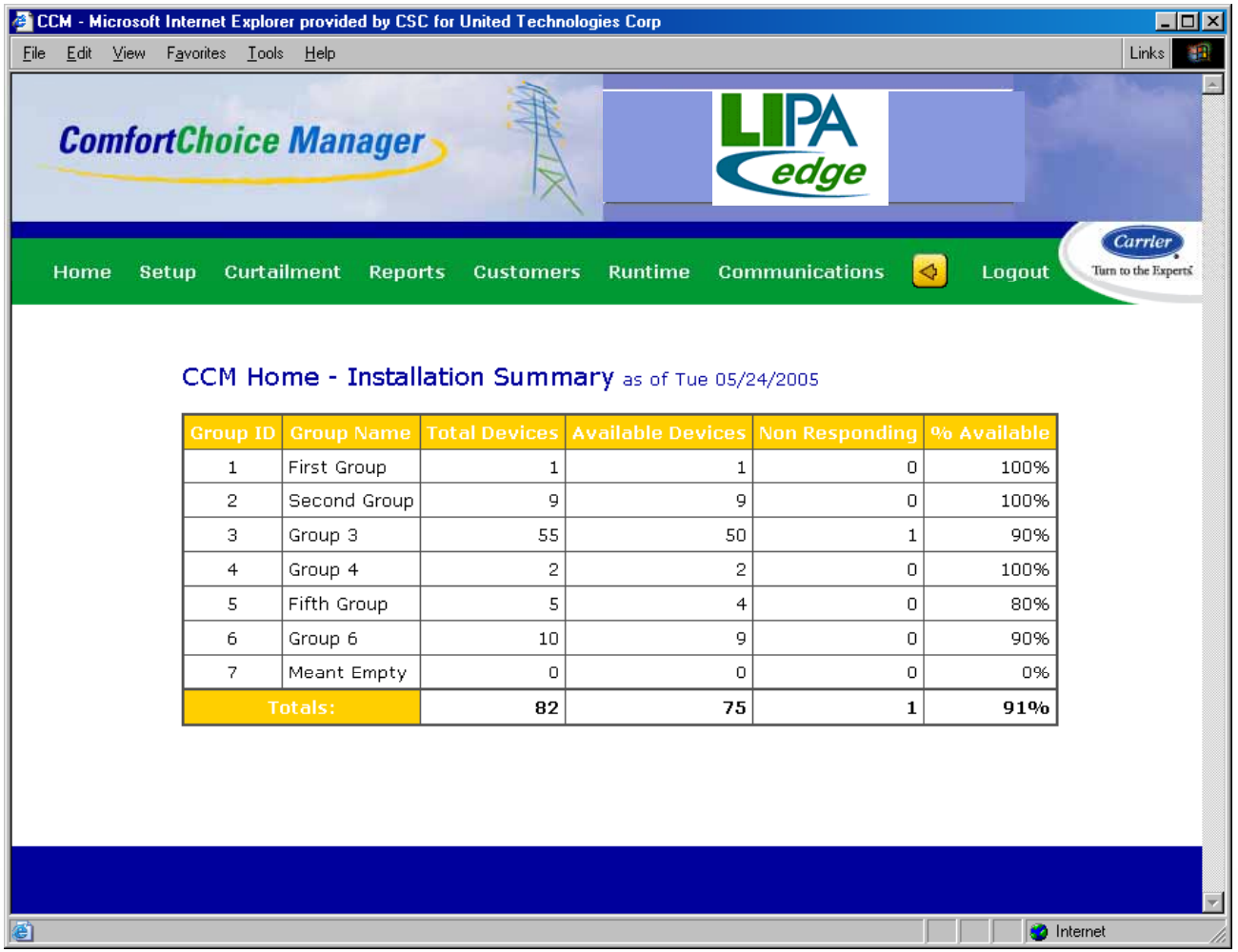
- CCM is Carrier's web-based load curtailment software designed to allow utilities to schedule and initiate curtailments for any group of customers, and specify start time, duration, temperature offset or duty cycle
- 2-way communication provides verifiable confirmation that each thermostat has received the curtailment command
- Customer Status and History - Utilities can view customer information, including status and history screens which display current curtailment status, thermostat settings, and curtailment participation
- Utility Customer Administration - provides utility personnel with a helpful tool to manage ComfortChoice™ installation and day-to-day customer support operations

ComfortChoice™ Manager Home Screen

Shows Installation Summary

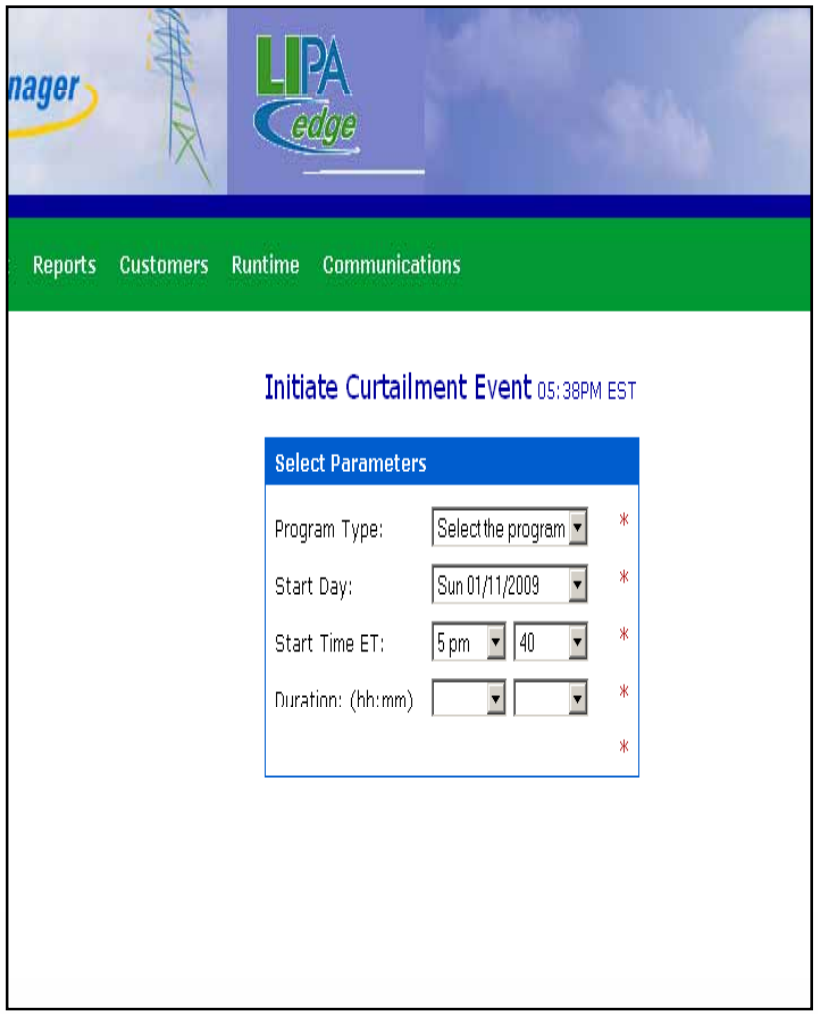
Devices
- Total
- Available Devices (for curtailment)
- Non-responding

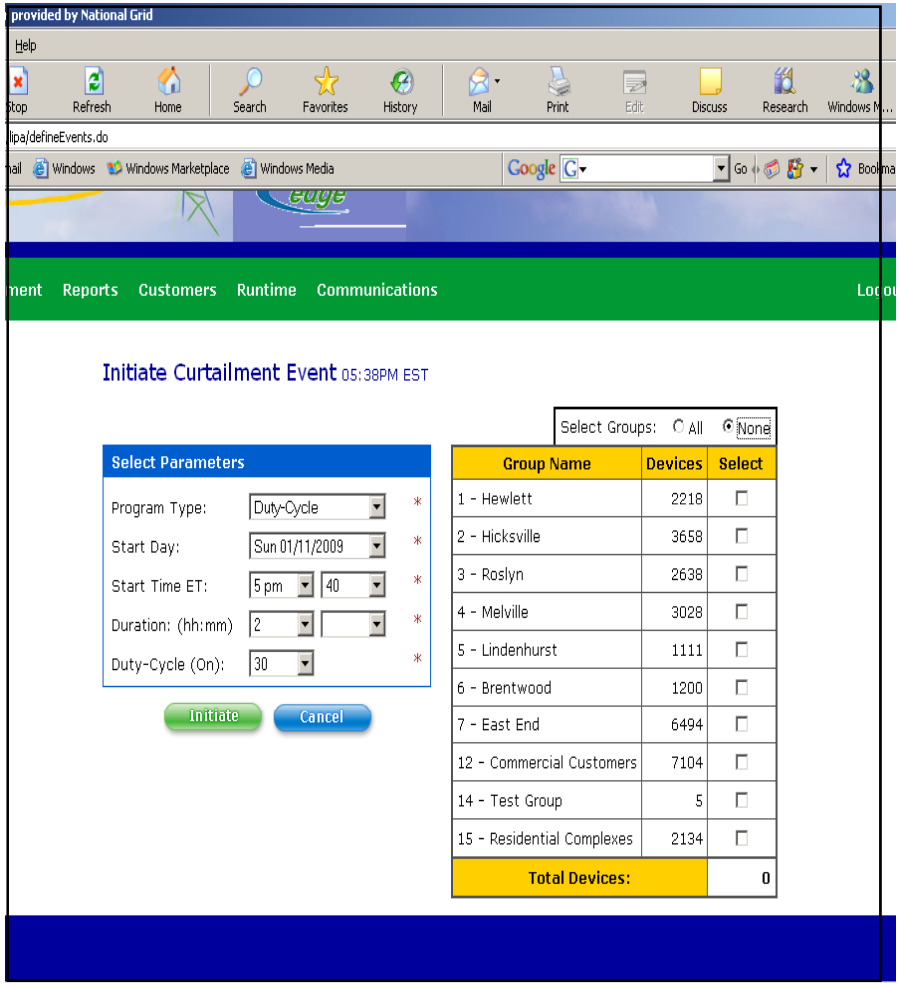
Menu's at top used for navigation



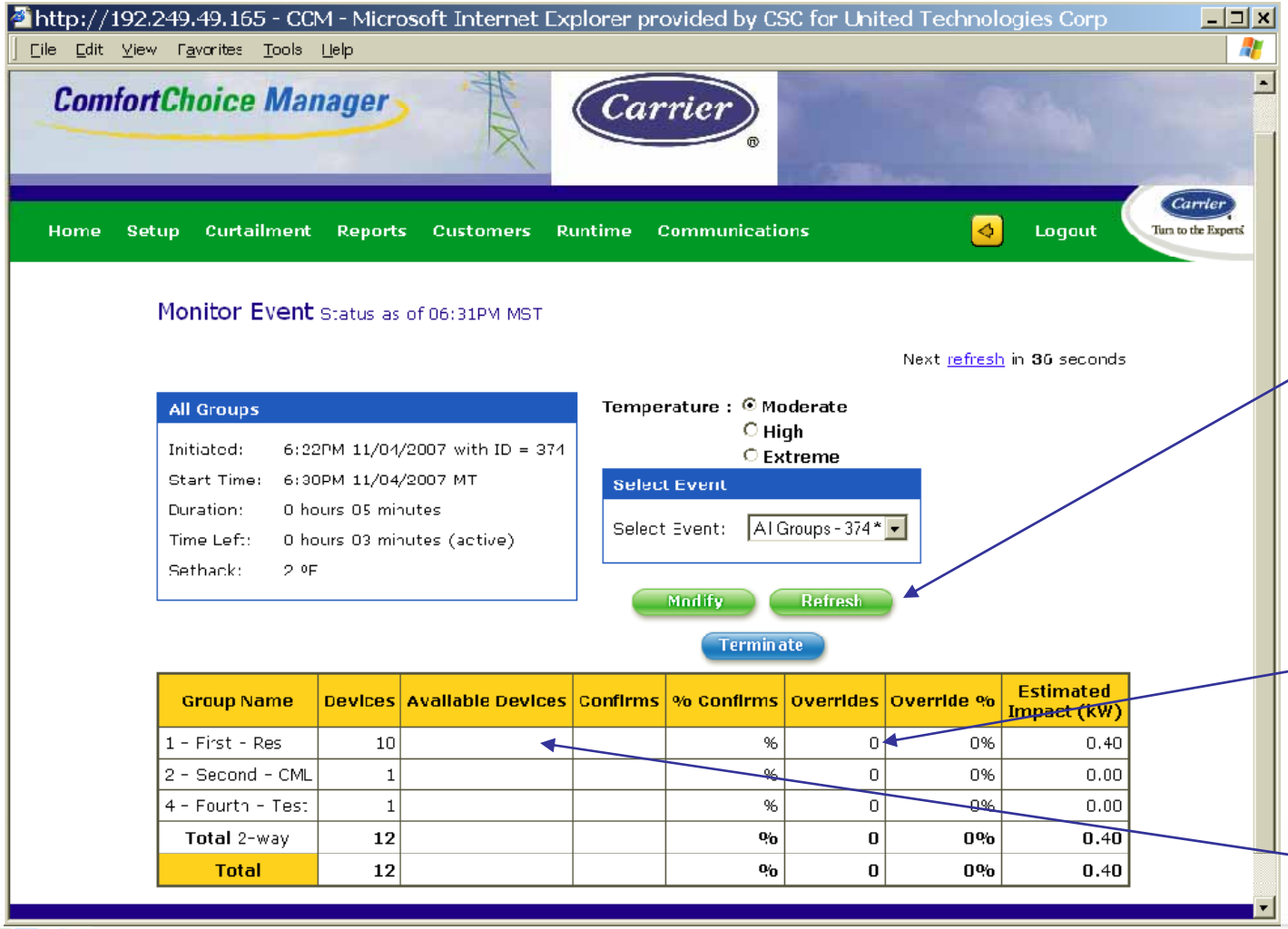
Group ID	Group Name	Total Devices	Available Devices	Non Responding	% Available
1	First Group	1	1	0	100%
2	Second Group	9	9	0	100%
3	Group 3	55	50	1	90%
4	Group 4	2	2	0	100%
5	Fifth Group	5	4	0	80%
6	Group 6	10	9	0	90%
7	Meant Empty	0	0	0	0%
Totals:		82	75	1	91%

ComfortChoice™ Manager Initiating a Curtailment





ComfortChoice™ Manager Event Monitoring



Refresh via Simple Command Button

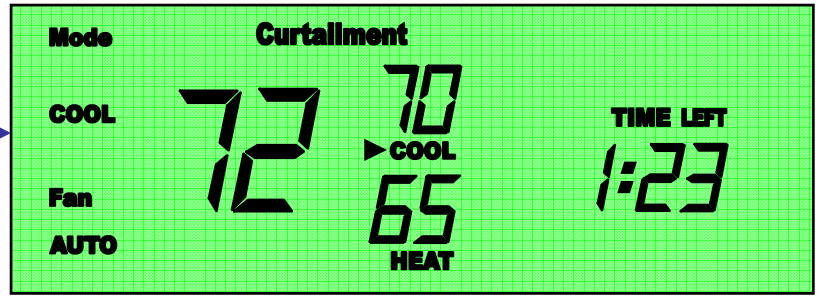
Monitor Overrides in Real-time

Display Available Devices

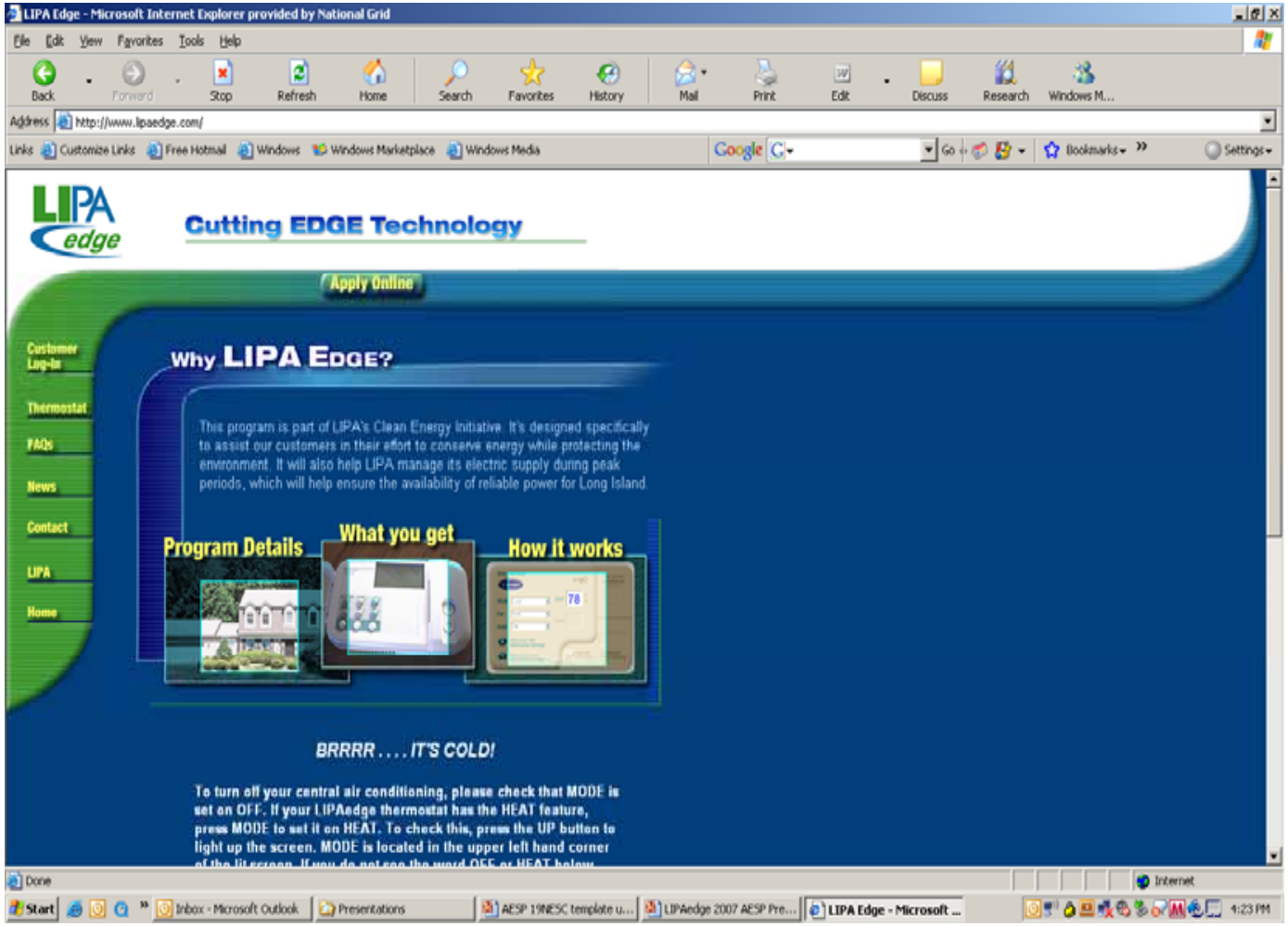
What the Customer Sees…

- At specified day/time device will go into curtailment for specified duration

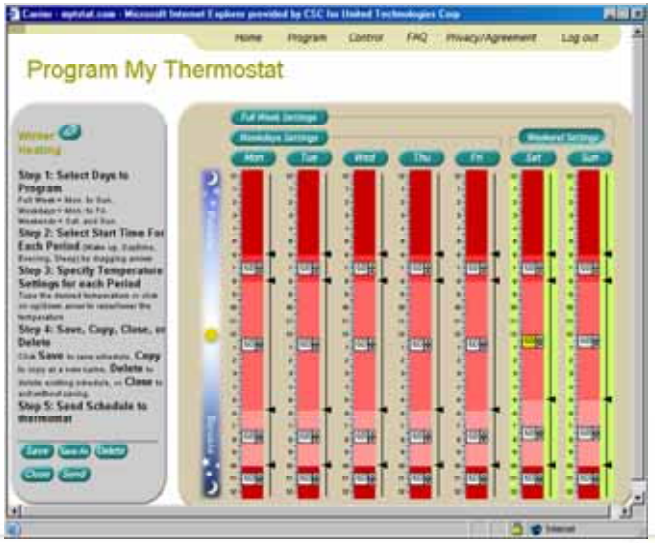
What the customer sees on their thermostat during an event



LIPA*edge* Web site



Customer Log-in



Enhanced Demand Response with Two-way Communications

- LIPA was the first utility to install and utilize two-way thermostat technology for Demand Response

- Lessons Learned from two-way
  - "Refresh" of a curtailment event
  - Using run-time data for Measurement & Verification
  - Identifying available devices
  - Improving customer service

Event Refresh

- Event is monitored in real-time
- Confirmations and overrides are displayed
  - Overriding enhances customer satisfaction
- Utility can refresh to maintain load reduction

Measurement & Verification

- 24 hour run-time data is collected for all devices
  - Number of minutes during the hour the equipment ran
  - Average temperature at the location during the entire hour
- Use run-time data to compare event day to a baseline day

Identifying Available Devices

- Devices are programmed to send weekly heartbeats
- Daily report of non-responding thermostats (NRT)
- Apply a process to determine cause of NRT
- Always know available devices

Customer Service

- Offer 24/7 Support
- Application intake / explain program
- Scheduling Installations
- Resolve thermostat issues
- Provide Internet access assistance
- Troubleshoot equipment issues

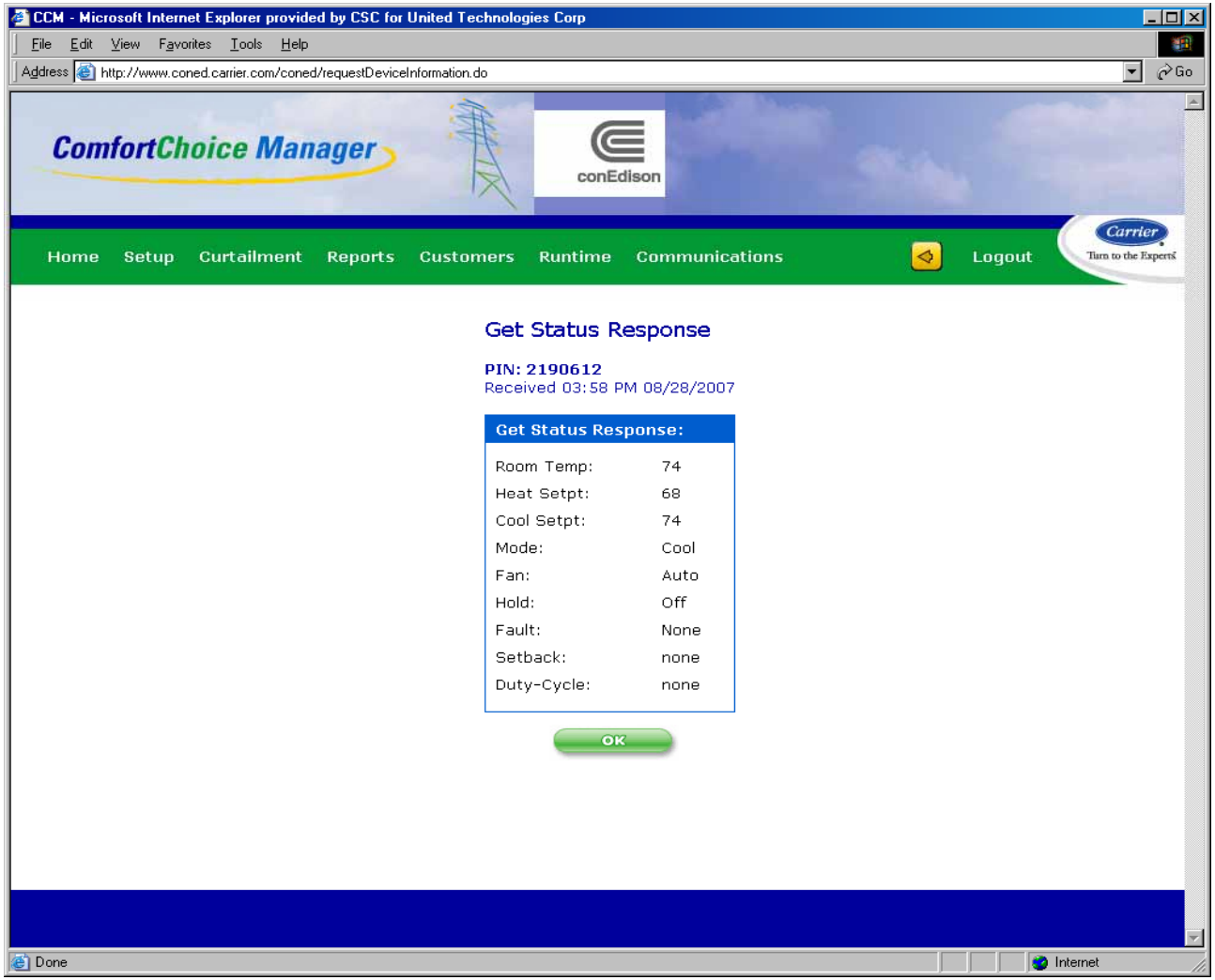
Troubleshooting

Device Status

Set points

Cool/Heat Mode

Fan Status



Troubleshooting

Get Cooling or Heating Schedule for a Customer Account

Heating or Cooling

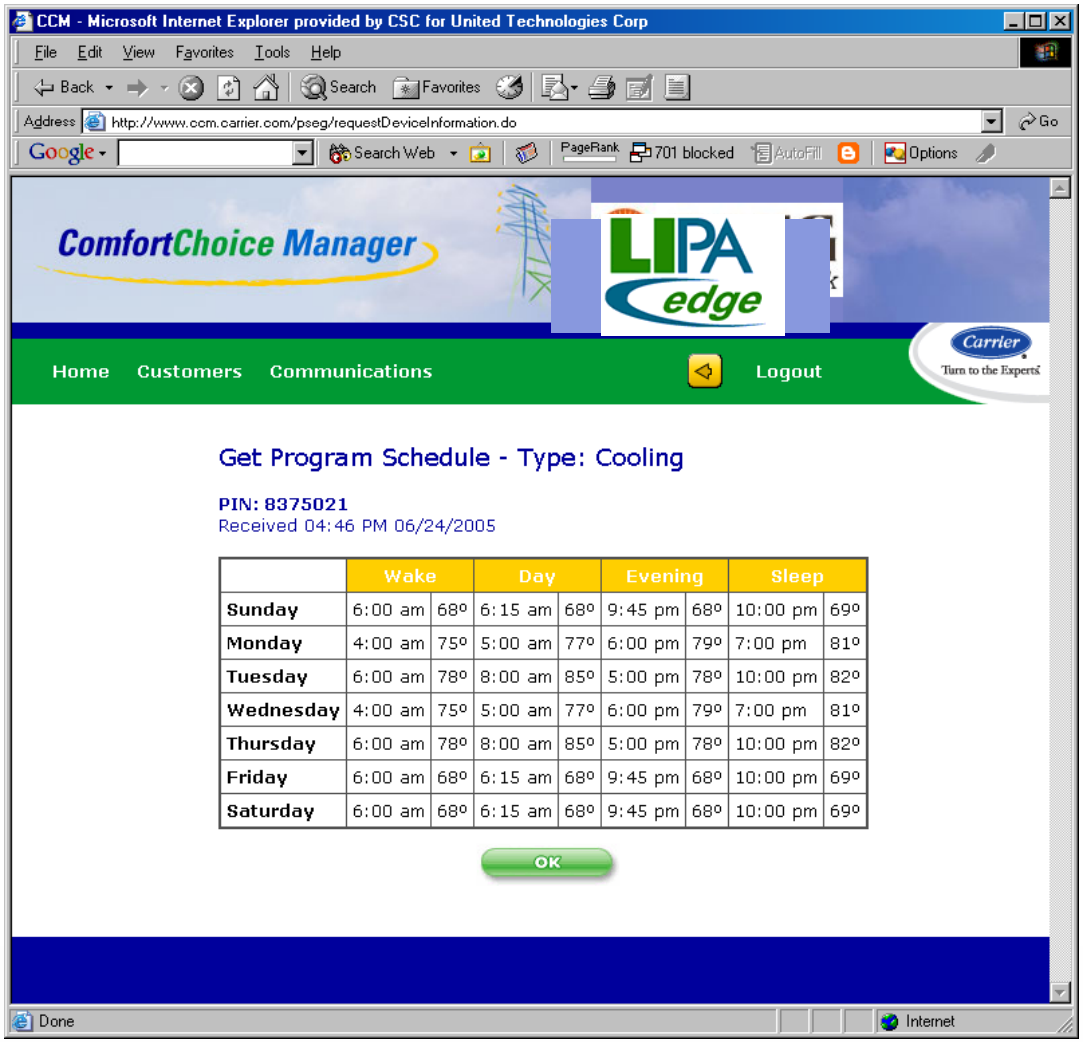
All 7 days

4 periods

Time/Set points

Useful for helping customers who may have mis-programmed thermostat

Can spot error (4:00am instead of 6:00am)



	Wake		Day		Evening		Sleep	
Sunday	6:00 am	68º	6:15 am	68º	9:45 pm	68º	10:00 pm	69º
Monday	4:00 am	75º	5:00 am	77º	6:00 pm	79º	7:00 pm	81º
Tuesday	6:00 am	78º	8:00 am	85º	5:00 pm	78º	10:00 pm	82º
Wednesday	4:00 am	75º	5:00 am	77º	6:00 pm	79º	7:00 pm	81º
Thursday	6:00 am	78º	8:00 am	85º	5:00 pm	78º	10:00 pm	82º
Friday	6:00 am	68º	6:15 am	68º	9:45 pm	68º	10:00 pm	69º
Saturday	6:00 am	68º	6:15 am	68º	9:45 pm	68º	10:00 pm	69º

Troubleshooting

Customer Account Detail: Run-time Data

Run-time data shows minutes per hour that heating or cooling equipment was operating

Can go back up to 6 days prior

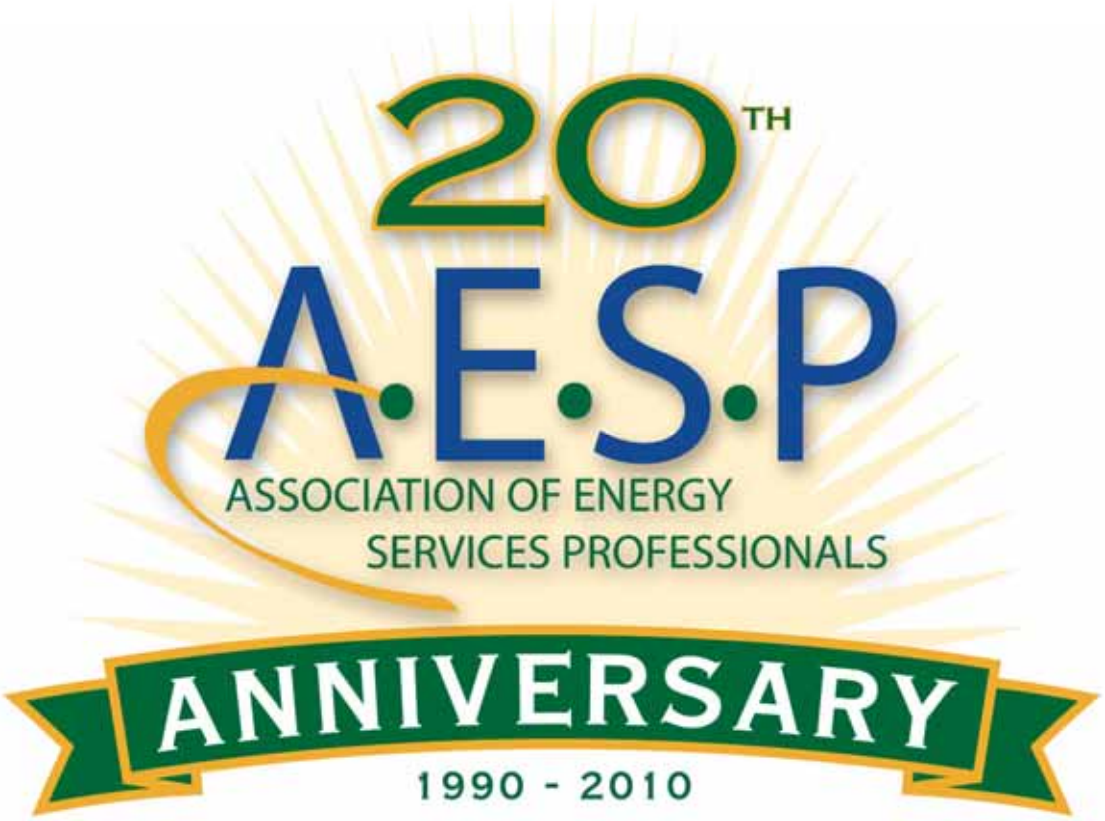
Useful for investigating customer claims

Hour	Runtime	Starts	Avg Temp	Drift
12:00 AM	16	4	74	0
1:00 AM	14	4	74	0
2:00 AM	13	4	74	0
3:00 AM	12	4	73	0
4:00 AM	13	4	73	0
5:00 AM	11	4	73	0
6:00 AM	2	1	74	-1
7:00 AM	0	0	75	0
8:00 AM	0	0	76	0
9:00 AM	0	0	76	-1
10:00 AM	0	0	77	-1
11:00 AM	0	0	78	-1
12:00 PM	10	3	79	0
1:00 PM	16	4	79	0
2:00 PM	16	1	80	1
3:00 PM	21	1	80	1
4:00 PM	18	1	80	1
5:00 PM	1	1	81	-1
6:00 PM	0	0	82	0
7:00 PM	0	0	82	0
8:00 PM	7	2	81	1
9:00 PM	40	3	77	3
10:00 PM	32	4	74	0
11:00 PM	22	4	74	0

Working together, we can make a difference!

- The LIPA*edge* Program can help customers in their efforts to conserve energy. And using less electricity is good for our environment.

- At the same time, our customers are helping LIPA manage its electric supply during peak periods, ensuring the availability of reliable power for all of Long Island



CELEBRATE WITH US NEXT YEAR IN TUCSON!