

Electrical Energy Conservation in Water & Wastewater Facilities

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The Northeast Utilities System



www.CTSavesEnergy.org

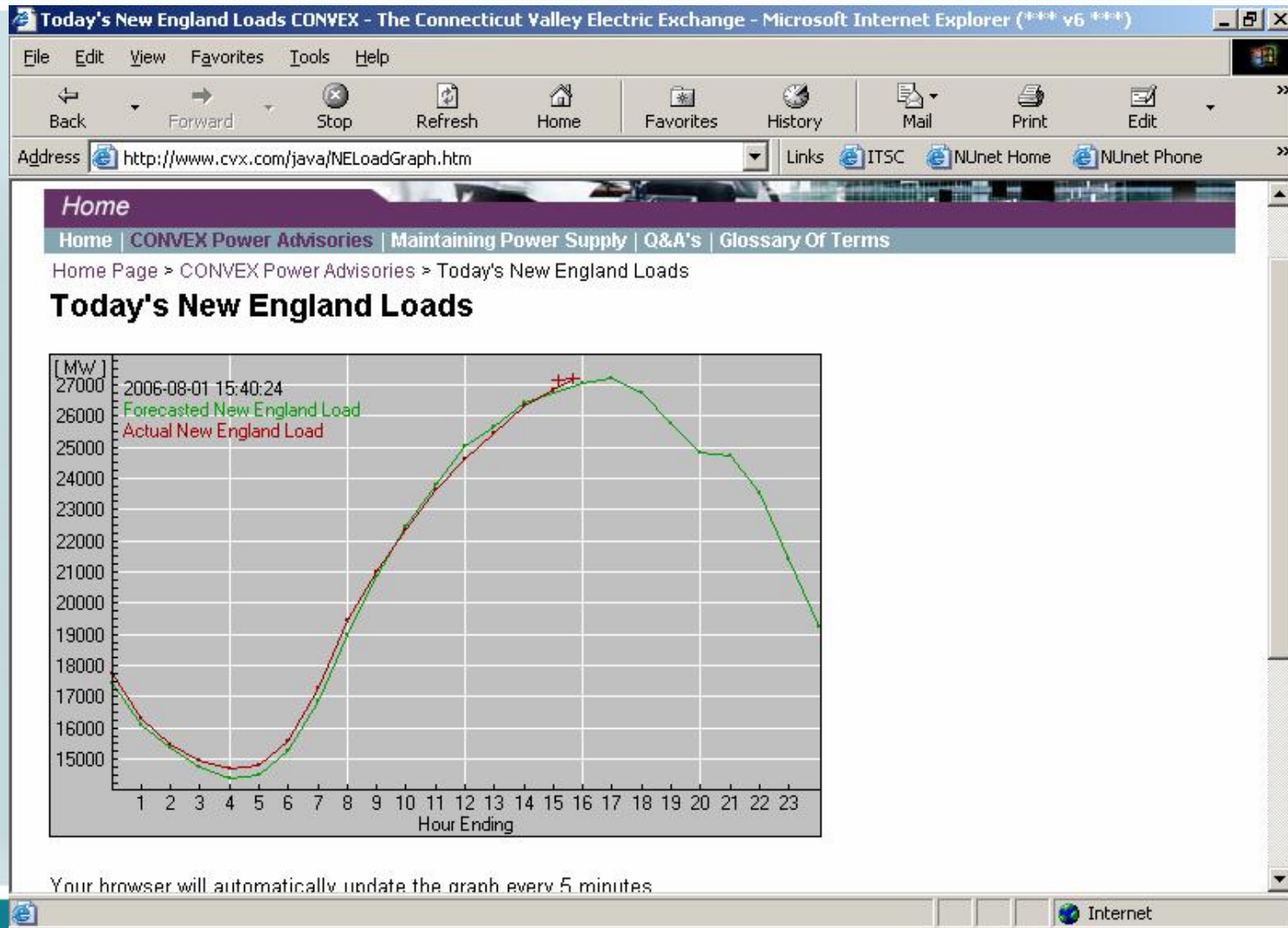
Presentation Content

- Demand Response Characteristics
- ISO-NE Demand Response Program (Overview)
- Demand Response Cycle and Technologies

I. Demand Response Characteristics

- Triggered by peak load deficiencies
- Attempts to prevent grid load from reaching the operating safety margin

Demand Response System Curve



II. ISO-NE Demand Response Overview

- Four questions that can help you understand Demand Response
 - What is Demand Response?
 - Why is Demand Response needed?
 - How are payments earned and what are the sources of their funding?
 - Why do customers participate in Demand Response Programs?

What is Demand Response?

- Customers taking predefined actions to reduce their electric load (kW) in response to a
-System reliability event (“Demand Response”)
- As a consequence of reducing load (kW), electric consumption (kWh) will also be reduced.

Why is Demand Response needed?

- **Transmission and Distribution Reliability Needs**
 - **Demand Response** is a resource to solve short-run planning and reliability problems
 - **Demand Response** accommodates economic growth within existing infrastructure because 1 MW of **Demand Response** = 1 MW of Generation

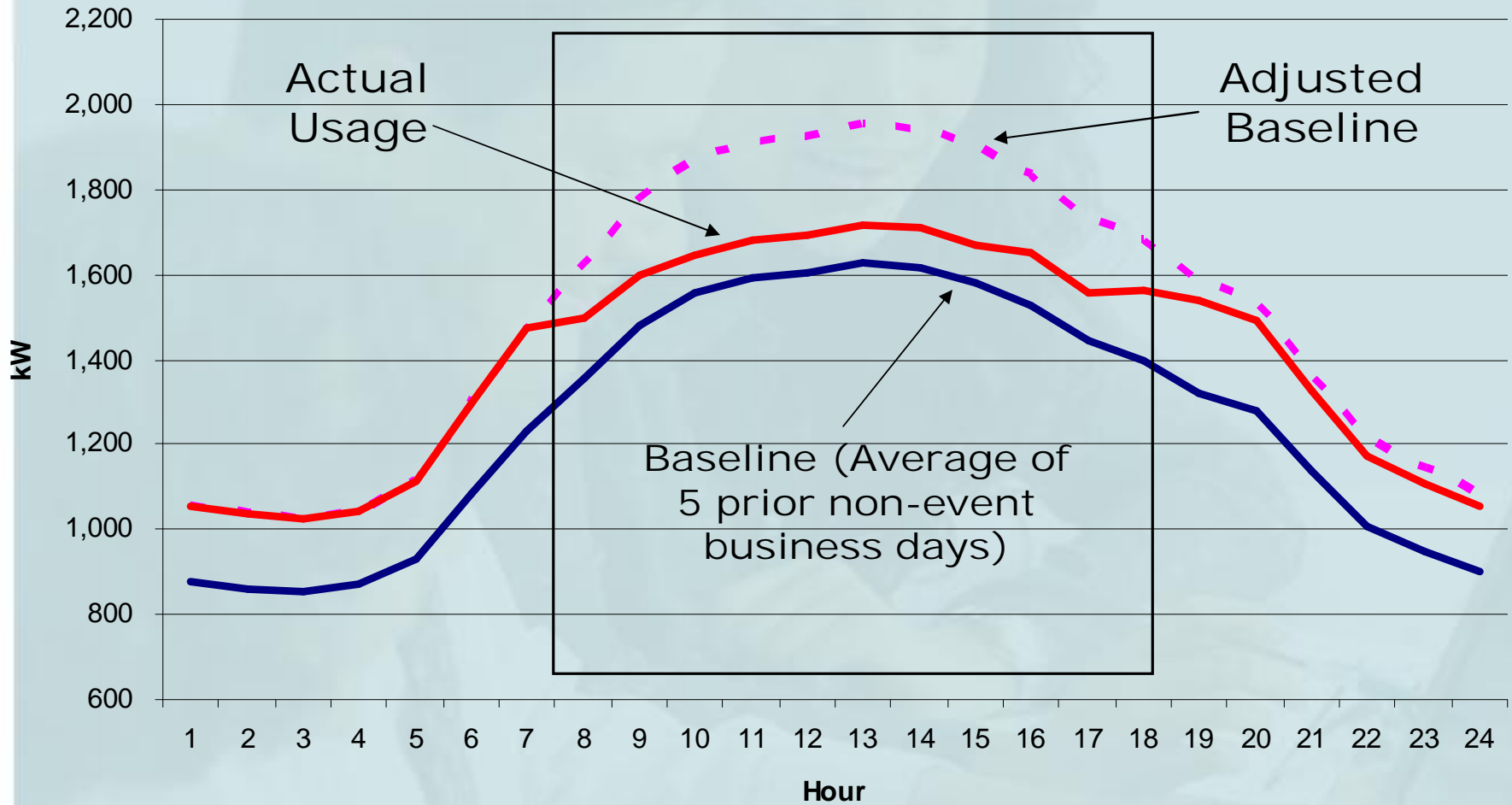
How are payments earned and what is their funding source?

- Program **Event is established** by ISO-NE
- Participants **reduce load** in response to the event
- Amount **of demand response is determined**
- A **payment structure** is used to determine value of the response

Event Established/Participants Respond

- Reliability (Demand) Program Events:
 - System Reliability Conditions as determined by the ISO New England Control Room (Operating Procedure 4)
- Participants Respond
 - **Reduce lighting loads:** *Dimming or de-energizing selected lighting circuits (Over 85% of customers control with wall switches/circuit breakers)*
 - **HVAC loads:** *Adjusting space temperature set-point values*
 - Over 50% use their Energy Management Systems
 - Over 50% say they can increase temperatures by 1 to 2°F without effecting Processes or Occupant Comfort
 - **Manufacturing Processes:** *Defer operation of participant selected manufacturing processes*
 - Over 45% use Computer or Fully Integrated Manufacturing Controls
 - **Emergency Generators:** *Activate emergency generators to meet “customer side of meter” loads*
 - 40% in Demand Response program use emergency generators
 - 70% say they have Emergency Generators

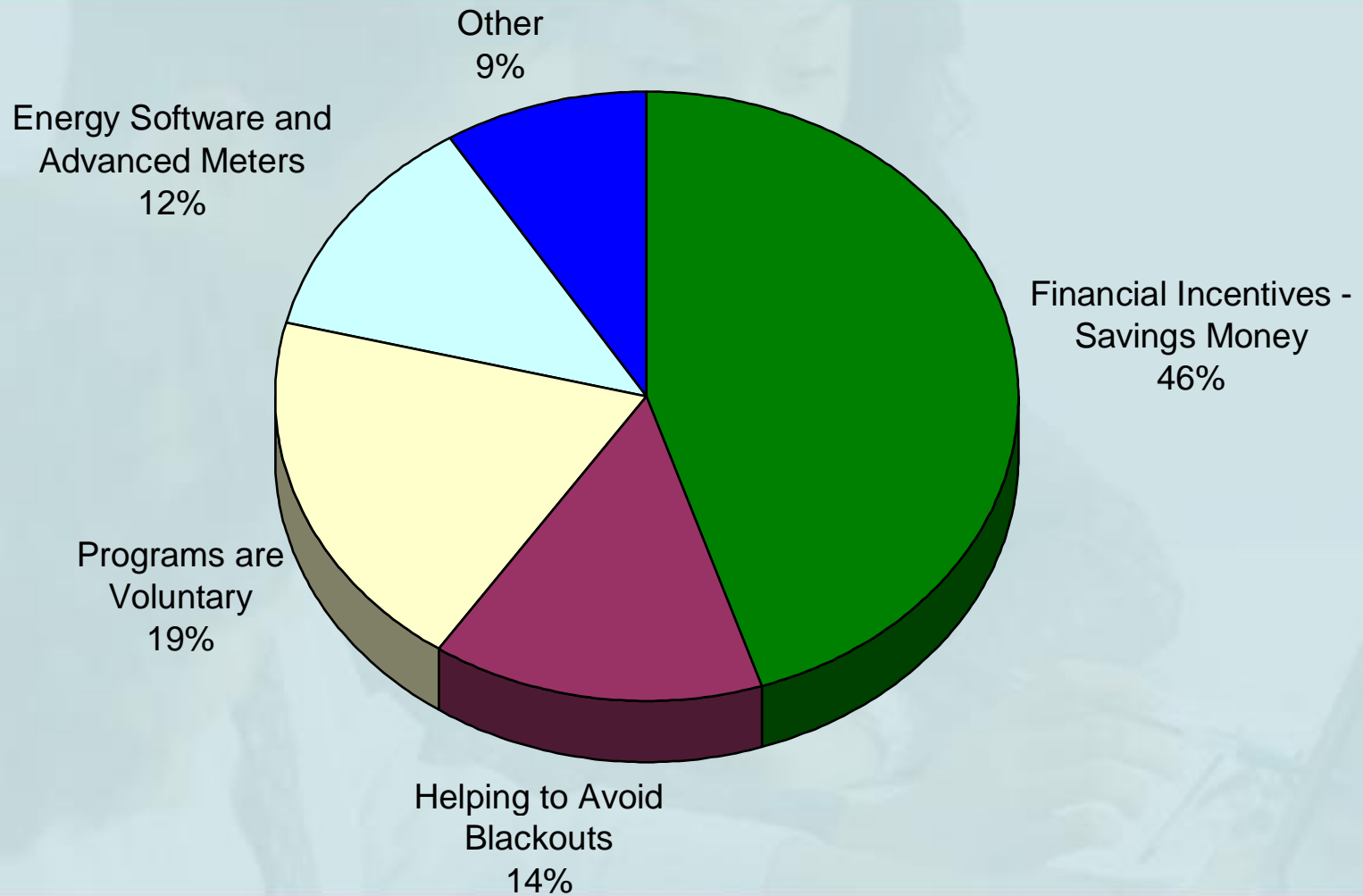
Response Determined



Payment Structure

Performance Payment (All event months)	Supplemental Payments (All event months)
Demand Response Rate \$/kWh	Demand Response Rate \$/kW-Year
0.5	80

Why do customers participate in Demand Response Programs?



III. Demand Response Cycle and Technologies

- Enrollment
- Metering augmentation
- Notification
- Curtailment (response that reduced grid kW)
 - “Pure” curtailment
 - Use of emergency generation
 - Direct load control
- Settlement (paying customer for curtailment)

Contacts

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