

# ISO-NE 2010 Summer Outlook

Electric/Gas Operations Committee Meeting No. 31  
June 3, 2010

# Agenda

- Summer Outlook
- Reserve Requirements
- Operable Capacity Analysis
- Review of ISO-NE Operating Procedures and Communications Protocols
- Background Information:
  - M/LCC2
  - OP4, Key Changes to OP4, OP4 Actions, & OP4 Communications
  - FCM and Results of: FCA-1, FCA-2 & FCA-3

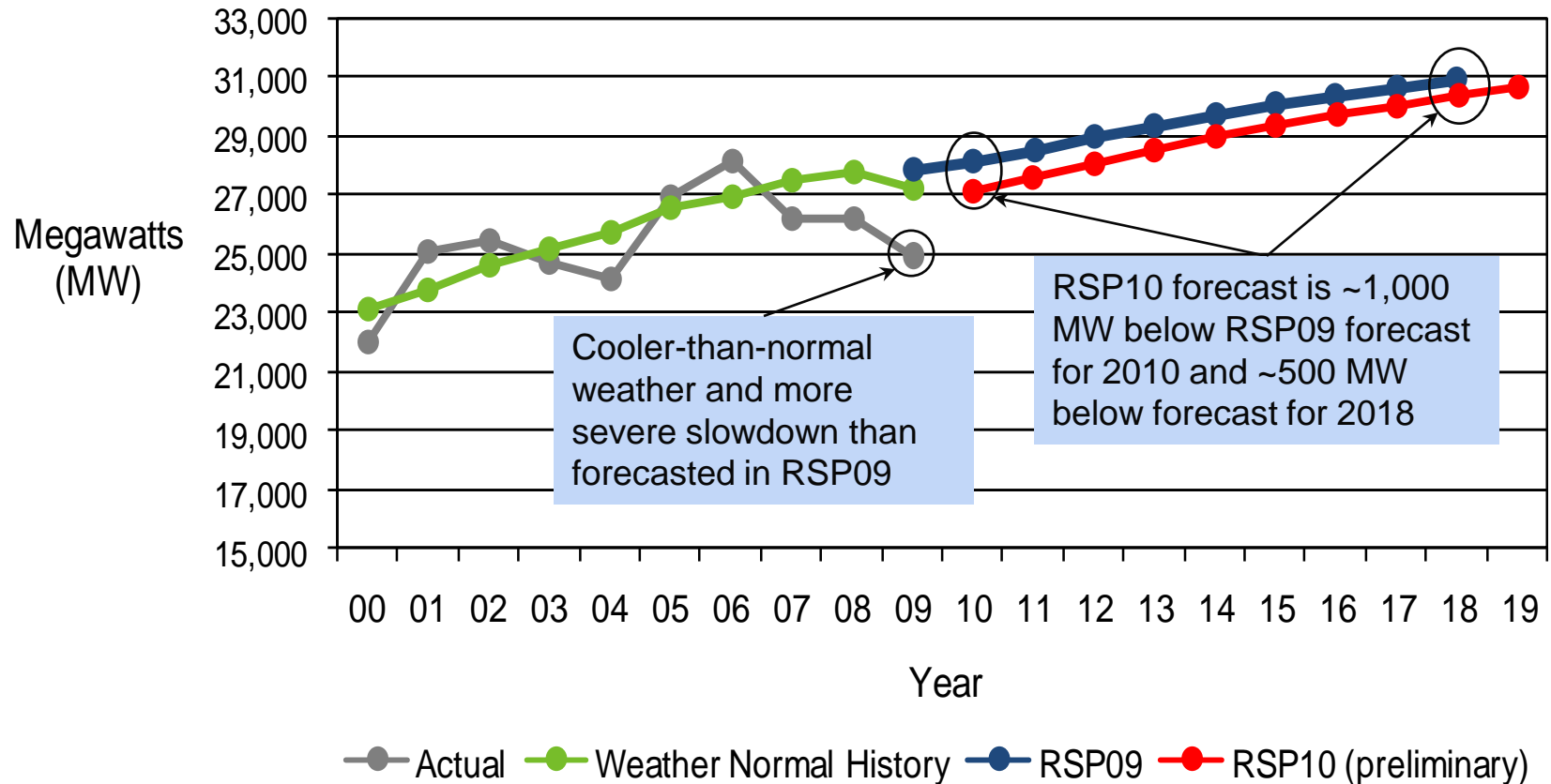
# Preparations for Summer

- Forecasting New England's demand for electricity
- Evaluating the region's summer capacity outlook
- Exercising ISO's communications plan

# Electricity Use Slows as Economy Slows

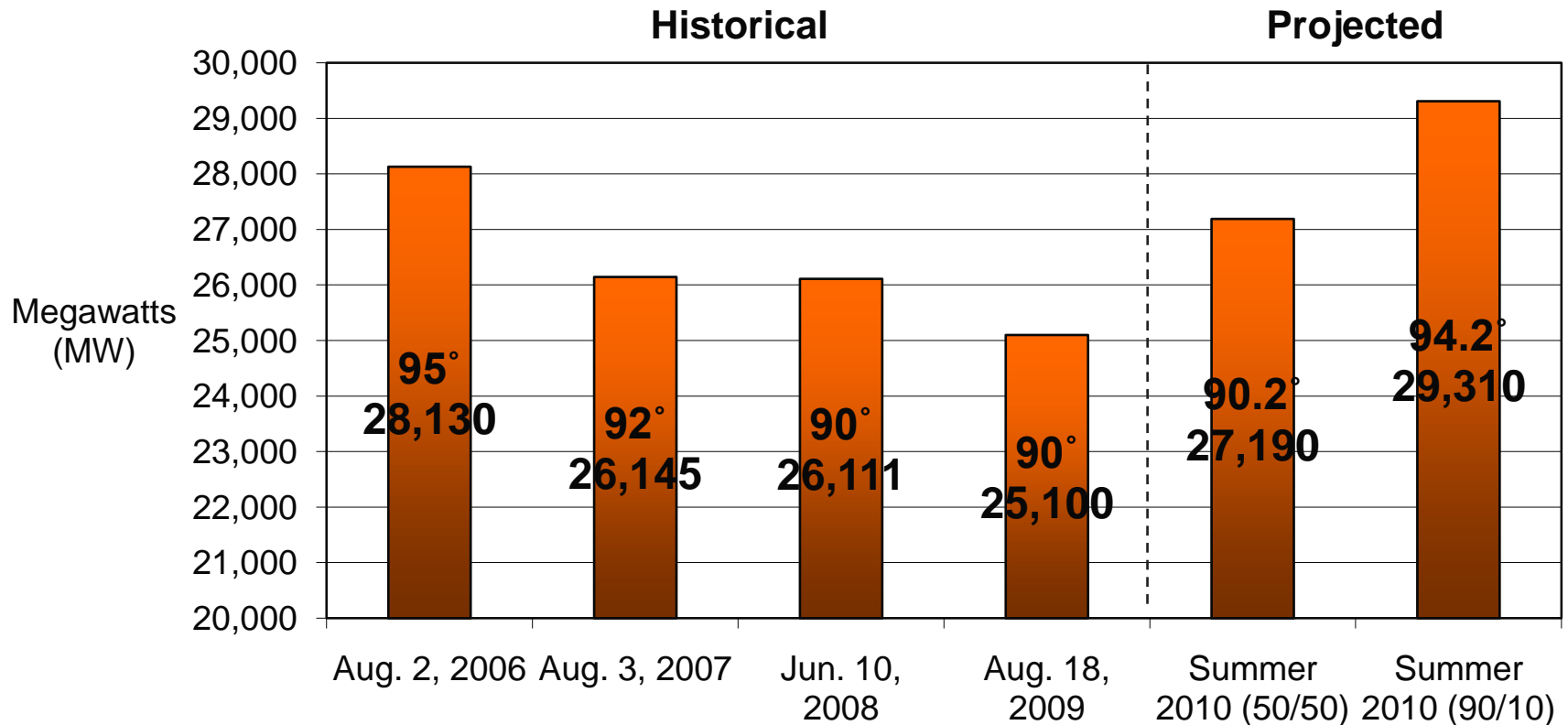
Summer peak-demand forecast drops about 1,000 MW for 2010

### Peak Demand: History (2000-2009) and Forecast (2010-2019)

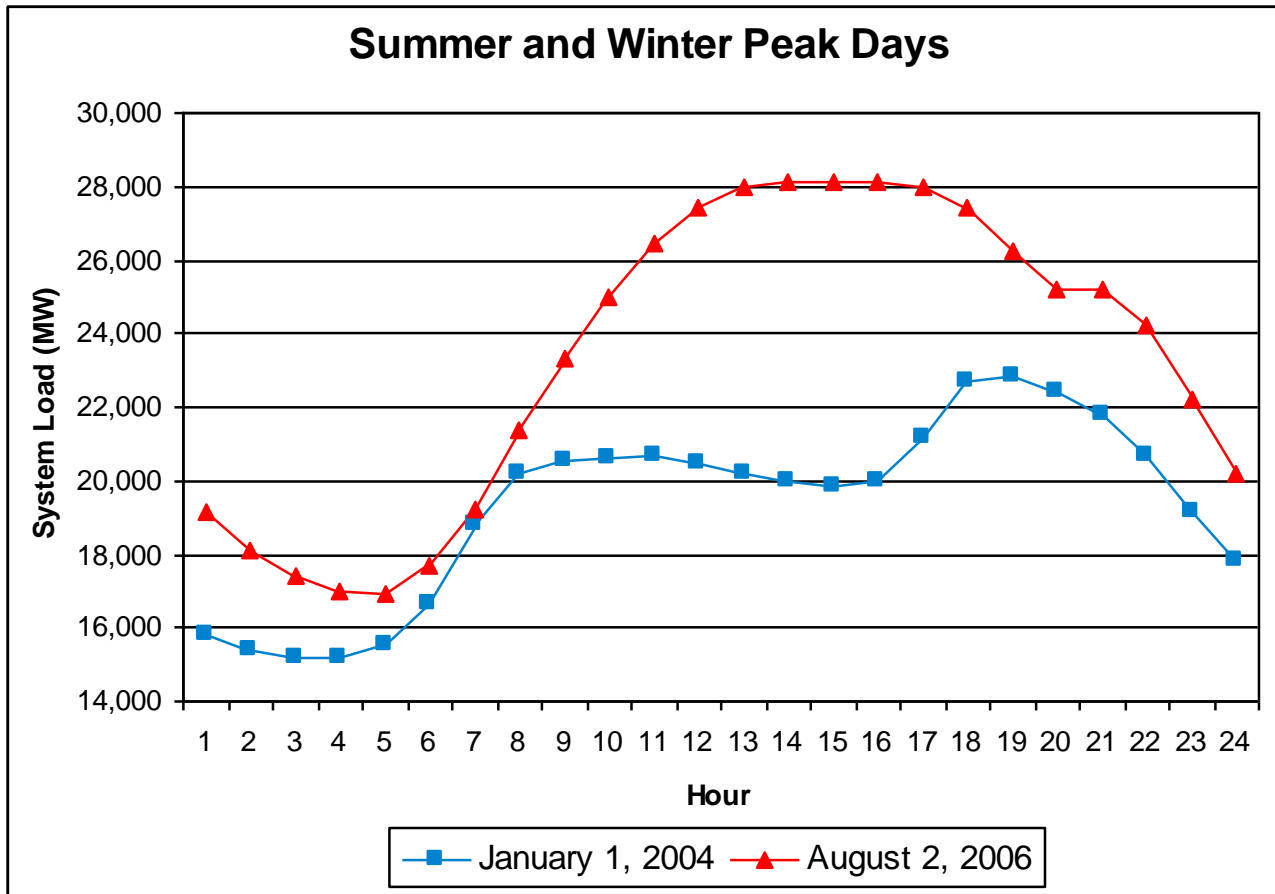


# Weather Drives Summer Peak Demand

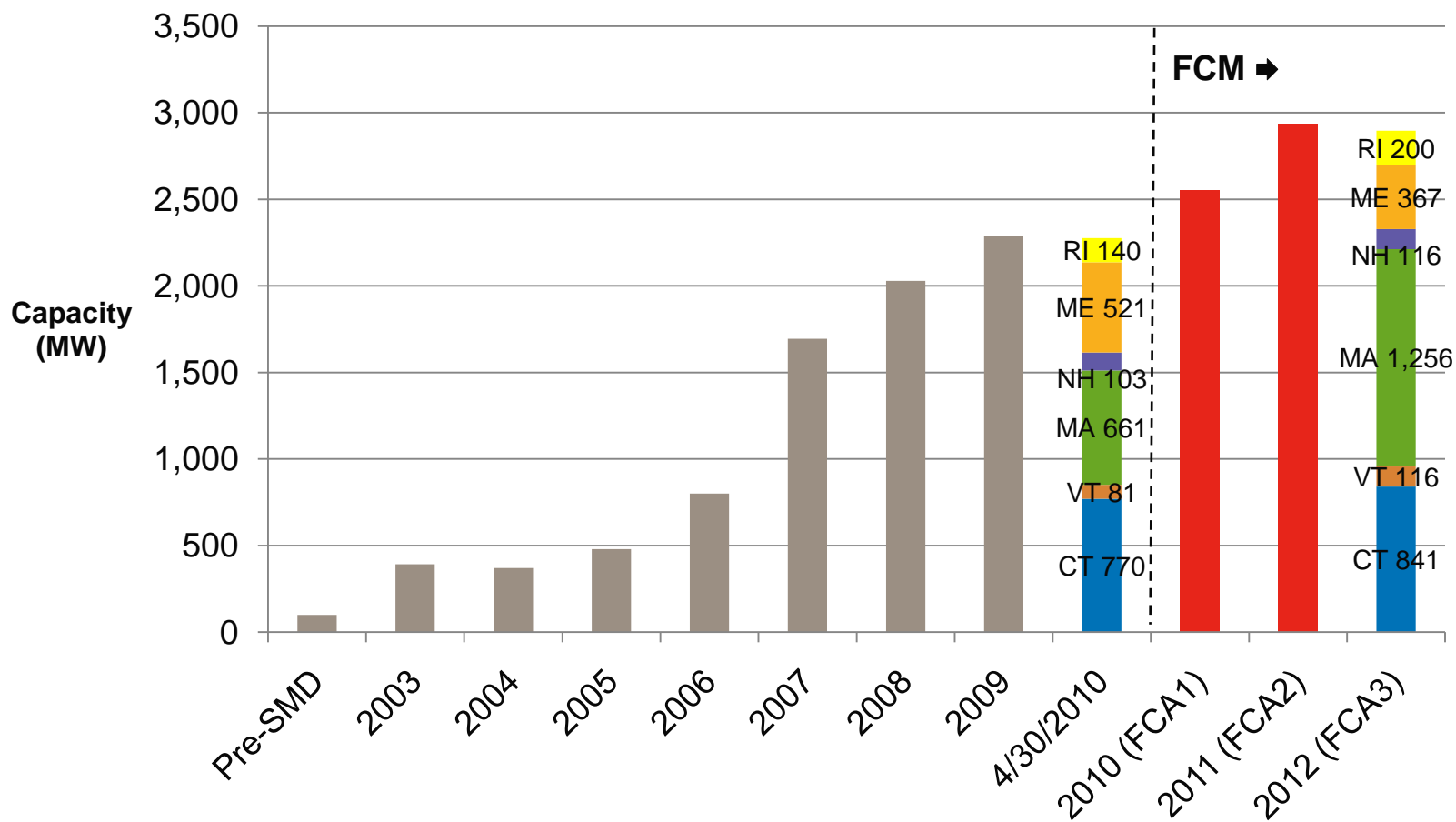
*Historical and Projected Peak Demand in New England*



# Summer vs. Winter Peak Demand



# Demand Resources Growing in New England



Through 2009: Total DR Enrollment in ISO Programs

2010-2012: Total DR Cleared in FCM (New and Existing)

# Reserve Requirements

- Operating reserves are required for reliable system operations\*
  - Ten-Minute Reserve Requirement
    - ISO is required to maintain Ten-Minute Reserves adequate to recover from the loss of 100% of the largest source of supply
      - Normally 1,250 MW to 1,800 MW
  - Thirty-Minute Reserve Requirement
    - ISO is required to maintain Thirty-Minute Reserves adequate to recover from the loss of 50% of the second largest source of supply
      - Normally 600 MW

\* Governed by Northeast Power Coordinating Council (NPCC) requirements and ISO New England procedures.

# Operable Capacity Analysis

# Highlights

- Based on 50/50 Reference Case Summer Peak Load Forecast, and prior to triggering any Emergency Operating Procedures (EOPs), the lowest Summer Operable Capacity Margin of (-1,060 MW) is shown for week beginning June 5<sup>th</sup>
- Based on 90/10 Extreme Case Summer Peak Load Forecast, and prior to triggering any Emergency Operating Procedures (EOPs), the lowest Summer Operable Capacity Margin of (-3,180 MW) is shown for week beginning June 5<sup>th</sup>

# Summer 2010 Operable Capacity Analysis (MW)

	June-10 <sup>2</sup> 50/50 Forecast (Reference Load )	June-10 <sup>2</sup> 90/10 Forecast (Extreme Load)
Generator Capacity Supply Obligation <sup>1</sup>	29,923	SAME
External Node Available capacity	331	SAME
Non Commercial Supply	0	SAME
Planned Outage MW <sup>3</sup>	100	SAME
Allowance for Unplanned Outages	2,800	SAME
Generation at Risk Due to Gas Supply	0	SAME
Net Capacity <sup>4</sup>	27,360	SAME
Peak Load Exposure (adjusted for Other Demand Resources)	26,618	28,738 (+2,120)
Reserve Requirement	1,800	SAME
Operable Capacity Required	28,418	30,538 (+2,120)
Operable Capacity Margin <sup>4</sup>	(1,060)	(3,180) (-2,120)

<sup>1</sup> Generator Capacity Supply Obligation is based on data as of May 28, 2010 and does not include Capacity Supply Obligations associated with Settlement Only Generators, Passive and Active Demand Response, and external capacity.

<sup>2</sup> Based on week with lowest Operable Capacity Margin, week beginning June 5<sup>th</sup>.

<sup>3</sup> Rounded to the nearest hundred.

<sup>4</sup> Rounded to the nearest ten

# Possible Relief Under OP4 based on OP4 Appendix A

OP 4 Action Number	Page 1 of 2 Action Description	Amount Assumed Obtainable Under OP 4 (MW)
1	Implement Power Caution and Resources with a CSO prepare to provide capacity and notify "Settlement Only" generators with a CSO to monitor reserve pricing to meet those obligations. Begin to allow depletion of 30-minute reserve.	0 <sup>1</sup> 600 <sup>2</sup>
2	Dispatch real time Demand Resources.	670 <sup>3</sup>
3	Voluntary Load Curtailment of Market Participants' facilities.	40
4	Implement Power Watch	0
5	Schedule Emergency Energy Transactions and arrange to purchase Control Area-Control-Area Emergency	1,000
6	Voltage Reduction requiring > 10 minutes Dispatch real time Emergency Generation	130 <sup>4</sup> 520 <sup>3</sup>
7	Request generating resources not subject to a Capacity Supply Obligation to voluntarily provide energy for reliability purposes	0
8	Voltage Reduction requiring < 10 minutes	270 <sup>4</sup>
9	Voluntary Load Curtailment by Large Industrial and Commercial Customers. Transmission Customer Generation Not Contractually Available to Market Participants during a Capacity Deficiency.	200 <sup>2</sup> 5

# Possible Relief Under OP4 (after 5/31/10) based on OP4 Appendix A

OP 4 Action Number	Page 2 of 2 Action Description	Amount Assumed Obtainable Under OP 4 (MW)
10	Radio and TV Appeal	200
11	Request State Governors to Reinforce Power Warning Appeals.	100
Total		3,735

## Based on results of the April Bilateral and Reconfiguration auctions for June CSO

### NOTES:

1. Based on Summer Ratings. Assumes 25% of total MW Settlement Only units <5 MW will be available and respond.
2. The actual load relief obtained is highly dependent on circumstances surrounding the appeals, including timing and the amount of advanced notice that can be given.
3. The MW values are reviewed on a quarterly basis; actual available MW amounts can be viewed using the demand response dispatch software. Reserve Margin gross-ups not included and derate not applied.
4. The MW values are based on a 26,618 MW system load and the most recent voltage reduction test % achieved.

# Summer 2010 Operable Capacity Analysis (MW) 50/50 Forecast (Reference)

## ISO-NE 2010 OPERABLE CAPACITY ANALYSIS June 1, 2010 - 50/50 FORECAST

This analysis is a tabulation of weekly assessments shown in one single table. The information shows the operable capacity situation under assumed conditions for each week. It is not expected that the system peak will occur every week during June, July, and August.

STUDY WEEK (Week Beginning, Saturday)	OPCAP SUPPLY							LOAD OBLIGATIONS			OPCAP MARGINS				
	AVAILABLE OPCAP MW	EXTERNAL NODE AVAIL OPCAP MW	NON COMMERCIAL CAPACITY MW	PLANNED OUTAGES	UNPLANNED OUTAGES MW	GEN RISK DUE TO GAS SUP MW	NET OPCAP SUPPLY MW	PEAK LOAD FORECAST MW	OPER RESERVE REQUIREMENT MW	NET LOAD OBLIGATION MW	OPCAP MARGIN MW	OPCAP FROM OP4 ACTIVE REAL-TIME DR MW	OPCAP MARGIN w/ OP4 actions through OP4 Step 2 MW	OPCAP FROM OP4 REAL- TIME EMER. GEN MW	OPCAP MARGIN w/ OP4 actions through OP4 Step 6 MW
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	
05/29/2010	29,923	331	0	0	2,800	0	27,419	26,618	1,800	28,418	(1,000)	520	(480)	640	160
06/05/2010	29,923	331	0	100	2,800	0	27,361	26,618	1,800	28,418	(1,060)	520	(540)	640	100
06/12/2010	29,923	331	0	0	2,800	0	27,408	26,618	1,800	28,418	(1,010)	520	(490)	640	150
06/19/2010	29,923	331	0	100	2,800	0	27,399	26,618	1,800	28,418	(1,020)	520	(500)	640	140
06/26/2010	29,923	331	0	100	2,800	0	27,387	26,618	1,800	28,418	(1,030)	520	(510)	640	130
07/03/2010	29,962	293	0	0	2,100	0	28,132	26,618	1,800	28,418	(290)	520	230	640	870
07/10/2010	29,962	293	0	0	2,100	0	28,122	26,618	1,800	28,418	(300)	520	220	640	860
07/17/2010	29,962	293	0	0	2,100	0	28,122	26,618	1,800	28,418	(300)	520	220	640	860
07/24/2010	29,962	293	0	0	2,100	0	28,127	26,618	1,800	28,418	(290)	520	230	640	870
07/31/2010	29,939	300	0	0	2,100	0	28,098	26,618	1,800	28,418	(320)	520	200	640	840
08/07/2010	29,939	300	0	0	2,100	0	28,096	26,618	1,800	28,418	(320)	520	200	640	840
08/14/2010	29,939	300	0	100	2,100	0	28,076	26,618	1,800	28,418	(340)	520	180	640	820
08/21/2010	29,939	300	0	0	2,100	0	28,089	26,618	1,800	28,418	(330)	520	190	640	830
08/28/2010	29,939	300	0	100	2,100	0	28,070	26,618	1,800	28,418	(350)	520	170	640	810
09/04/2010	29,939	300	0	400	2,100	0	27,765	26,618	1,800	28,418	(650)	520	(130)	640	510
09/11/2010	29,939	300	0	400	2,100	0	27,710	26,618	1,800	28,418	(710)	520	(190)	640	450

1. Available OPCAP MW based on resource Capacity Supply Obligations, CSO, during the Forward Capacity Market procurement period from June 2010 through May 2011. Does not include Settlement Only Generators.
2. External Node Available OPCAP MW based on external Capacity Supply Obligations, CSO, during the Forward Capacity Market procurement period from June 2010 through May 2011
3. New resources that have not yet acquired a CSO but will become commercial in the future.
4. Allowance for Planned Outages includes planned outages scheduled greater than or equal to 15 days in advance.
5. Allowance for Unplanned Outages includes forced outages and maintenance outages scheduled less than 14 days in advance.
6. Generation at Risk due to Gas Supply pertains to gas fired capacity expected to be at risk during cold weather conditions.
7. Total OpCap Supply Available per the formula (1 + 2 + 3 - 4 - 5 - 6 = 7)
8. Peak Load Exposure per data included in the 2010 CELT Report.
9. Operating Reserve Requirement based on first largest contingency plus 1/2 the second largest contingency.
10. Total Load Obligation per the formula (8 + 9 = 10)
11. Net OPCAP Supply minus Net Load Obligation (7 - 10 = 11)
12. OP 4 Action 2 Real-time Demand Response not including reserve margin gross-ups and derate applied.
13. OPCAP Margin taking into account Real Time Demand Response through OP4 Step 2 (11 - 12 = 13).
14. OP 4 Action 6 Emergency Generation Response without the Voltage Reduction requiring > 10 Minutes. Real Time Emergency Generation is capped at 600MW.
15. OPCAP Margin taking into account Real Time Demand Response and Real Time Emergency Generation through OP4 Step 6 (13 - 14 = 15). This does not include Emergency Energy Transactions (EETs).

# Summer 2010 Operable Capacity Analysis (MW) 90/10 Forecast (Reference)

## ISO-NE 2010 OPERABLE CAPACITY ANALYSIS June 1, 2010 - 90/10 FORECAST

This analysis is a tabulation of weekly assessments shown in one single table. The information shows the operable capacity situation under assumed conditions for each week. It is not expected that the system peak will occur every week during June, July, and August.

STUDY WEEK (Week Beginning, Saturday)	OPCAP SUPPLY							LOAD OBLIGATIONS			OPCAP MARGINS				
	AVAILABLE OPCAP MW	EXTERNAL NODE AVAIL OPCAP MW	NON COMMERCIAL CAPACITY MW	PLANNED OUTAGES	UNPLANNED OUTAGES MW	GEN RISK DUE TO GAS SUP MW	NET OPCAP SUPPLY MW	PEAK LOAD FORECAST MW	OPER RESERVE REQUIREMENT MW	NET LOAD OBLIGATION MW	OPCAP MARGIN MW	OPCAP FROM OP4 ACTIVE REAL-TIME DR MW	OPCAP MARGIN MW	OPCAP FROM OP4 REAL- TIME EMER. GEN MW	OPCAP MARGIN OP4
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
05/29/2010	29,923	331	0	100	2,800	0	27,400	28,738	1,800	30,538	(3,140)	520	(2,620)	640	(1,980)
06/05/2010	29,923	331	0	100	2,800	0	27,360	28,738	1,800	30,538	(3,180)	520	(2,660)	640	(2,020)
06/12/2010	29,923	331	0	0	2,800	0	27,408	28,738	1,800	30,538	(3,130)	520	(2,610)	640	(1,970)
06/19/2010	29,923	331	0	100	2,800	0	27,399	28,738	1,800	30,538	(3,140)	520	(2,620)	640	(1,980)
06/26/2010	29,923	331	0	100	2,800	0	27,387	28,738	1,800	30,538	(3,150)	520	(2,630)	640	(1,990)
07/03/2010	29,962	293	0	0	2,100	0	28,132	28,738	1,800	30,538	(2,410)	520	(1,890)	640	(1,250)
07/10/2010	29,962	293	0	0	2,100	0	28,122	28,738	1,800	30,538	(2,420)	520	(1,900)	640	(1,260)
07/17/2010	29,962	293	0	0	2,100	0	28,122	28,738	1,800	30,538	(2,420)	520	(1,900)	640	(1,260)
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07/31/2010	29,939	300	0	0	2,100	0	28,098	28,738	1,800	30,538	(2,440)	520	(1,920)	640	(1,280)
08/07/2010	29,939	300	0	0	2,100	0	28,096	28,738	1,800	30,538	(2,440)	520	(1,920)	640	(1,280)
08/14/2010	29,939	300	0	100	2,100	0	28,076	28,738	1,800	30,538	(2,460)	520	(1,940)	640	(1,300)
08/21/2010	29,939	300	0	0	2,100	0	28,089	28,738	1,800	30,538	(2,450)	520	(1,930)	640	(1,290)
08/28/2010	29,939	300	0	100	2,100	0	28,070	28,738	1,800	30,538	(2,470)	520	(1,950)	640	(1,310)
09/04/2010	29,939	300	0	400	2,100	0	27,765	28,738	1,800	30,538	(2,770)	520	(2,250)	640	(1,610)
09/11/2010	29,939	300	0	400	2,100	0	27,710	28,738	1,800	30,538	(2,830)	520	(2,310)	640	(1,670)

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7. Total OpCap Supply Available per the formula  $(1 + 2 + 3 - 4 - 5 - 6 = 7)$
8. Peak Load Exposure per data included in the 2010 CELT Report.
9. Operating Reserve Requirement based on first largest contingency plus 1/2 the second largest contingency.
10. Total Load Obligation per the formula  $(8 + 9 = 10)$
11. Net OPCAP Supply minus Net Load Obligation  $(7 - 10 = 11)$
12. OP 4 Action 2 Real-time Demand Response not including reserve margin gross-ups and derate applied. Based on ARA3 results.
13. OPCAP Margin taking into account Real Time Demand Response through OP4 Step 2  $(11 - 12 = 13)$ .
14. OP 4 Action 6 Emergency Generation Response without the Voltage Reduction requiring > 10 Minutes. Real Time Emergency Generation is capped at 600MW.
15. OPCAP Margin taking into account Real Time Demand Response and Real Time Emergency Generation through OP4 Step 6  $(13 - 14 = 15)$ . This does not include Emergency Energy Transactions (EETs).

# Review of ISO-NE Operating Procedures and Communications Protocols

# Communications Goal

- To provide timely, complete and consistent reports to key stakeholders on power system conditions

# Communications Triggers

- Several operating procedures/market rules trigger communications with external stakeholders:
  - Master/Local Control Center Procedure No. 2 (M/LCC 2)
  - ***Action During a Capacity Deficiency (Operating Procedure No. 4)***
  - Operations During Cold Weather Conditions (Appendix H)
  - Action During an Energy Emergency (Operating Procedure No. 21)
- Other unusual and emergency circumstances in which the ISO communicates with external stakeholders:
  - Conservation appeals not triggered by an operating procedure
  - Emergencies, such as storms or potential terrorist alerts, or other circumstances that could affect operation/reliability of New England's bulk power system or wholesale markets

# ISO New England Audiences – To whom do we communicate?

- ISO New England communicates with a number of stakeholders when events could affect bulk power system reliability:
  - Local control centers
  - Generating Station Designated Entities
  - Market participants
  - Government officials:
    - State and federal regulators and staff
    - State emergency management agencies
  - Reliability Councils
  - Communication contacts from market participant companies
  - Public via media

# Corporate Communications – Types of Notifications

- Pre-scripted messages include:
  - New England-wide Power Watch, Power Warning, Controlled Power Outage
  - State-specific Power Watch, Power Warning, Controlled Power Outage
    - (e.g., for the State of Connecticut, for the Greater Boston area)
  - Time-specific Power Watch, Power Warning, Controlled Power Outage
    - (e.g., For Today; for Tomorrow; Extended through Tomorrow; Power Watch Lifted)
- Pre-scripted conservation appeals have been prepared that are not triggered by an operating procedure
  - e.g., Unusual hot weather, extreme cold weather circumstances that would lead to voluntary conservation appeals

# External Communications for Emergencies not Related to Operating Procedures

- There may be times when ISO New England believes a voluntary conservation appeal, not linked to OP-4, would help in maintaining the reliability of the bulk power system.
- ISO New England believes that under certain conditions, issuing a voluntary conservation appeal before the system goes deficient is sometimes the right course of action.
- For example,
  - A sustained heat wave that will have an impact on generating resources and supplies
  - When extreme cold weather creates volatile power system conditions
  - Other extreme conditions that might impact reliability on a case by case basis
- These voluntary conservation appeals have been issued before at ISO's discretion due to unusual system conditions

# External Communications for Emergencies not Related to Operating Procedures (cont.)

- External Affairs and Corporate Communications:
  - Corporate Communications and External Affairs will use the OP-4 communication process as a guide for communicating power system emergencies that are not linked to an operating procedure
  - Notify all OP-4 contacts through e-mail and/or telephone
  - Other government officials may also be notified depending on urgency
  - Continue to notify public through media advisories until power system conditions improve

# Contact Information

- Provide updated contact information to ISO-NE:
  - Government Contacts:
    - External Affairs Department:
      - By phone: (413) 535-4138
      - By email: [gwarman-gold@iso-ne.com](mailto:gwarman-gold@iso-ne.com)
  - NEPOOL Contacts:
    - Corporate Communications/Media Relations Department:
      - By phone: (413) 535-4309
      - By email: [rjohnson@iso-ne.com](mailto:rjohnson@iso-ne.com)

# Other Email Distribution Lists

- Subscribe at [www.iso-ne.com /support / mailing lists](http://www.iso-ne.com/support/ mailing lists):
  - All Notices
  - Emergency Operating System Notices (OP4, etc.)

# Background Information

# Abnormal Conditions Alert (Master/Local Control Center Procedure No. 2): Communications

# Master/Local Control Center Procedure No. 2 - Abnormal Conditions Alert

- The purpose of Master/Local Control Center Procedure No. 2 (M/LCC 2):
  - Alerts power system personnel and market participants of abnormal system conditions, either real time or in the future
  - Outlines steps to be taken upon notification, including:
    - Cancellation of maintenance on power system resources
    - Delineates which outages can and cannot be allowed
- M/LCC 2 may be issued System-wide or locally depending on circumstances
- **The number of M/LCC 2 alerts is expected to decline**
  - ISO is eliminating the requirement to implement M/LCC 2 in order to cut real-time transactions (i.e., sales to neighboring regions) that do not clear in the Day Ahead Market

# Abnormal Conditions Alert (cont.)

- What is an abnormal condition on the bulk power system? The definitions include:
  - Shortage of operating reserve
    - May require implementation of OP-4 and/or OP-7
  - Potential, expected or actual low voltage or reactive reserves
  - Potential, expected or actual loss of first contingency coverage
  - SMD (Solar Magnetic Disturbance)
  - Any other threat to the bulk power system reliability and integrity where the ISO wants to heighten the level of awareness on the bulk power system
    - Terrorism, sabotage, storms, etc.
- Will usually be a precursor to OP-4 implementation
- However, depending on the timing, type and severity of events which are occurring, M/LCC 2 may be skipped – and move straight into OP-4 and/or OP-7

# Action During a Capacity Deficiency (OP4): Communications

Power Caution

Power Warning

Power Watch

Governor Appeal

# Operating Procedure No. 4 – Action During a Capacity Deficiency

- Operating Procedure No. 4 (OP4) is implemented when any of the following circumstances occur:
  - Available resources are insufficient to meet anticipated electricity use (demand) plus reserve requirements
  - One or more contingencies occur that result in immediate deficiency in available capacity resources needed to meet demand and reserve requirement
  - Transmission facilities in a sub-area are loaded beyond established transfer limits
  - A sub-area is experiencing abnormal and/or reactive conditions
  - There is a need to implement manual load shedding, as required in Operating Procedure No. 7, but it may be avoided or reduced in magnitude by implementing this procedure

# Action During a Capacity Deficiency (cont.)

- OP4 is implemented when any of the following circumstances occur (continued):
  - Other control areas within the Northeast Power Coordinating Council (NYISO, Ontario, Quebec, New Brunswick, Maritimes) are experiencing a capacity deficiency and have requested assistance, which, if provided, would reduce New England's reserves below required margin
  - Any other serious threat to the integrity of the bulk power system for which ISO New England determines this procedure would mitigate the impact

# Action During a Capacity Deficiency (cont.)

- OP4 includes 11 actions that system operators use to maintain bulk power system reliability
  - Actions can be implemented New England-wide, by local control center area, or by state
  - Actions can be implemented in any order or may be skipped right into OP7

# Key Changes to OP 4














- **Reduce number of actions from 16 to 11**
  - Incorporate Forward Capacity Market (FCM) requirements for June 1, 2010
    - Eliminate old demand response programs and block actions
  - Provide for more efficient dispatch of demand resources
- **Realign certain actions**
  - Move action to *begin to deplete 30-minute reserve* to Action 1 since it is always implemented with a *Power Caution*
  - Issue notice to settlement-only generators of their capacity obligations under FCM
  - Dispatch DR earlier in OP4 and require resources to interrupt within 30 minutes
  - Move *Power Watch* after DR is dispatched to coincide with more serious actions
- **New actions**
  - Request resources that are not subject to a Capacity Supply Obligation (CSO) to provide energy for reliability purposes

OLD OP 4	Action Description	NEW OP4	Action Description
1	Inform Gen of Capacity Shortage Make Emergency Capability Available, <b>Power Caution</b>	1	Inform Gen and Demand of Capacity Shortage make CSO available, SOG obligations under FCM, Begin to allow 30 minute reserve depletion, <b>Power Caution</b>
2	Order on Settlement Only Generators	2	Dispatch RTDR in amount and location required
3	Interrupt 2-hour and Profile DR Resources	3	Voluntary Load Curtailment Participants
4 +5	Interrupt 2-hour DR	4	Implement a <b>Power Watch</b>
6	Begin to allow the depletion of 30 minute reserves	5	Schedule Emergency Energy Transactions
7+8	Interrupt 2-hour DR	6	Voltage Reduction requiring > 10 minutes Dispatch RTEG in amount and location required
9	Voluntary Load Curtailment Participants Interrupt 30-minute DR Resources w/o voltage reduction, <b>Power Watch</b>	7	Request Gen without a CSO to provide voluntary reliability energy
10	Request all customer generation under contract	8	Voltage Reduction requiring < 10 minutes
11	Schedule Emergency Energy Transactions	9	Voluntary Load Curtailment C and I and Customer Gen
12	Voltage Reduction requiring > 10 minutes Interrupt DR Requiring Voltage Reduction	10	Radio and TV, <b>Power Warning</b>
13	Voltage Reduction requiring < 10 minutes	11	Governor Appeal
14	Voluntary Load Curtailment C and I and Customer Gen		
15+ 16	Radio, TV, Governor Appeal <b>Power Warning</b>		

# Possible Relief Under OP4 Actions

OP4 Action	Action Description	Possible Relief (MW)
1	Inform all resources of a capacity deficiency (including settlement-only) Begin to allow depletion of 30-minute reserves	40 600
2	Dispatch Real Time Demand Resources	488
3	Voluntary load curtailment of Market Participants' facilities	40
4	Power Watch	-
5	Schedule Emergency Energy Transactions	1,000
6	Voltage reductions requiring >10 minutes Dispatch Real Time Emergency Generation	82 530
7	Request generation without CSO to provide energy	-
8	Voltage reductions requiring <10 minutes	366
9	Voluntary load curtailment of C&I customers' generation	-
10	Radio and TV appeals for voluntary conservation (Power Warning)	200
11	Request governors' support for ISO appeals for conservation	-
-	<b>Total</b>	<b>3,346</b>

# OP4: External Notifications

Power Caution	Power Watch	Power Warning	Governor Appeal
 OP-4 Any Step	 OP-4 Action 4	 OP-4 Action 10	 OP-4 Action 11
 No Public advisory issued	 All internal and external stakeholders are notified	 All internal and external stakeholders are notified	 ISO New England notifies state government contacts to assist with appeal
 Serves as a notice to Market Participants that a capacity deficiency exists	 Public request for electricity conservation is made	 Urgent public appeal to immediately turn off all unnecessary power use.	 ISO requests Governors support for Power Warning   Should be implemented by 2:00 p.m., for “Day-ahead” appeals; or by 9:00 a.m. on the day the Power Warning is in effect

# Overview of OP4 Actions 1-11

# Action 1

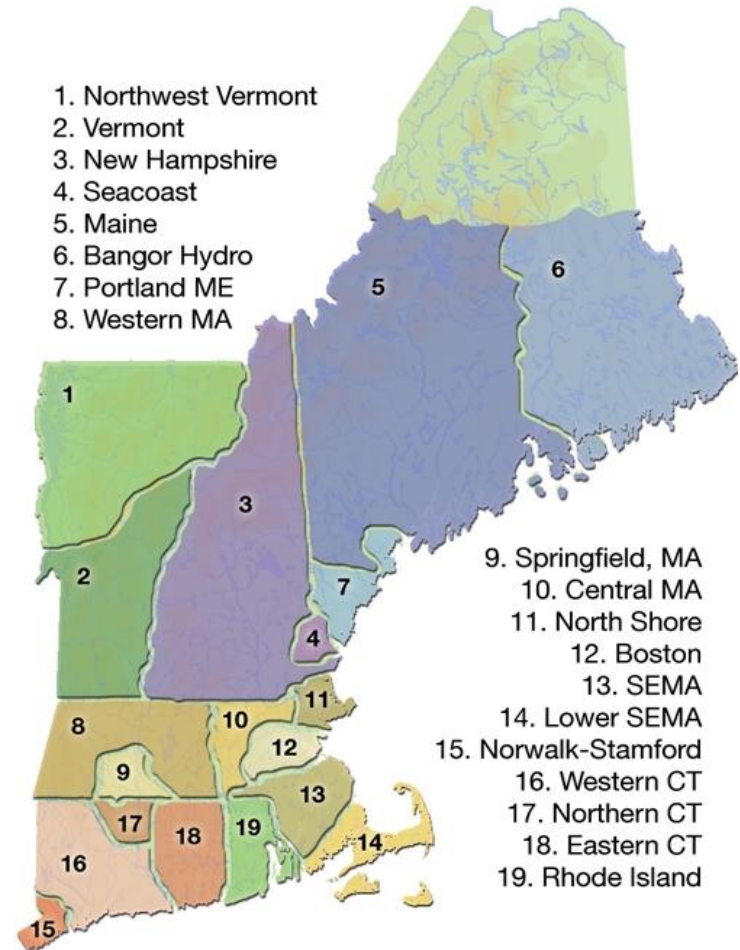
- ISO will:
  - Inform all resources that a capacity shortage exists
    - Each resource with a CSO should *prepare* to provide capability
    - “Settlement Only” Generators with real-time obligations and CSOs need to monitor the status of reserve pricing and meet their obligations under “Shortage Event” definitions in Market Rule 1
  - Begin to allow depletion of 30-minute reserve
  - Implement a *Power Caution*
    - Does *not* involve public appeals for conservation

# Action 2

- ISO will:
  - Dispatch *Real Time Demand Resources* (RTDR) via Demand Designated Entities (DDEs) in the amount and location required
    - Beginning June 1, 2010 – At the system level or Load Zone level
    - Beginning June 1, 2011 – At the Dispatch Zone level
  - DDEs will:
    - Dispatch RTDR in locations and amounts required by ISO
    - Determine which assets to interrupt within each Load Zone

# ISO to Dispatch Demand Resources in Targeted Areas *beginning June 1, 2011*

- **19 dispatch zones:**
  - Allows dispatch of resources only when, where and in amounts needed
  - Dispatch is similar to a generator dispatch
  - Aggregator manages curtailment within zone as long as MW requirements are met allowing management of fatigue



# Action 3

- ISO will:
  - Request voluntary load curtailment of Market Participants' facilities in New England

# Action 4

- ISO will:
  - Initiate radio and television appeals for voluntary load curtailment
  - Implement a ***Power Watch***
    - Notification that further steps to manage capacity could affect the public
    - Decoupled from activation of Demand Response
    - Moved to coincide with deeper actions of OP4
      - When 30-minute reserves are expected to go to zero

# Action 5

- ISO will:
  - Implement Actions 5 and beyond to maintain 10-minute reserve
  - Arrange to purchase available emergency capacity and energy, or energy only, (if capacity backing is not available) from Market Participants or neighboring regions

# Action 6

- ISO will:
  - Implement voltage reduction of 5% of normal operating voltage requiring *more than* 10 minutes to implement
    - Local Control Centers (LCCs) implement voltage reduction on distribution and sub-transmission systems
  - Alert NYISO that sharing of reserves within Northeast Power Coordinating Council may be required
  - Dispatch Real-Time Emergency Generation (RTEG) Resources via DDEs in the amount and location required
    - Beginning June 1, 2010 – At the system level or Load Zone level
    - Beginning June 1, 2011 – At the Dispatch Zone level
  - DDEs will:
    - Dispatch RTDR in locations and amounts required by ISO
    - Determine which assets to interrupt within each Load Zone

# Action 7

- ISO will:
  - Request Generating Resources not subject to a CSO to *voluntarily* provide energy for reliability purposes
    - Either on a forecast basis or in real time when ISO anticipates it will be unable to maintain 10-minute reserves

# Action 8

- ISO will:
  - Implement voltage reduction of 5% of normal operating voltage that is attainable *within* 10 minutes
    - LCCs implement voltage reduction on distribution and sub-transmission systems

# Action 9

- ISO will:
  - Request activation of all of customer generation not contractually available to Market Participants
  - Request voluntary load curtailment by large industrial and commercial customers
  - Request is made through Transmission and Distribution owners

# Action 10

- ISO will:
  - Initiate radio and television appeals for voluntary load curtailment
  - Implement a **Power Warning**
    - Notification for public appeals when an immediate reduction in power usage is necessary to avert overload of the electrical system
    - Public appeals made when other efforts (e.g. emergency purchases, voluntary curtailment, contracted curtailment and voltage reduction) have been unsuccessful in bringing supply and demand back into balance

# Action 11

- ISO will:
  - Request New England governors to reinforce **Power Warning** appeals initiated in Action 10

# Communications for Actions 1-11

# OP4 Communications: Steps 1-3, 5-9

Power Caution

- **Corporate Communications/External Affairs shall:**
  - Inform government officials and NEPOOL communications contacts of Implementation of OP-4 and Power Caution via e-mail notification
  - No public advisory for conservation is necessary

# OP4 Communications: Step 4

Power Watch

- **Corporate Communications/External Affairs shall:**
  - Inform government officials and NEPOOL communications contacts of OP-4 implementation and Power Watch via e-mail notification
  - Activate conference call “**bridge-lines**” and conduct regular conference call updates
  - Update “pre-scripted” public appeal for voluntary electricity conservation and issue it via media advisory
  - Post conservation appeal on ISO web: home page, press release page

# OP4 Communications: Step 10

## Power Warning

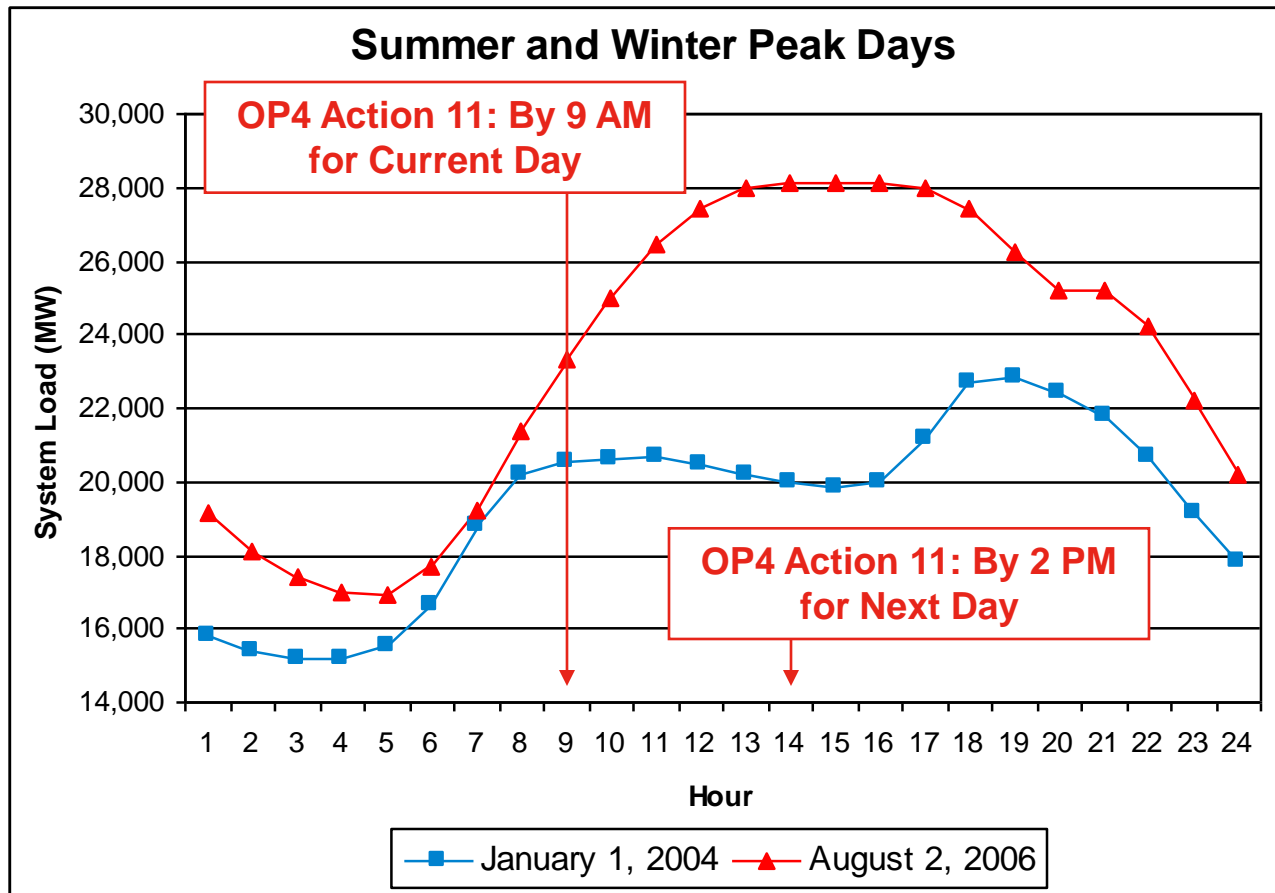
- **Corporate Communications/External Affairs shall:**
  - Inform government officials and NEPOOL communications contacts of implementation of OP-4 and “Power Warning” via e-mail notification
  - Activate conference call “**bridge-lines**” and conduct regular conference call updates
  - Update “pre-scripted” public appeal for electricity conservation and issue it via media advisory
  - Post conservation appeal on ISO web: home page, press release page

# OP4 Communications: Step 11

## Governor Appeal

- **Corporate Communications/External Affairs shall:**
  - To the extent possible, “day ahead” declaration of Action 11 to be made by 2 p.m. and “day-of” by 9 a.m. to maximize impact
  - ISO New England notifies state government contacts to assist with appeal
  - Notify pre-determined governor’s staff member to request action
    - Action requested is for the governor to make an urgent public appeal for conservation

# Summer vs. Winter Peak Demand



# 2010 OP4 Events

- March 14 (Sunday)
  - New England: 8:30 p.m.–10 p.m.
  - Actions 1, 6
- May 2 (Sunday)
  - New England: 8:00 p.m.–10 p.m.
  - Actions 1, 6
- May 26 (Friday)
  - New England: 4:15 p.m.–10 p.m.
  - Actions 1, 6

# 2009 OP4 Events

- None

# 2008 OP4 Events

- May 8 (Thursday)
    - NEMA/Boston: 2 p.m. – 10 p.m.\*
    - Actions 1-9
    - Power Watch
- \* Action 1 was cancelled at 2:30 a.m.  
May 9

# 2007 OP4 Events

- February 10 (Saturday)
  - New England: 9:40 a.m. – 11 a.m.
  - Actions 1 and 6
  - Power Caution
- August 2 (Thursday)
  - New England: 3:30 p.m. – 6 p.m.
  - Actions 1 and 6
  - Power Caution
- September 8 (Saturday)
  - New England: 4:15 p.m. – 9 p.m.
  - Actions 1 and 6
  - Power Caution
- December 1 (Saturday)
  - New England: 5:48 p.m. – 8:45 p.m.
    - Actions 1 and 6
    - Power Caution
  - Maine: 6:04 p.m. – 11:30 p.m.
    - Actions 1-12
    - Power Watch
- December 2 (Sunday)
  - Maine: 11 a.m. – 10 p.m.
  - Actions 2-11
  - Power Watch

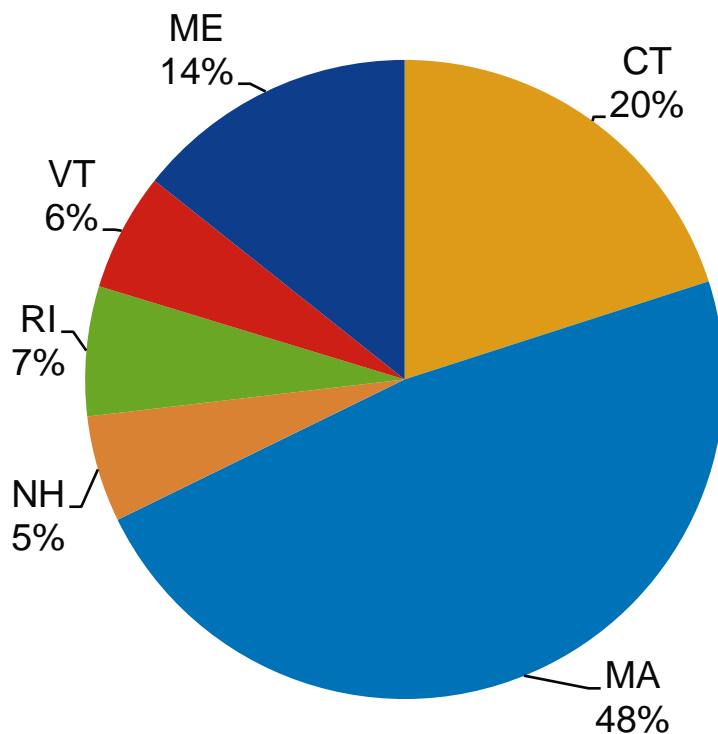
# Forward Capacity Market

- Procure enough capacity to meet New England's forecasted Installed Capacity Requirement (ICR) three years in the future
- Allow new capacity projects to compete in the market and set price
- Select a portfolio of ***Supply and Demand Resources*** through a competitive Forward Capacity Auction (FCA) process
  - Proposed resources must be pre-qualified to participate in the auction
  - Proposed resources must participate and clear in the auction to be paid for capacity
- Provides a long-term (up to 5 year) commitment to New Supply and Demand Resources to encourage investment

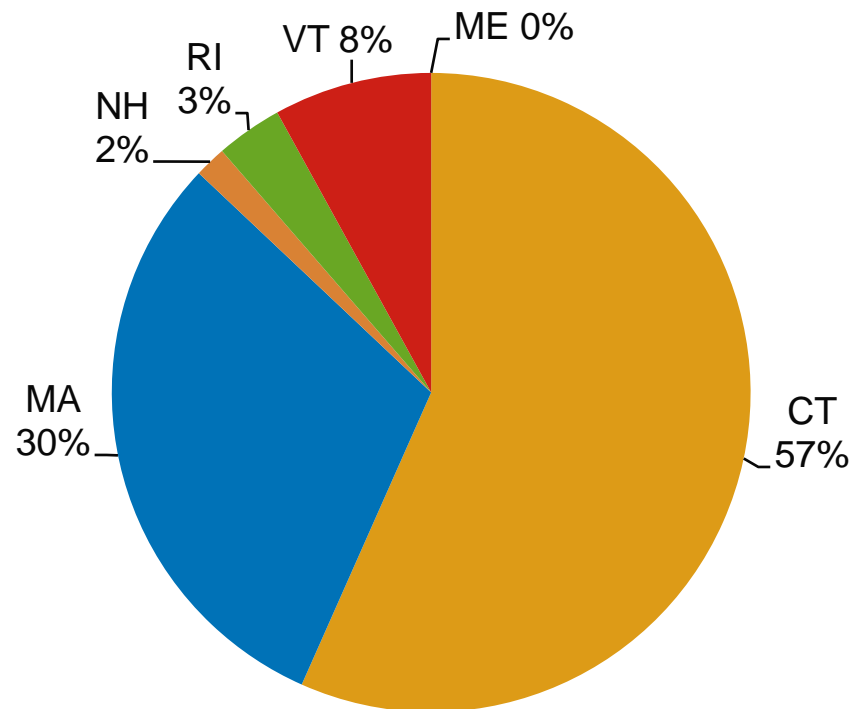
# Results of 1<sup>st</sup> Forward Capacity Auction

*Conducted in February 2008 for delivery in 2010*

## New Demand Resources (1,188 MW)



## New Supply Resources (626 MW)

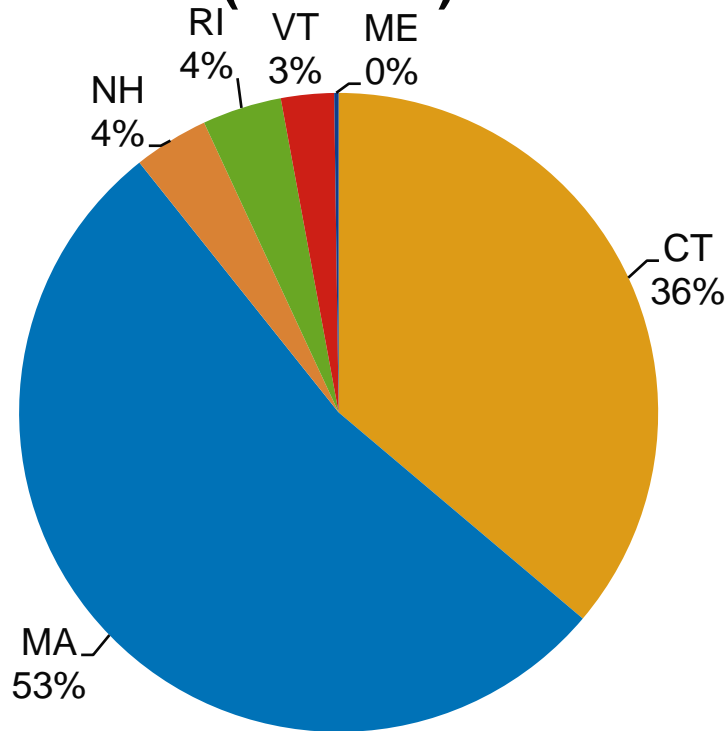


# Results of 2<sup>nd</sup> Forward Capacity Auction

*Conducted in December 2008 for delivery in 2011*

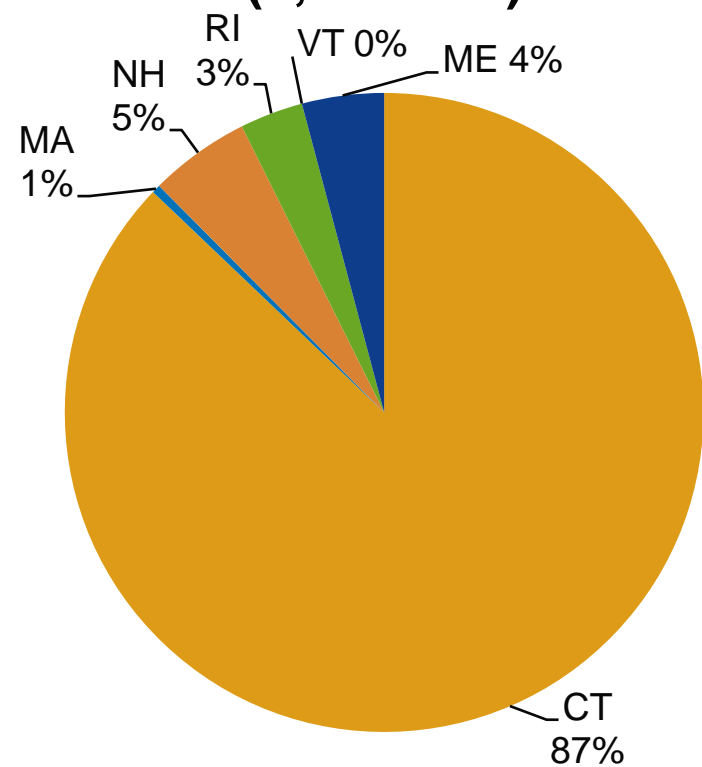
## New Demand Resources

(448 MW)



## New Supply Resources

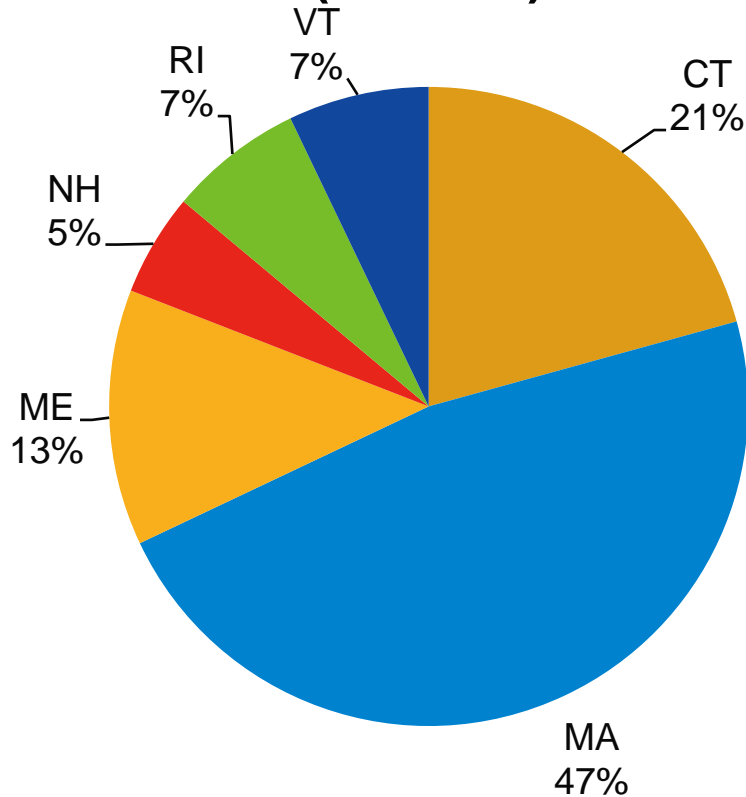
(1,157 MW)



# Results of 3<sup>rd</sup> Forward Capacity Auction

*Conducted in October 2009 for Delivery in 2012*

## New Demand Resources (309 MW)



## New Supply Resources (1,670 MW)

