



Long Island Power Authority's LIPAedge Program

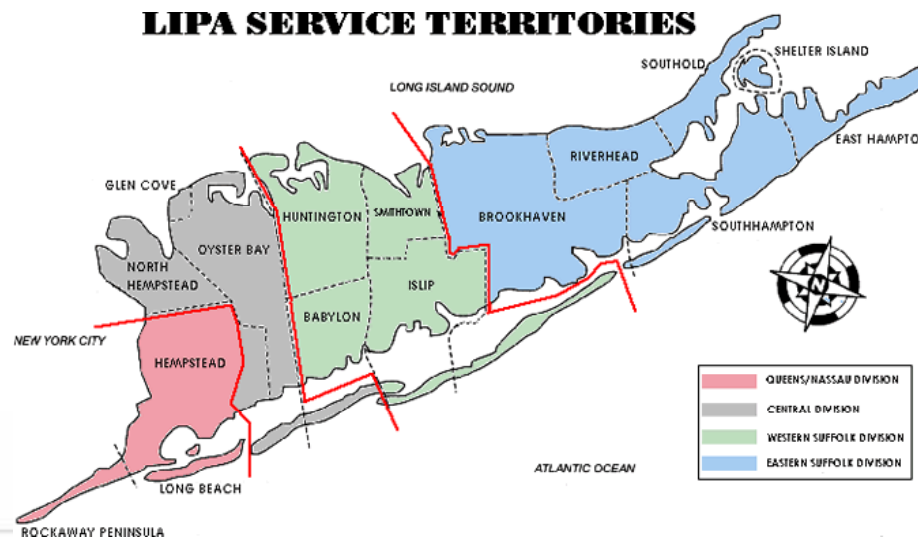
Pat Dorsch

January 29, 2009

- LIPA background
- What is LIPAedge?
- 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 LIPAedge?

- 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 LIPAAedge?

- 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

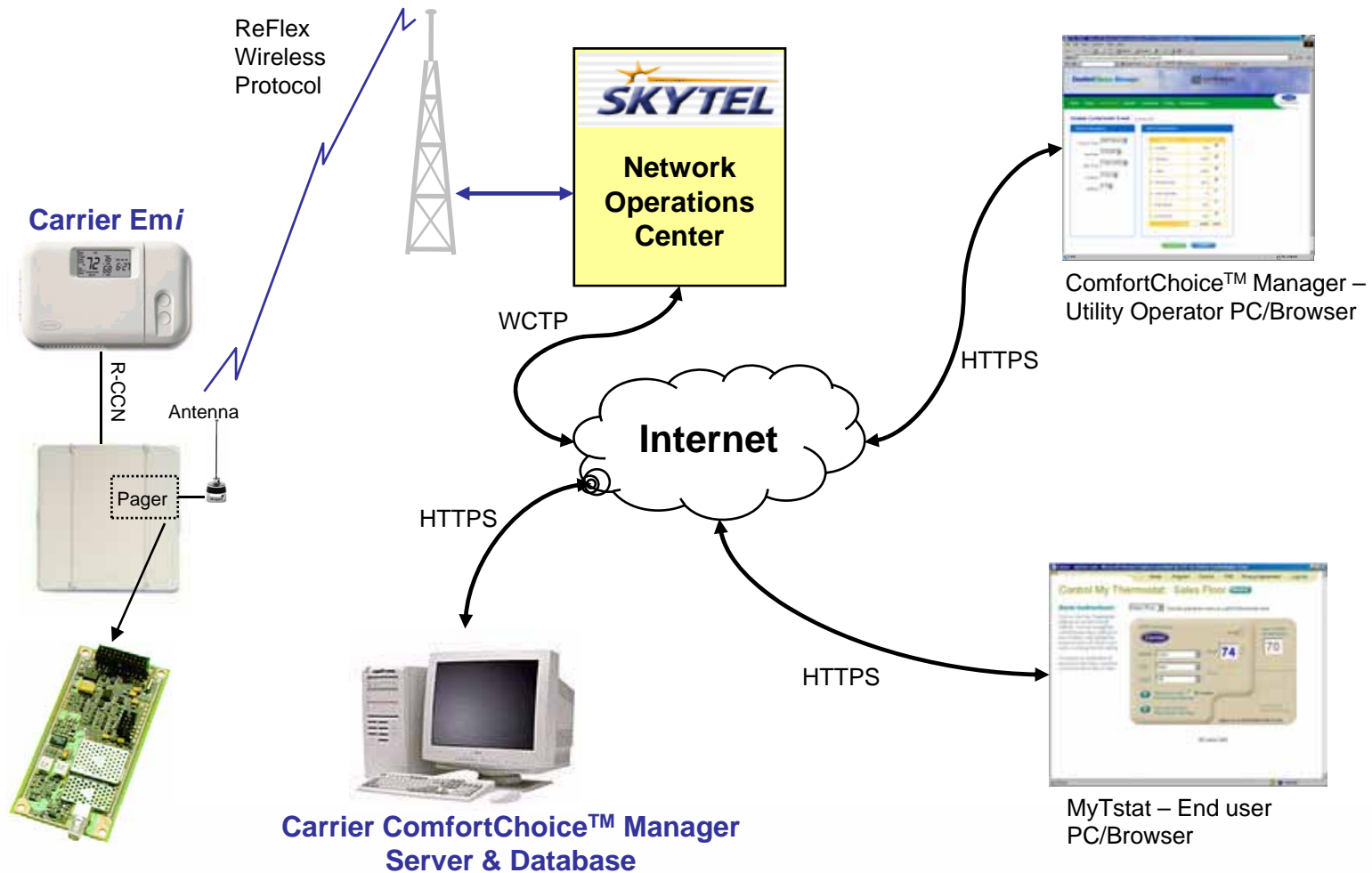
Program Description

- 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

The screenshot shows a web browser window titled "CCM - Microsoft Internet Explorer provided by CSC for United Technologies Corp". The page displays the "Customer Account Detail" for a customer named STEWART, DELROY. The interface includes a navigation menu with options like Home, Setup, Curtailment, Reports, Customers, Runtime, Communications, and Logout. The main content area is divided into several sections:

- Customer Information:** Name: STEWART, DELROY; Address: 54 WILMONT TURN, CORAM, NY 11727; Phone: 6314761203.
- Account Information:** Account: 8736704001; Pin #: 1835043; Group ID: 7 - East End; Installed: 02/27/2001 11:55AM; Status: available; Equipment: N/A.
- Latest Activity:** Last Msg: 04/22/2008 08:40AM; Website: N/A; Last Login: 06/26/2006 06:26PM.
- Request Device Information:** Select Type: Get Status (dropdown menu); Send button.
- Reset Web Password:** Used to reset password to PIN #; Reset button.
- Resend Device Configuration:** Resend Device Configuration; Resend button.

The browser's status bar at the bottom shows "Done" and "Local intranet".

Curtailement 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 LIPAedge Web site application page
 - “At this time, we are not accepting any new LIPAedge applications. However, if you would like to file an application for future consideration please...”
 - Continue educational update mailings to existing LIPAedge 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 changeovers; 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

Initiate Curtailment Event 05:38PM EST

Select Parameters

Program Type: *

Start Day: *

Start Time ET: *

Duration: (hh:mm) *

Initiate Curtailment Event 05:38PM EST

Select Parameters

Program Type: *

Start Day: *

Start Time ET: *

Duration: (hh:mm) *

Duty-Cycle (On): *

Select Groups:

Group Name	Devices	Select
1 - Hewlett	2218	<input type="checkbox"/>
2 - Hicksville	3658	<input type="checkbox"/>
3 - Roslyn	2638	<input type="checkbox"/>
4 - Melville	3028	<input type="checkbox"/>
5 - Lindenhurst	1111	<input type="checkbox"/>
6 - Brentwood	1200	<input type="checkbox"/>
7 - East End	6494	<input type="checkbox"/>
12 - Commercial Customers	7104	<input type="checkbox"/>
14 - Test Group	5	<input type="checkbox"/>
15 - Residential Complexes	2134	<input type="checkbox"/>
Total Devices:		0

ComfortChoice™ Manager Event Monitoring

The screenshot shows the ComfortChoice Manager web interface. At the top, there is a navigation bar with links: Home, Setup, Curtailment, Reports, Customers, Runtime, Communications, and Logout. The main content area is titled "Monitor Event" and shows the status as of 06:31PM MST. It includes a "Refresh" button and a "Next refresh in 30 seconds" indicator. Below this, there are controls for "Temperature" (Moderate, High, Extreme) and a "Select Event" dropdown menu. A "Refresh" button is highlighted with a blue box and an arrow pointing to it from the text "Refresh via Simple Command Button". Below the controls are three buttons: "Modify", "Refresh", and "Terminate". A table at the bottom displays event monitoring data with columns for Group Name, Devices, Available Devices, Confirms, % Confirms, Overrides, Override %, and Estimated Impact (kW). A blue box with an arrow points to the "Available Devices" column, with the text "Display Available Devices". Another blue box with an arrow points to the "Refresh" button, with the text "Monitor Overrides in Real-time".

Temperature : Moderate
 High
 Extreme

Select Event
 Select Event: All Groups - 374*

Modify Refresh Terminate

Group Name	Devices	Available Devices	Confirms	% Confirms	Overrides	Override %	Estimated Impact (kW)
1 - First - Res	10			%	0	0%	0.40
2 - Second - CML	1			%	0	0%	0.00
4 - Fourth - Tes:	1			%	0	0%	0.00
Total 2-way	12			%	0	0%	0.40
Total	12			%	0	0%	0.40

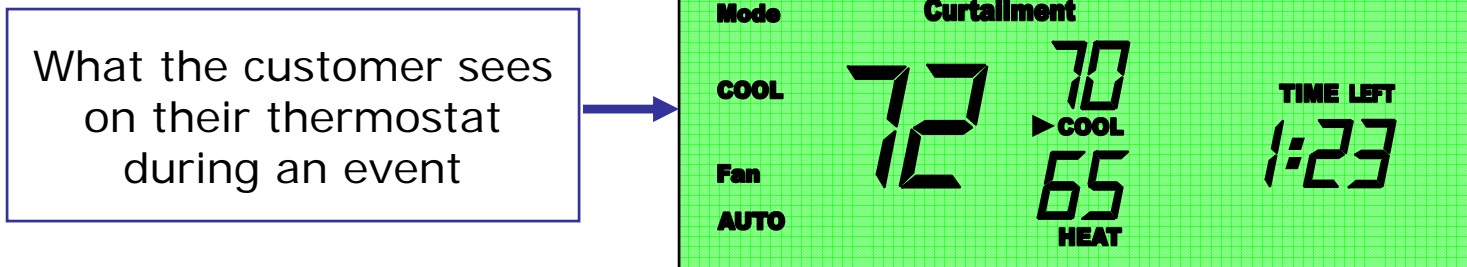
Refresh via Simple Command Button

Monitor Overrides in Real-time

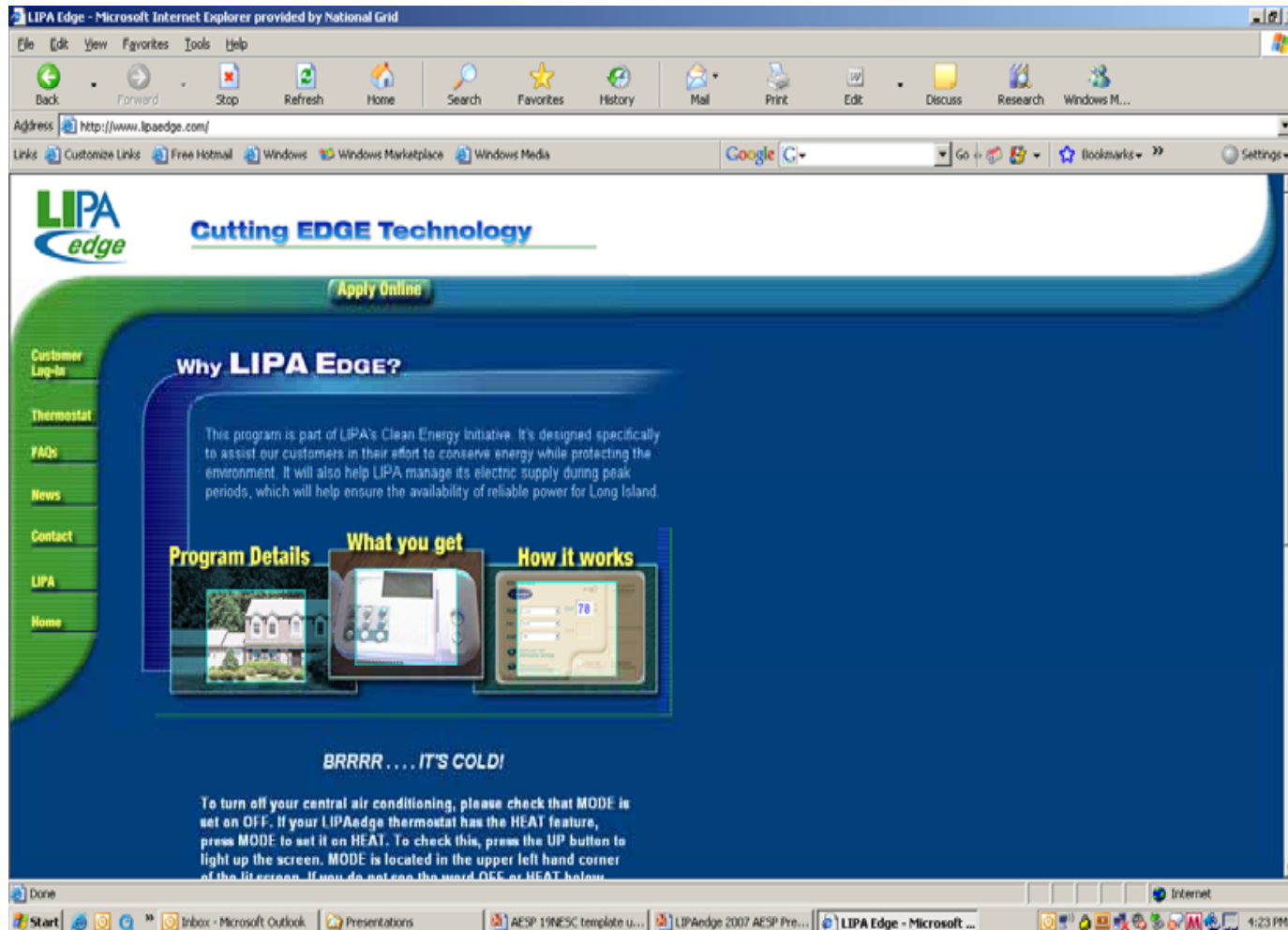
Display Available Devices

What the Customer Sees...

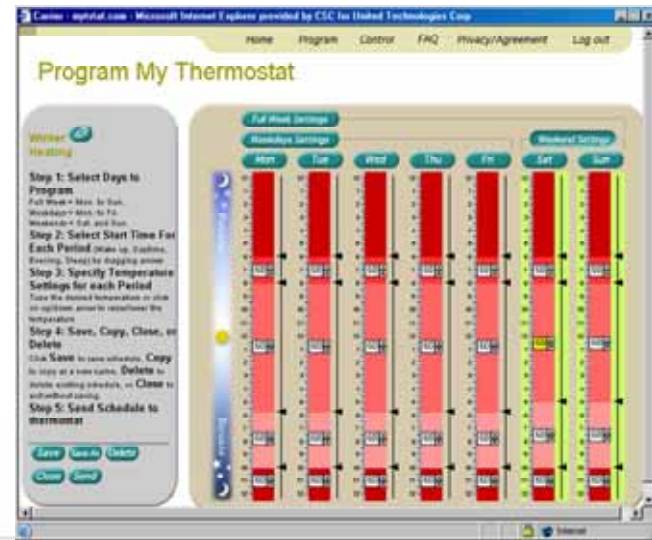
- At specified day/time device will go into curtailment for specified duration



LIPAEedge 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

The screenshot shows a Microsoft Internet Explorer browser window displaying the ComfortChoice Manager web application. The address bar shows the URL: <http://www.coned.carrier.com/coned/requestDeviceInformation.do>. The page header includes the "ComfortChoice Manager" logo, the "conEdison" logo, and a "Carrier Turn to the Experts" logo. A green navigation bar contains the following menu items: Home, Setup, Curtailment, Reports, Customers, Runtime, Communications, and Logout. The main content area displays the "Get Status Response" for PIN: 2190612, received at 03:58 PM 08/28/2007. A table shows the following data:

Get Status Response:	
Room Temp:	74
Heat Setpt:	68
Cool Setpt:	74
Mode:	Cool
Fan:	Auto
Hold:	Off
Fault:	None
Setback:	none
Duty-Cycle:	none

Below the table is a green "OK" button. The browser status bar at the bottom shows "Done" and "Internet".

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)

The screenshot shows a Microsoft Internet Explorer browser window displaying the ComfortChoice Manager website. The browser title is "CCM - Microsoft Internet Explorer provided by CSC for United Technologies Corp". The address bar shows "http://www.ccm.carrier.com/pseg/requestDeviceInformation.do". The website header includes the "ComfortChoice Manager" logo, the "LIPA edge" logo, and the "Carrier Turn to the Experts" logo. The navigation menu includes "Home", "Customers", "Communications", and "Logout". The main content area displays "Get Program Schedule - Type: Cooling" for PIN: 8375021, received on 06/24/2005 at 04:46 PM. Below this is a table with columns for "Wake", "Day", "Evening", and "Sleep", and rows for each day of the week. An "OK" button is visible below the table.

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

Troubleshooting

Customer Account Detail: Run-time Data

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

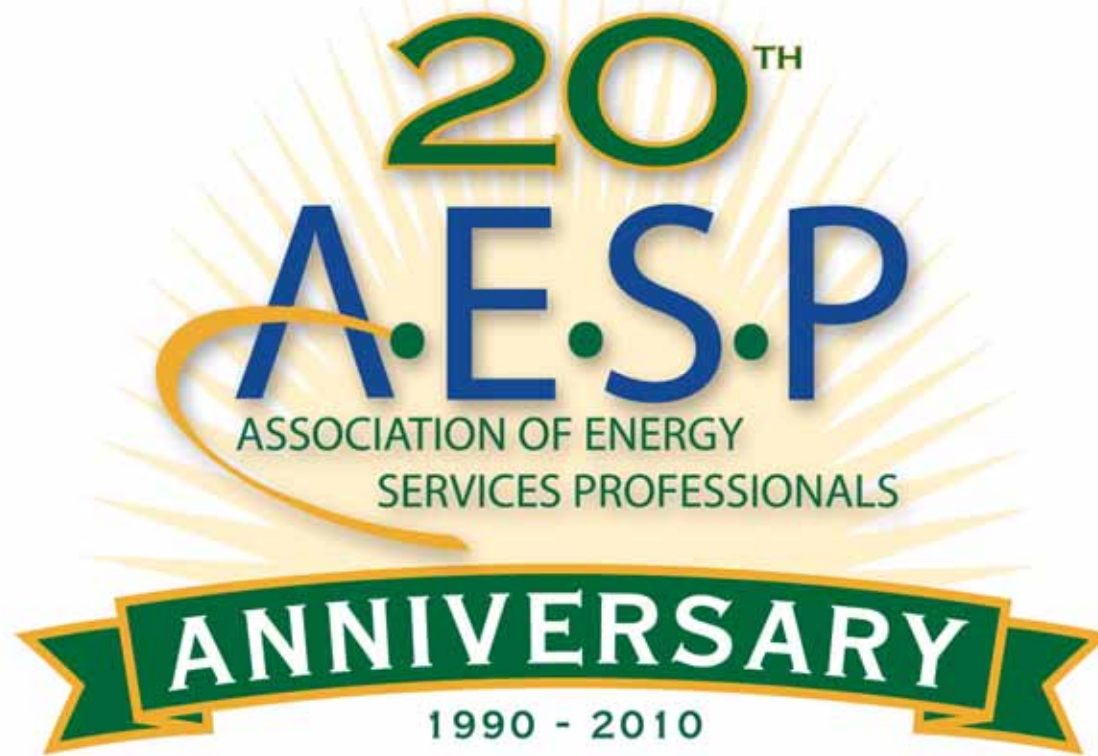
Can go back up to 6 days prior

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 LIPAedge 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!



19th National Energy Services Conference & Expo
www.aesp.org

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