

Agenda Item 4.1.2 – 4.4

PSPC Meeting 273

March 11, 2010

# Installed Capacity Requirement (ICR) & Related Values for the 2013/14 Forward Capacity Auction (FCA4)

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# Objective of this Presentation

- Review the ISO proposed Installed Capacity Requirement (ICR), Local Resource Adequacy Requirements (LRA) and Maximum Capacity Limit (MCL), collectively the ICR Values for the 2013/14 FCA (FCA4)
- Answer questions regarding load, capacity and transmission assumptions used to simulate the New England bulk power supply

# 2013/14 ICR Tentative Schedule

- PSPC review of assumptions – Feb **18, 2010**
- PSPC review of ISO recommendation of ICR Values – **Mar 11, 2010**
- RC review/vote of ISO recommendation of ICR values – **Mar 17, 2010**
- PC review/vote of ISO recommendation of ICR values – **Apr 9, 2010**
- File with the FERC – by **April 30, 2010**
- FCA4 – **Aug 2, 2010**

# ICR Values for the 2013/14 FCA

# ISO Proposed ICR

- Proposed ICR is 32,817 MW
- Net ICR (ICR minus HQICCs) is  $32,817 \text{ MW} - 916 \text{ MW} = 31,901 \text{ MW}$
- Annual Resulting Reserve Margin is 14.9% with HQICCs and 11.7% without HQICCs

# LRA, TSA and LSR

- Local Sourcing Requirement (LSR) is the higher of the TSA and LRA Requirements
- Local Sourcing Requirement for CT is 7,362 MW
  - TSA Requirement Calculated is 7,362 MW
  - LRA Requirement Calculated is 7,203 MW
- Local Sourcing Requirement for NEMA/Boston is 2,957 MW
  - TSA Requirement Calculated is 2,957 MW
  - LRA Requirement Calculated is 2,494 MW

# ISO Proposed ICR Values (MW)

2013/2014 FCA	New England	Connecticut	NEMA/ Boston	Maine
Peak Load (50/50)	28,570	7,485	5,730	2,145
Total Resources*	36,959	9,337	3,960	3,621
Installed Capacity Requirement	32,817			
NET ICR (ICR Minus 916 MW of HQICCs)	31,901			
Local Sourcing Requirement		7,362	2,957	
Maximum Capacity Limit				3,196

- Total Resources excludes HQICCs

# Comparison to FCA3 ICR Values (MW)

	New England		Connecticut		NEMA/Boston		Maine	
	2013/14 FCA	2012/13 FCA	2013/14 FCA	2012/13 FCA	2013/14 FCA	2012/13 FCA	2013/14 FCA	2012/13 FCA
Peak Load (50/50)	28,570	29,020	7,485	7,650	5,730	5,885	2,145	2,165
Total Resources*	36,959	37,059	9,337	9,111	3,960	3,813	3,621	3,616
Installed Capacity Requirement	32,817	32,879						
NET ICR (ICR Minus HQICCs)	31,901	31,965						
Local Sourcing Requirement			7,362	6,640	2,957	2,019		
Maximum Capacity Limit							3,196	3,257

- 2013/14 MCL values calculated with “At Criteria” and 2012/13 calculated with “As Is” system conditions
- Total Resources excludes HQICCs

# ICR Calculation Details

<u>Total Monthly Capacity</u>	
	2013/14
Internal Installed Capacity	32,716
Tie Benefits	1,700
Imports/Sales	1,114
Demand Resources	3,130
OP 4 Action 12 & 13 - Min Res	443
Expansion Unit Capacity	-
Capacity	39,103
<u>Installed Capacity Requirement Calculation Details</u>	
	2013/14
Annual Peak	28,570
Capacity	39,103
Tie Benefits	1,700
HQICCs	916
OP4 - Action 12 & 13	643
Minimum Reserve Requirement	(200)
ALCC	4,531
Installed Capacity Requirements	32,817
Net ICR	31,901
Reserve Margin with HQICCs	14.9%
Reserve Margin without HQICCs	11.7%

$$\text{Installed Capacity Requirement (ICR)} = \frac{\text{Capacity} - \text{Tie Benefits} - \text{OP4 Load Relief}}{1 + \frac{\text{ALCC}}{\text{APk}}} + \text{HQICCs}$$

- ALCC is the “Additional Load Carrying Capability” used to bring the system to the 0.1 Reliability Criterion.

# LRA for Connecticut

Local Resource Adequacy Requirement - Connecticut		
Connecticut Zone		2013/14 FCA
Resource <sub>z</sub>	[1]	9,337
Proxy Units <sub>z</sub>	[2]	0
Proxy Units Adjustment <sub>z</sub>	[3]	0
Firm Load Adjustment <sub>z</sub>	[4]	2,010
FOR <sub>z</sub>	[5]	0.0583
LRA <sub>z</sub>	$[6]=[1]+[2]-([3]/(1-[5]))-([4]/(1-[5]))$	<b>7,203</b>
Rest of New England Zone		
resource	[7]	27,623
Proxy Units	[8]	0
Proxy Units Adjustment	[9]	0
Firm Load Adjustment	[10] = -[4]	-2,010
Total System Resource	$[11]=[1]+[2]-[3]-[4]+[7]+[8]-[9]-[10]$	36,959

- Total Resources excludes HQICCs

# LRA for NEMA/Boston

Local Resource Adequacy Requirement - NEMA/BOSTON		
NEMA/BOSTON Zone		2013/14 FCA
Resource <sub>z</sub>	[1]	3,960
Proxy Units <sub>z</sub>	[2]	0
Proxy Units Adjustment <sub>z</sub>	[3]	0
Firm Load Adjustment <sub>z</sub>	[4]	1,340
FOR <sub>z</sub>	[5]	0.0859
LRA <sub>z</sub>	[6]=[1]+[2]-([3]/(1-[5]))-([4]/(1-[5]))	<b>2,494</b>
<b>Rest of New England Zone</b>		
Resource	[7]	33,000
Proxy Units	[8]	0
Proxy Units Adjustment	[9]	0
Firm Load Adjustment	[10] = -[4]	-1,340
Total System Resource	[11]=[1]+[2]-[3]-[4]+[7]+[8]-[9]-[10]	36,959

- Total Resources excludes HQICCs

# MCL for ME

Local RA Requirement - RestofNewEngland (for Maine MCL calculation)		
Rest of New England Zone		2013/14 FCA
Resource <sub>z</sub>	[1]	33,338
Proxy Units <sub>z</sub>	[2]	0
Surplus Capacity Adjustment <sub>z</sub>	[3]	4,470
Firm Load Adjustment <sub>z</sub>	[4]	-125
FOR <sub>z</sub>	[5]	0.0621
LRA <sub>z</sub>	[6]=[1]+[2]-([3]/(1-[5]))-([4]/(1-[5]))	<b>28,705</b>
Maine Zone		
Resource	[7]	3,621
Proxy Units	[8]	0
Proxy Units Adjustment	[9]	0
Firm Load Adjustment	[10] = -[4]	125
Total System Resource	[11]=[1]+[2]-[3]-[4]+[7]+[8]-[9]-[10]	36,959
Maximum Capacity Limit - Maine		
Commitment Period		2013/14 FCA
ICR for New England	[1]	31,901
LRA <sub>RestofNewEngland</sub>	[2]	28,705
Maximum Capacity Limit <sub>y</sub>	[3]=[1]-[2]	<b>3,196</b>

- Total Resources excludes HQICCs

# Comparison of CT LRA for 2013/14 FCA Vs. 2012/13 FCA

Local Resource Adequacy Requirement - Connecticut		2013/14 FCA	2012/13 FCA
Connecticut Zone		<b>CT</b>	
Resource <sub>z</sub>	[1]	9,337	9,111
Proxy Units <sub>z</sub>	[2]	0	0
Proxy Units Adjustment <sub>z</sub>	[3]	0	0
Firm Load Adjustment <sub>z</sub>	[4]	2,010	2,325
FOR <sub>z</sub>	[5]	0.0583	0.0592
LRA <sub>z</sub>	[6]=[1]+[2]-([3]/(1-[5]))-([4]/(1-[5]))]	<b>7,203</b>	<b>6,640</b>
Rest of New England Zone		<b>Rest of New England</b>	
Resource	[7]	27,623	27,948
Proxy Units	[8]	0	0
Proxy Units Adjustment	[9]	0	0
Firm Load Adjustment	[10] = -[4]	-2,010	-2,325
Total System Resources	[11]=[1]+[2]-[3]-[4]+[7]+[8]-[9]-[10]	36,959	37,059

- 2013/14 LRA & MCL values calculated with “At Criteria” and 2012/13 calculated with “As Is” system conditions
- Total Resources excludes HQICCs

# Comparison of NEMA/Boston LRA for 2013/14 FCA Vs. 2012/13 FCA

Local Resource Adequacy Requirement - NEMA/BOSTON		2013/14 FCA	2012/13 FCA
NEMA/BOSTON Zone		<b>NEMA/BOSTON</b>	
Resource <sub>z</sub>	[1]	3,960	3,813
Proxy Units <sub>z</sub>	[2]	0	0
Proxy Units Adjustment <sub>z</sub>	[3]	0	0
Firm Load Adjustment <sub>z</sub>	[4]	1,340	1,620
FOR <sub>z</sub>	[5]	0.0859	0.0970
LRA <sub>z</sub>	[6]=[1]+[2]-([3]/(1-[5]))-([4]/(1-[5]))	<b>2,494</b>	<b>2,019</b>
Rest of New England Zone		<b>Rest of New England</b>	
Resource	[7]	33,000	33,246
Proxy Units	[8]	0	0
Proxy Units Adjustment	[9]	0	0
Firm Load Adjustment	[10] = -[4]	-1,340	-1,620
Total System Resources	[11]=[1]+[2]-[3]-[4]+[7]+[8]-[9]-[10]	36,959	37,059

- 2013/14 LRA & MCL values calculated with “At Criteria” and 2012/13 calculated with “As Is” system conditions
- Total Resources excludes HQICCs

# Comparison of ME MCL for 2013/14 FCA Vs. 2012/13 FCA

Local Resource Adequacy Requirement - RestofNewEngland (for Maine MCL calculation)		2013/14 FCA	2012/13 FCA
<b>Rest of New England Zone</b>		<b>Rest_of_New_England</b>	
Resource <sub>z</sub>	[1]	33,338	33,443
Proxy Units <sub>z</sub>	[2]	0	0
Surplus Capacity Adjustment <sub>z</sub>	[3]	4,470	0
Firm Load Adjustment <sub>z</sub>	[4]	-125	4,455
FOR <sub>z</sub>	[5]	0.0621	0.0591
LRA <sub>z</sub>	[6]=[1]+[2]-([3]/(1-[5]))-([4]/(1-[5]))	<b>28,705</b>	<b>28,708</b>
<b>Maine Zone</b>		<b>Maine</b>	
Resource	[7]	3,621	3,616
Proxy Units	[8]	0	0
Proxy Units Adjustment	[9]	0	0
Firm Load Adjustment	[10] = -[4]	125	-4,455
Total System Resource	[11]=[1]+[2]-[3]-[4]+[7]+[8]-[9]-[10]	36,959	37,059

- 2013/14 LRA & MCL values calculated with “At Criteria” and 2012/13 calculated with “As Is” system conditions
- Total Resources excludes HQICCs

# Assumptions for the ICR Values Calculation for the 2013/14 FCA

# Modeling the New England Control Area

The New England ICR is calculated using a single area LOLE model (Westinghouse Capacity Model Program).

- Internal transmission constraints are not modeled. All loads and resources are assumed to be connected to a single electric bus.
- Internal transmission constraints are addressed through Local Sourcing Requirements and Maximum Capacity Limits.

# Assumptions for the 2013/14 ICR Values

- *Load Forecast*
  - Load Forecast distribution
- *Resource Data*
  - Existing Qualified Generating Capacity Resources
  - Existing Qualified Intermittent Power Capacity Resources
  - Existing Qualified Import Capacity Resources and Known Sales
  - Existing Qualified Demand Resources (DR)
- *Resource Availability*
  - Generating Resources Availability
  - Intermittent Power Resources Availability
  - Demand Resources Availability
- *Transmission Transfer Capability*
  - Connecticut Import
  - NEMA/Boston Import
  - Maine-New Hampshire Interface
- *Load Relief from OP 4 Actions*
  - Tie Reliability Benefits
    - HQICCs
    - Maritimes
    - New York
  - 5% Voltage Reduction

# Load Forecast Data

- **Load forecast assumption from the 2010 CELT Report Load Forecast**
- **The load forecast weather related uncertainty is represented by a weekly distribution of daily peak loads for calculating system resource adequacy.**
  - Weekly distributions of daily peak loads represented by the expected value (mean), the standard deviation and the skewness.

# Load Forecast Data – New England System Load Forecast

## Monthly Peak Load (MW) – 50/50 Forecast

Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14
25,384	28,570	28,570	23,106	18,142	19,638	22,400	22,400	21,558	20,204	17,719	20,326

There is a distribution associated with each monthly peak. The distribution associated with the Summer Seasonal Peak (July & August) is show below:

## Probability Distribution of Annual Peak Load (MW)

10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	95/5
27,230	27,470	27,795	28,160	28,570	29,005	29,450	30,085	30,840	31,490

# Resource Data – Existing Qualified Generating Capacity Resources (MW)

Load Zone	Generation		Intermittent		Total	
	Summer	Winter	Summer	Winter	Summer	Winter
MAINE	3,011.753	3,223.452	236.537	291.579	3,248.290	3,515.031
NEW HAMPSHIRE	4,019.376	4,176.631	158.405	200.229	4,177.781	4,376.860
VERMONT	885.040	947.349	76.293	117.328	961.333	1,064.677
CONNECTICUT	7,965.798	8,347.667	413.891	429.739	8,379.689	8,777.406
RHODE ISLAND	2,603.912	2,949.199	5.889	8.746	2,609.801	2,957.945
SOUTH EAST MASSACHUSETTS	6,010.406	6,484.794	79.115	83.869	6,089.521	6,568.663
WEST CENTRAL MASSACHUSETTS	3,860.992	4,134.103	48.174	68.443	3,909.166	4,202.546
NORTH EAST MASSACHUSETTS & BOSTON	3,271.875	3,704.645	67.753	71.274	3,339.628	3,775.919
<b>Total New England</b>	<b>31,629.152</b>	<b>33,967.840</b>	<b>1,086.057</b>	<b>1,271.207</b>	<b>32,715.209</b>	<b>35,239.047</b>

- Winter Generation values shown for informational purposes, only summer values are modeled.
- Intermittent Resources have both summer and winter values modeled.

# Resource Data – Existing Qualified Import Capacity Resources

Resource Name	Interface	Summer Qualified Capacity (MW)	Import Capacity Modeled in ICR (MW)	EFORd (%)
NYPA - CMR	NY AC Ties	68.800	68.800	-
NYPA - VT	NY AC Ties	15.300	15.300	-
VJO - Highgate	HQ Highgate	225.000	194.000	1.00
VJO - Phase I/II	Phase I/II	110.000	39.000	3.00
Lievre River Project - Import	Phase I/II	240.000	240.000	6.43
Erie Boulevard Hydropower - Import	NY AC Ties	697.000	697.000	3.54
<b>Total Imports</b>		<b>1,356.100</b>	<b>1,254.100</b>	<b>3.45</b>

- Resource-backed imports modeled with EFORd based on NERC class average data for large Hydro.
- Imports modeled with tie line forced outage rates of 3% for HQ Phase II, 1 % for Highgate and 0% for New York ties.
- Total EFORd is the weighted average using the Summer Capacity.
- The VJO imports are modeled with delist bids to reflect the value of the firm contract.

# Resource Data – Known Sales (MW)

<b>Export</b>	<b>Summer</b>	<b>Winter</b>
LIPA over Cross Sound Cable	100.000	100.000

- Modeled as removed capacity from the resource supplying the export.

# Resource Data – Existing Qualified Demand Resources (MW)

Load Zone	On-Peak		Seasonal Peak		RT Demand Response		RT Emergency Gen		Total	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
MAINE	58.483	55.884	-	-	279.165	297.060	35.023	32.519	372.671	385.463
NEW HAMPSHIRE	61.842	61.225	-	-	45.409	44.613	39.135	37.191	146.386	143.029
VERMONT	71.766	70.988	-	-	33.443	43.409	18.124	17.152	123.333	131.549
CONNECTICUT	115.672	110.337	250.727	250.727	291.940	256.061	298.901	282.985	957.240	900.110
RHODE ISLAND	68.612	67.609	1.727	1.727	51.417	43.277	93.078	81.681	214.834	194.294
SOUTH EAST MASSACHUSETTS	112.545	110.288	1.727	1.727	153.524	137.281	78.961	66.857	346.757	316.153
WEST CENTRAL MASSACHUSETTS	94.516	92.013	19.188	19.188	142.505	119.715	100.221	86.314	356.430	317.230
NORTH EAST MASSACHUSETTS & BOSTON	208.904	205.942	-	-	254.596	224.063	148.989	128.791	612.489	558.796
<b>Total New England</b>	<b>792.340</b>	<b>774.286</b>	<b>273.369</b>	<b>273.369</b>	<b>1251.999</b>	<b>1165.479</b>	<b>812.432</b>	<b>733.490</b>	<b>3130.140</b>	<b>2946.624</b>

- The DR capacity modeled in the ICR is the Summer Existing Qualified DR Capacity by Load Zone for FCA4.
- The Qualified Capacity rating of DR includes the Transmission and Distribution (T&D) Loss Adjustment (Gross-up) of 8%.

# Resource Assumptions for the LRA and MCL Calculation

Type of Resource	New England	Connecticut	NEMA/Boston	Maine
Generating Resources	31,489.152	7,965.798	3,278.415	3,011.753
Intermittent Power Resources	1,086.057	413.891	68.868	236.849
Demand Resources	3,130.140	957.240	612.489	372.671
Import Resources	1,254.100	-	-	-
<b>Total MW Modeled in LRA and MCL</b>	<b>36,959.449</b>	<b>9,336.929</b>	<b>3,959.772</b>	<b>3,621.273</b>

- Total Resources excludes HQICCs

# Availability Assumptions - Generating Resources

- **Forced Outages Assumption**

- Each generating unit's Equivalent Forced Outage Rate on Demand (non-weighted EFORd) modeled
- Based on a 5-year average (December 2004 – November 2009) of generator submitted Generation Availability Data System (GADS) data
- NERC GADS Class average data will be used for immature units

- **Scheduled Outage Assumption**

- Each generating unit weeks of Maintenance modeled
- Based on a 5-year average (January 2005 – December 2009) of each generator's actual historical average of planned and maintenance outages scheduled at least 14 days in advance
- NERC GADS Class average data will be used for immature units

# Availability Assumptions - Generating Resources

Resource Category	Summer MW	Assumed Average EFORd Weighted by Summer Ratings	Assumed Average Maintenance Weeks Weighted by Summer Ratings
Combined Cycle	11,385	4.6	5.8
Fossil	9,333	7.2	4.3
Nuclear	4,629	1.4	3.1
Hydro (Includes Pumped Storage)	3,027	1.9	2.6
Combustion Turbine	2,914	6.7	2.0
Diesel	226	5.7	1.0
Miscellaneous	115	7.5	5.0
<b>Total System</b>	<b>31,629</b>	<b>4.9</b>	<b>4.3</b>

- Assumed summer MW weighted EFORd and Maintenance Weeks are shown by resource category for informational purposes. In the LOLE simulations, individual unit values are modeled.

# Availability Assumptions - Intermittent Power Resources

- Intermittent Power Resources are modeled as 100% available since their outages have been incorporated in their 5-year historical output used in their ratings determination.

# Availability Assumptions - Demand Resources

Load Zone	On-Peak		Seasonal Peak		RT Demand Response		RT Emergency Gen		Total	
	MW	Availability (%)	MW	Availability (%)	MW	Availability (%)	MW	Availability (%)	MW	Availability (%)
MAINE	58.483	100	-	-	279.165	100	35.023	100	372.671	100
NEW HAMPSHIRE	61.842	100	-	-	45.409	74	39.135	74	146.386	85
VERMONT	71.766	100	-	-	33.443	99	18.124	45	123.333	92
CONNECTICUT	115.672	100	250.727	100	291.940	76	298.901	87	957.240	89
RHODE ISLAND	68.612	100	1.727	100	51.417	48	93.078	17	214.834	51
SOUTH EAST MASSACHUSETTS	112.545	100	1.727	100	153.524	56	78.961	58	346.757	71
WEST CENTRAL MASSACHUSETTS	94.516	100	19.188	100	142.505	67	100.221	72	356.430	79
NORTH EAST MASSACHUSETTS & BOSTON	208.904	100	-	-	254.596	72	148.989	87	612.489	85
<b>Total New England</b>	<b>792.340</b>	<b>100</b>	<b>273.369</b>	<b>100</b>	<b>1251.999</b>	<b>76</b>	<b>812.432</b>	<b>73</b>	<b>3130.140</b>	<b>84</b>

- Based on DR Performance analysis described in 2/18/2010 PSPC presentation:  
[http://www.iso-ne.com/committees/comm\\_wkgrps/relblty\\_comm/pwrsuppln\\_comm/mtrls/2010/feb182010/dr\\_performance\\_fca4\\_2\\_18\\_2010.pdf](http://www.iso-ne.com/committees/comm_wkgrps/relblty_comm/pwrsuppln_comm/mtrls/2010/feb182010/dr_performance_fca4_2_18_2010.pdf)

# Transmission Transfer Capability Used in Calculating LRA and MCL (MW)

Interface	Limit
CT Import	2,500
NEMA/Boston Import	4,900
Maine-New Hampshire	1,600*

- The assumption was modified from 1525 MW to reflect the new load forecast.

# OP 4 Assumptions - Tie Reliability Benefits (MW)

<b>Control Area</b>	<b>Summer (MW)</b>	<b>Winter (MW)</b>
Québec - Phase II	916	916
Québec - Highgate	6	6
Maritimes	584	584
New York	194	194
<b>Total</b>	<b>1,700</b>	<b>1,700</b>

- Modeled with Forced Outage assumptions of 3% for Québec, 1% for Maritimes, and 0% for New York due to tie line availability.

# OP 4 Assumptions - Action 6 and 8 Voltage Reduction (%)

Year	Spring			Fall			Average of Spring & Fall		
	Action 6 >10 Min	Action 8 ≤ 10 Min	Total	Action 6 >10 Min	Action 8 ≤ 10 Min	Total	Action 6 >10 Min	Action 8 ≤ 10 Min	Total
2005	0.80	1.20	2.00	0.60	1.00	1.60	0.70	1.10	1.80
2006	3.50	1.00	4.50	0.65	1.20	1.85	2.08	1.10	3.18
2007	0.90	1.28	2.18	1.00	0.95	1.95	0.95	1.12	2.07
2008	0.80	1.70	2.50	1.00	1.80	2.80	0.90	1.75	2.65
2009	0.58	1.30	1.88	0.89	1.30	2.19	0.74	1.30	2.04
<b>2005 - 2009 Average</b>							1.07	1.27	2.35

- Use 5-year Average of Spring and Fall 5% Voltage Reduction test results

# OP 4 Assumptions - Action 6 and 8 Voltage Reduction (MW)

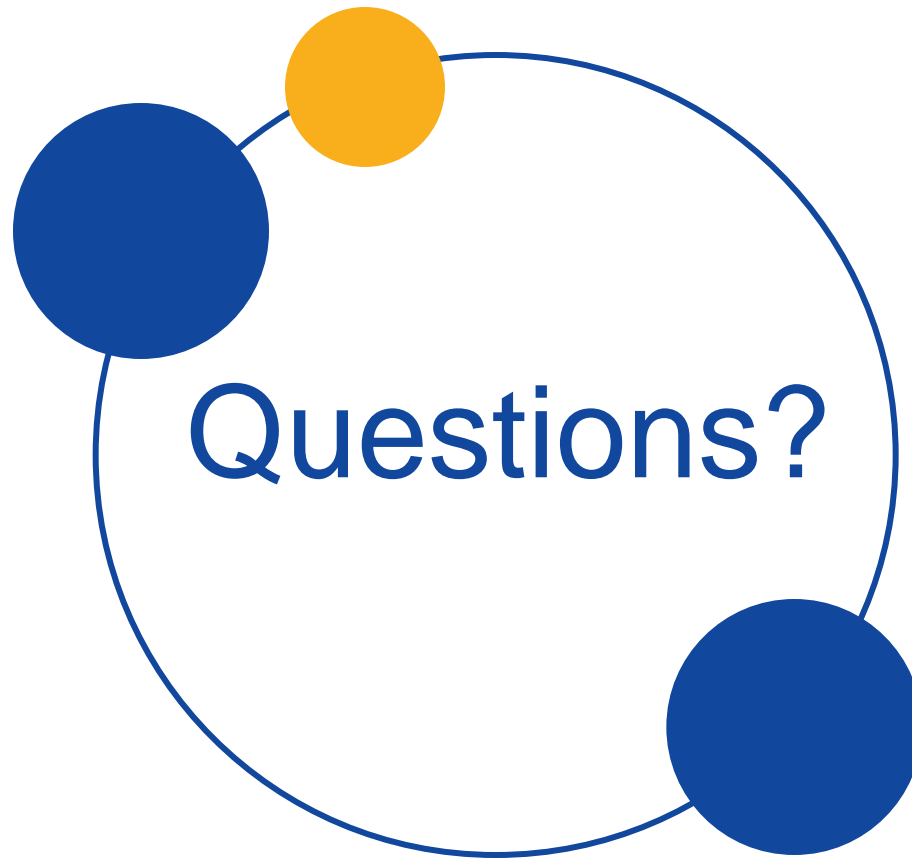
<b>2013/14</b>	<b>Peak Load</b>	<b>Passive DR</b>	<b>Action 6 5% Voltage Reduction (MW)</b>	<b>Action 8 5% Voltage Reduction (MW)</b>	<b>Total (MW)</b>
June – September	28,570	1,066	294	349	643
October – May	22,400	1,048	228	271	499

- Calculated as (Peak Load MW – Passive DR MW) \* % Assumption

# Summary of all MW Modeled in ICR

Type of Resource	2013/14 FCA	
	Summer	Winter
Generating Resources	31,629.152	31,629.152
Intermittent Power Resources	1,086.057	1,271.207
Demand Resources	3,130.140	3,130.140
Import Resources	1,114.100	1,114.100
OP 4 Voltage Reduction	643.000	499.000
Minimum Operating Reserve	(200.000)	(200.000)
1,700 MW Tie Benefits (includes 916 MW HQICCs)	1,700.000	1,700.000
<b>Total MW Modeled in ICR</b>	<b>39,102.449</b>	<b>39,143.599</b>

- Notes: Generating Resources is the summer Qualified Capacity values. Intermittent Power Resources have both the summer and winter capacity values modeled.
- Demand Resources is the Summer Qualified value which includes the Transmission & Distribution gross-up.
- Import Resources are modeled with the value of the firm VJO contract reflected.
- OP 4 Voltage Reduction includes both Action 6 and Action 8 MW assumptions.
- Minimum Operating Reserve of 200 MW is the minimum Operating Reserve requirement for transmission system security.



Questions?