



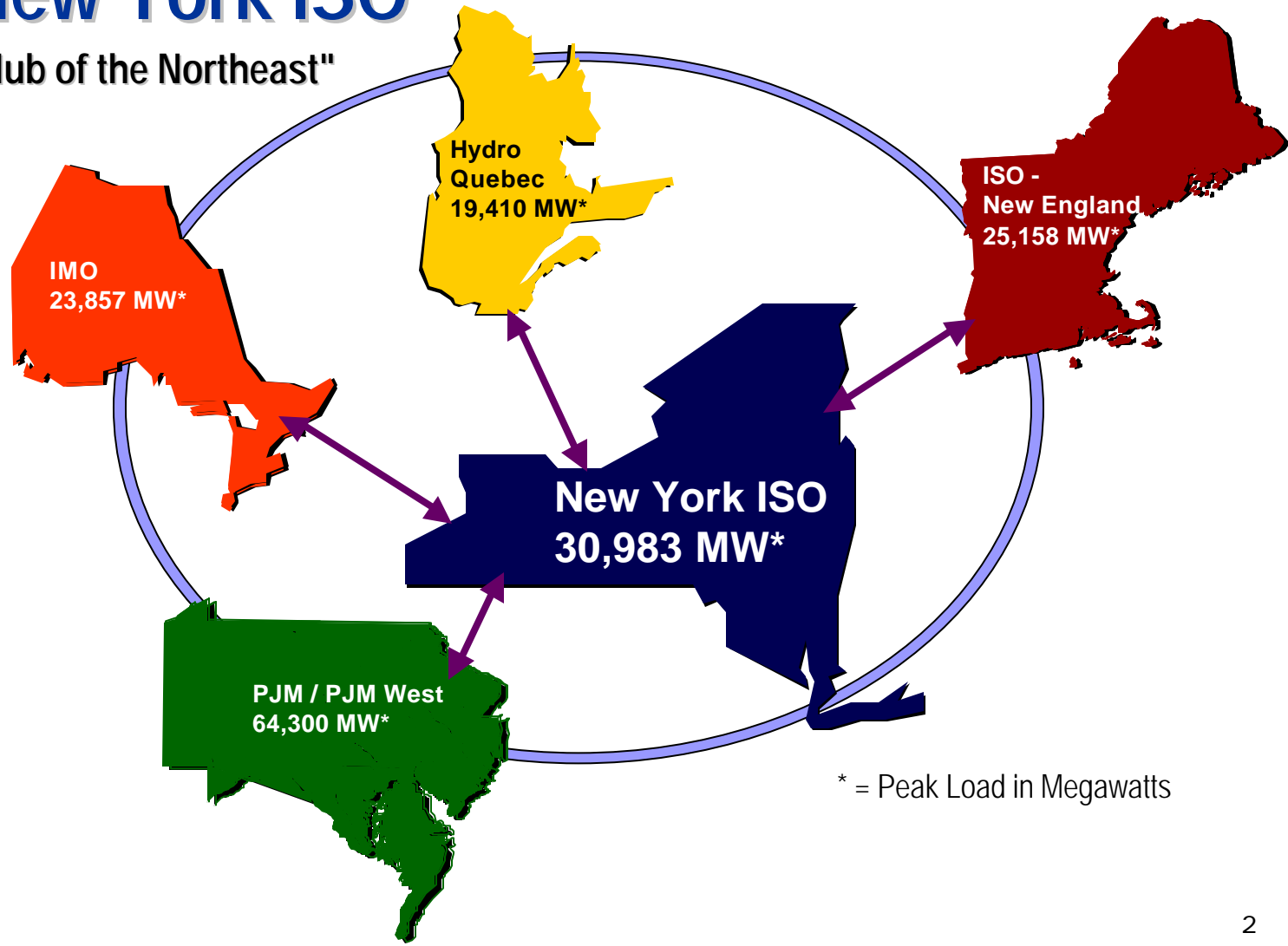
# Demand Response Programs In New York

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**Regional Demand Response Virtual Training**  
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# New York ISO

"Hub of the Northeast"





## NYISO's Demand Response Programs

- ✍ Emergency Demand Response Program
- ✍ I CAP Special Case Resources Program
- ✍ Day-Ahead Demand Response Program

Programs are aimed at wholesale electricity market participants and NYISO Direct Customers

# NYISO's Demand Response Programs

## EDRP

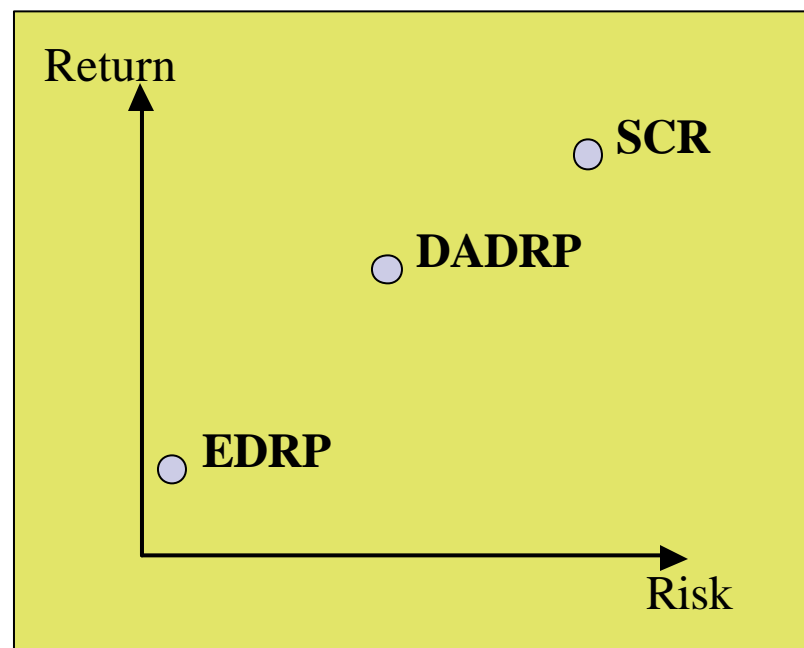
- ✍ Low Risk
- ✍ Low/Moderate Return

## DADRP

- ✍ Moderate Risk
- ✍ Moderate/High Return

## ICAP/SCR

- ✍ Moderate/High Risk
- ✍ Moderate/High Return



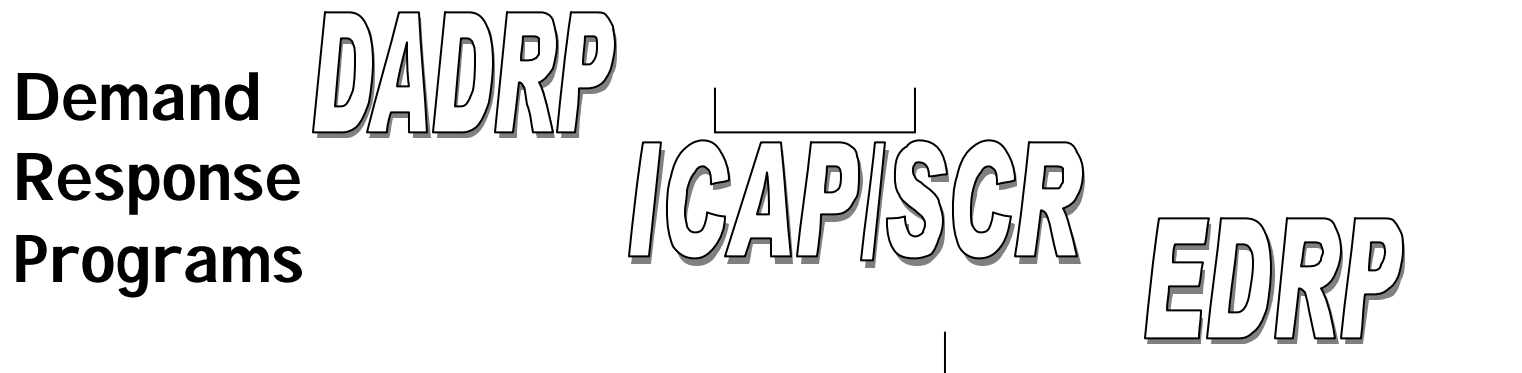
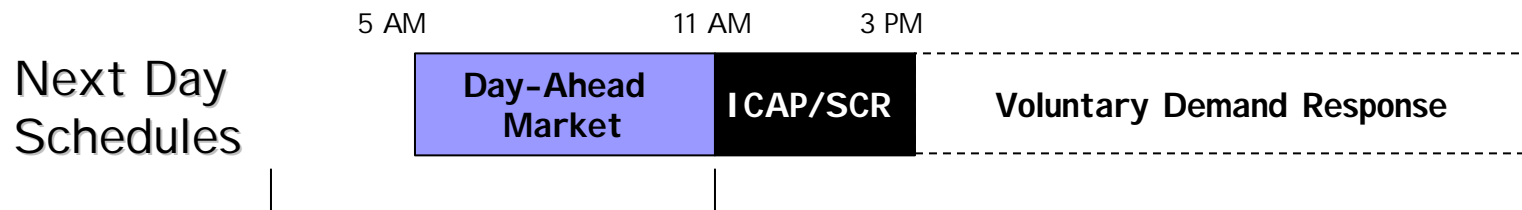


## Which Program Fits My Needs?

- ✍ If you have interruptible load, you can participate in:
  - ✍ The EDRP program
  - ✍ ICAP Special Case Resources
  - ✍ The Day-Ahead Demand Response program
- ✍ If you have standby generators, you can:
  - ✍ Join the EDRP program
  - ✍ Qualify as a Special Case Resource for ICAP

# A Day in the Summer Market

## Markets





# Emergency Demand Response Program (EDRP)

- ✍ Emergency/Reliability Program
- ✍ Minimum Resource Size: 100 kW, may aggregate within Zones
- ✍ Activated in Response to Operating Reserve Deficiency
- ✍ Payment for Energy (kWh) Reduction
- ✍ Provider notified of activation 2 hours ahead, if possible
  - ✍ Greater than 100 kW, may aggregate
  - ✍ Paid the greater of real-time marginal price or \$500/MWh & guaranteed 4 hour minimum
  - ✍ May set real-time market price at \$500
- ✍ Available to interruptible load & emergency backup generation
- ✍ Open to Load Serving Entities (LSEs), Direct Customers, and Aggregators (Curtailment Service Providers - CSPs)
- ✍ Activated after I CAP SCR resources if deemed necessary by Operators
- ✍ Voluntary Response – No Penalties for Non-Performance
- ✍ Credit Requirements: None
- ✍ Fee to become CSP: None



# EDRP: Demand Response Training Ground

- ✍ EDRP prepares customers for I CAP/SCR
  - ✍ Experience w/ EDRP curtailments provides basis for accurate and achievable I CAP/SCR capacity nomination
- ✍ EDRP prepares customers for DADRP
  - ✍ Experience w/ EDRP curtailments provides:
    - ✍ Basis for consistently achievable DADRP MW curtailment offers
    - ✍ Basis for required payment to offset costs of curtailment





# ICAP Special Case Resources (SCR) Program

- ✍ Emergency/Reliability Program
- ✍ Minimum Resource Size: 100 kW, may aggregate within Zones
- ✍ Activated in Response to Operating Reserve Deficiency
- ✍ Payment for Capacity (kW) Reduction
- ✍ Provider advised 21 hours ahead with 2 hour in-day notification during Operating Reserve deficiency
  - ✍ Paid for energy reduction: real-time market price or Strike Price (maximum \$500/MWh), whichever is greater & guaranteed 4 hour minimum
  - ✍ May set real time market price under scarcity pricing rules
- ✍ Available to interruptible load & emergency backup generation
- ✍ Open to Load Serving Entities (LSEs), Direct Customers, and Aggregators (Responsible Interface Providers – RIPs)
- ✍ Activated prior to Emergency Demand Response resources
- ✍ Mandatory Response – Resources Derated for Non-Compliance
- ✍ Credit Requirements: None
- ✍ Fee to become RIP: None



# ICAP/SCR: Transition from EDRP

## ✍ Program Similarities

- ✍ Events called during identical system conditions
- ✍ Energy payment provided
- ✍ 2-Hour In-Day Notice

## ✍ Program Differences

- ✍ ICAP/SCR invoked before EDRP
- ✍ Up-Front capacity payment commitment
- ✍ Dispatch based, in part, on customer terms (strike price)
- ✍ Penalties for non-compliance



## ICAP SCR Benefits

- ✍ Customers can dictate terms of UCAP sale
  - ✍ Negotiate price UCAP to be sold at through a bilateral agreement
  - ✍ Submit offer (incl. MW's and offer price) to sell capacity into any of the NYISO auctions
- ✍ Real-Time energy reductions during declared events results in additional energy payment

## ICAP SCR Penalty

- ✍ **Deficiency Penalty:** Retroactive penalty assessed if customer unable to verify contracted demand reduction (CDR) during contract period
  - ✍ Metered load at or below CDR during any single hour of an event or verification test nullifies any exposure to "Deficiency Penalty"
- ✍ **Derating:** Avg. event performance over previous 12 months used to recalculate UCAP. Less than full performance limits amount of capacity that can be sold in future.



# Day-Ahead Demand Response Program (DADRP)

- ✍ Economic Program
- ✍ Minimum Resource Size: 1 MW, may aggregate within Zones
- ✍ Load bids interruption in Day-Ahead Market just like a generator - if chosen, can set marginal price
- ✍ Payment for Energy (kWh) Reduction
- ✍ Parties submitting accepted bids get:
  - ✍ Notified by 11:00 a.m. of schedule for the next day (starting at midnight)
  - ✍ incentive credit (fixed load bid reduced by amount of curtailment provided)
  - ✍ paid greater of marginal price or bid for actual interruption
- ✍ Available to interruptible load only (generation excluded)
- ✍ Open to Load Serving Entities (LSEs), Direct Customers, and Aggregators (Demand Reduction Providers – DRPs)
- ✍ Activated prior to Emergency Demand Response resources
- ✍ Mandatory Response – Penalties Assessed for Non-Compliance
  - ✍ penalized for buy-through at Day-Ahead or Real-Time marginal price, whichever is greater
- ✍ Credit Requirements: Relaxed from Generator Levels
- ✍ Fee to become DRP: None



# DADRP: Progressing from EDRP

## ✍ Program Similarities

- ✍ Guaranteed minimum energy payment rate specified in bid
- ✍ Performance calculation methodology identical

## ✍ Program Differences

- ✍ Curtailment opportunities derived based on customer bid **not** system conditions
- ✍ Customer better able to identify risk and indicate relevant payment required for undertaking risk



# DADRP Curtailment Opportunities

- ✍ Customer dictates terms of curtailment via bid:
  - ✍ Strike Price (\$/MW)
  - ✍ Curtailment Amount (MWs)
  - ✍ Start Time
  - ✍ Duration
- ✍ If bid is scheduled, Day-Ahead notice given
- ✍ Bids not required every day ✍ Increased Flexibility

## DADRP Benefits

- ✍ **Guaranteed Min. Payment**
  - Bid Price \* Curtailment Amount \* Duration
- ✍ Customer uses bid price to ensure sufficient payment is received to offset outage costs and acceptance of additional risk
- ✍ Paid at LBMP – supplemental payment made if guaranteed minimum payment not achieved



# Performance Measurement (All)

- ✍ Customer Baseline Load approach
  - ✍ Out of last 10 days, average of 5 highest energy consumption blocks corresponding to load reduction period
  - ✍ Is 5 too many? Too few?
- ✍ Optional weather-sensitive CBL
  - ✍ Shifts CBL upwards or downwards  $\pm 20\%$  so as to line up CBL and actual load in hours just prior to event
  - ✍ Proxy for weather variables
  - ✍ Consider gaming of CBL



## Metering Requirements (All)

- ✍ Hourly interval meters standard
- ✍ Reduced accuracy metering (2% or better) allowed – takes advantage of EMS opportunities
- ✍ Small customer aggregation program allows other validation methods (e.g., statistical sampling)
- ✍ Reserves/regulation market participants must have metering equivalent to generators





# Small Customer Aggregation Metering and Verification Rules

- ✍ Small Customer Aggregation (SCA) Currently Applies to EDRP, SCR, and DADRP
- ✍ Allows Participation without Interval Meters
- ✍ Proposed Generic Rules Would Guide Proposal-Specific Proposals
- ✍ Minimum Aggregation is Program-Specific
  - ✍ DADRP – 1 MW/Zone
  - ✍ RTDRP – 1 MW/Zone (proposed)
  - ✍ SCR/EDRP – 100 kW/Zone
- ✍ Each Proposal Reviewed by the NYI SO staff, Price Responsive Load Working Group, Must be Approved by a Majority of the Chairs and Vice-Chairs of the MC, BIC, and the Chairman PRLWG
- ✍ Must Comply with Proposed M&V Guidelines



## Past EDRP/SCR Experience

	Participants/ MW	Events	Load Curtailed	Payments
2001	292 712 MW	23 Hours Downstate 17 Hour Upstate	~425 MW 38% of CBL (summer)	\$4.2 Mil
2002	1711 1481 MW	22 Hours Downstate 10 Hour Upstate	~668 MW 34% of CBL (summer)	\$3.3 Mil
2003	1419 1531 MW	23 Hours Upstate and Downstate (To Date)	N/A	N/A



## RIP and CSP Total MW Registered

EDRP/SCR Breakdown Effective August 5, 2003

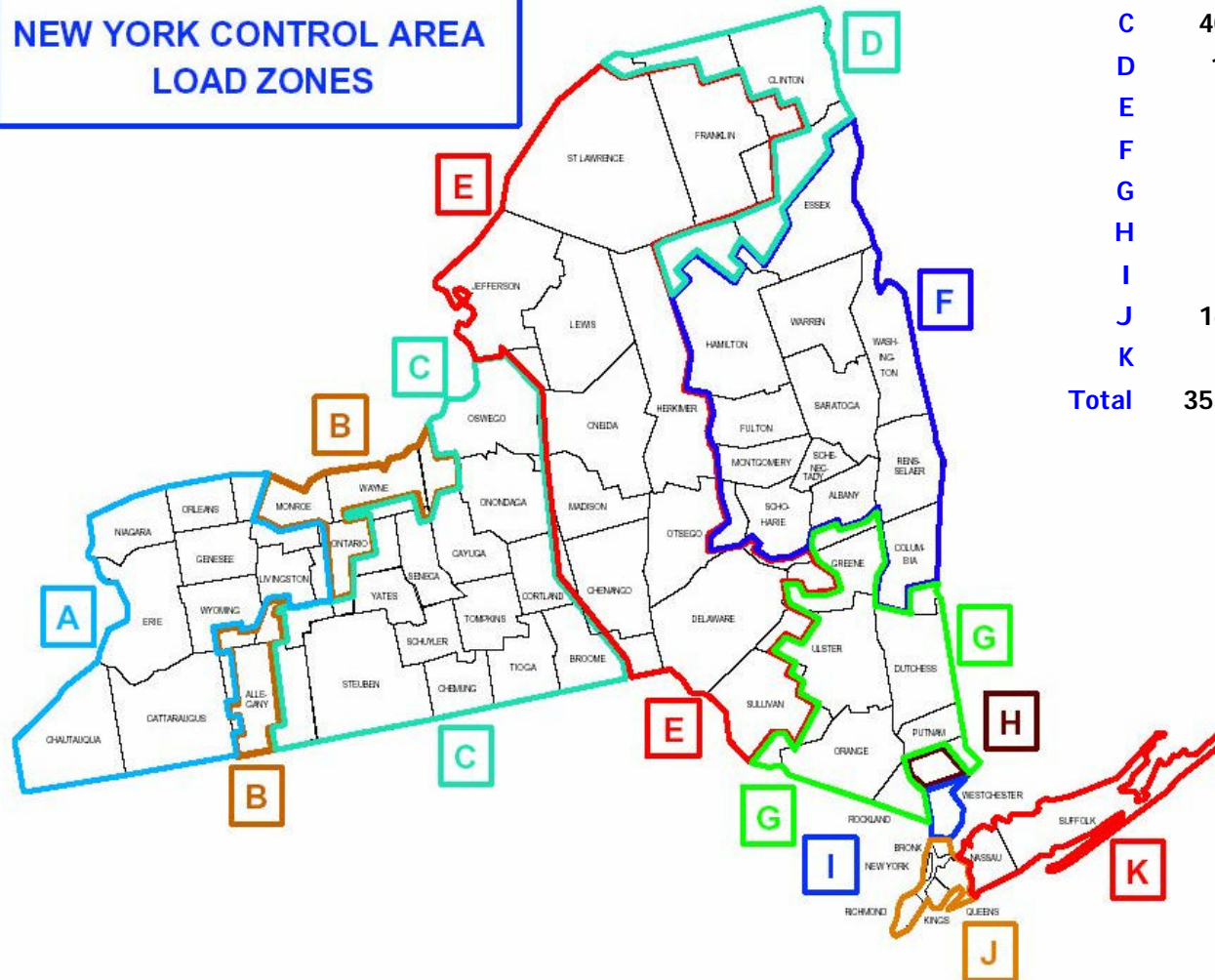
<i>RIP/CSP/DRP Type</i>	<i>EDRP/SCR MW</i>	<i>DADRP MW</i>
Aggregators	496.1 MW	21.5 MW
Direct Customers	153.9 MW	276.4 MW
Transmission Owners	881.0 MW	50.6 MW

# EDRP/SCR Registration by Zone

EDRP/SCR Registration as of 8/05/2003				
Zone	SCR Sold		EDRP Registered	
	MW Sold	# Customers Registered	MW Registered	# Customers Registered
A	333	33	100.6	48
B	30.2	13	32.8	16
C	75.6	30	26.9	82
D	3.8	5	219.4	9
E	12	8	60	41
F	53.5	12	68.3	58
G	0	0	55	36
H	2.4	4	5.7	6
I	8	8	17.6	31
J	126.7	64	112.7	100
K	7.1	11	179.7	804
TOTAL	652.3	188	878.7	1231
TOTAL EDRP & SCR	1531 MW		1419 Customers	

# DADRP Registration

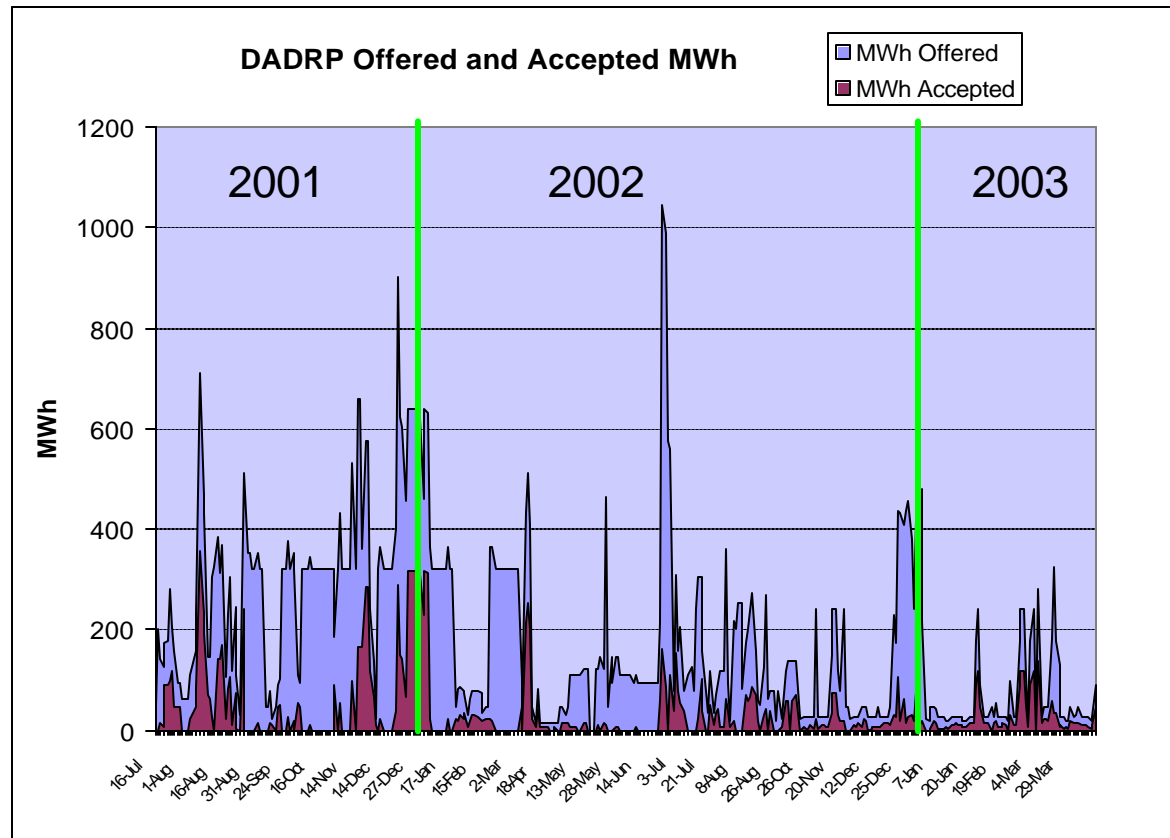
NEW YORK CONTROL AREA  
LOAD ZONES



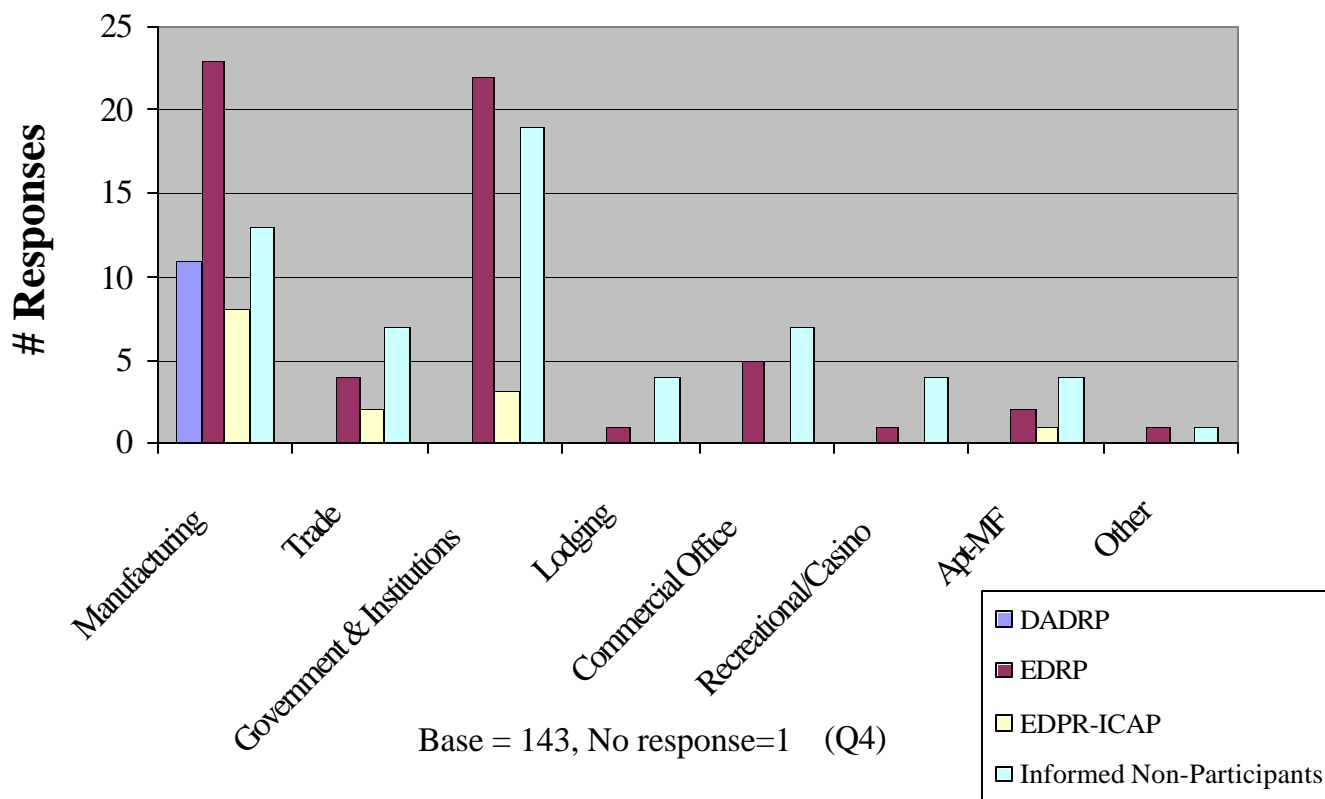
Zone	MW
A	73.4
B	0
C	40.9
D	100
E	14
F	92
G	2
H	2
I	1
J	16.2
K	12
<b>Total</b>	<b>353.5</b>



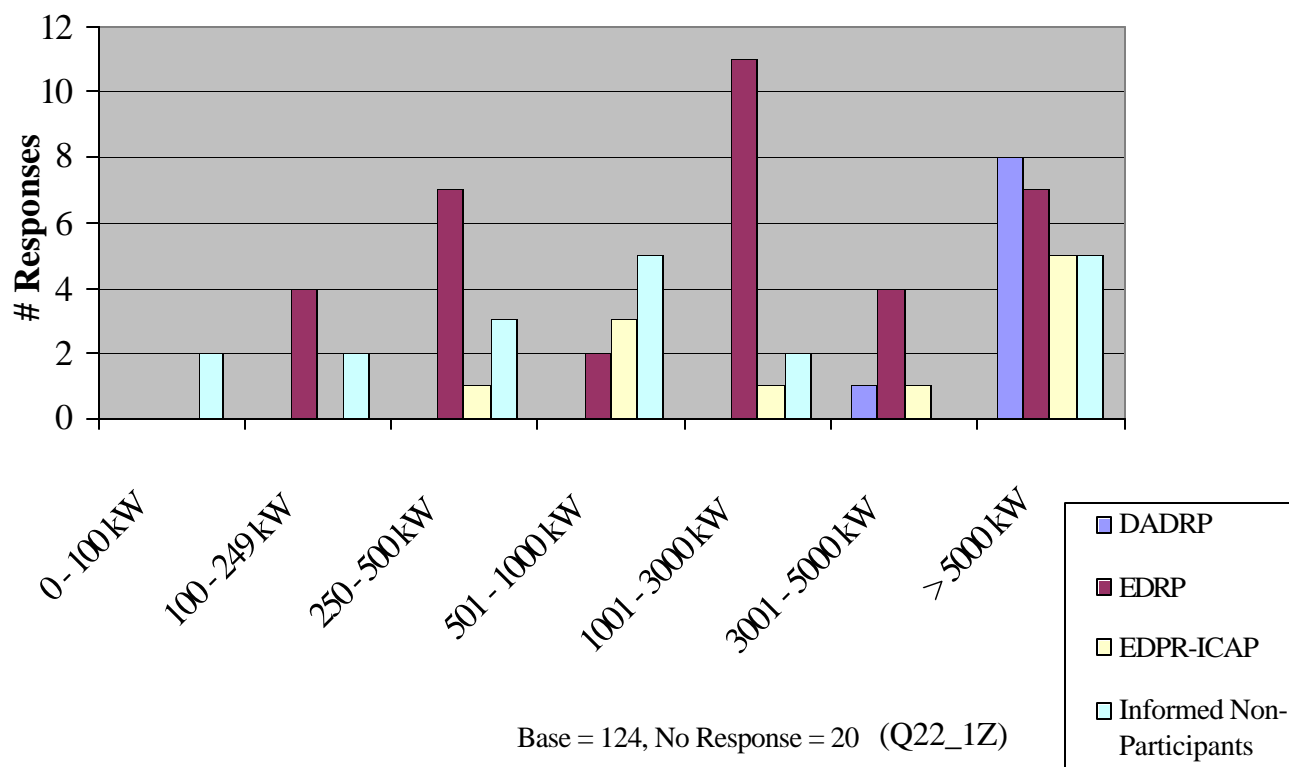
# DADRP Performance



# 2002 PRL Participants by Business



# 2002 PRL Participants by Peak Load







## Conclusion

- ✍ Current EDRP customers use PRL experience:
  - ✍ To help mitigate and assess relevant risk of participating in other NYISO PRL programs
  - ✍ To help calculate required benefits to offset undertaking additional risk
- ✍ New Customers
  - ✍ Assess demand response capability through internal audit of electricity consumption
  - ✍ Calculate risks associated with each program
  - ✍ Calculate benefits associated with each program
- ✍ Choose the NYISO PRL Program that best fits your abilities and needs

# Who Can Help Me Enroll?

## Demand Response Service Providers

Aggregators	NAME	EMAIL	PHONE
Advantage Energy Inc.	Jodie Spath	jmspaeth@advantageenergyusa.com	716-753-0250
Amerada Hess	Blas Hernandez	bhernandez@hess.com	732-750-6359
Con Edison Solutions Inc.	Fred Ornstein	ornsteina@conedsolutions.com	914-286-7080
Constellation NewEnergy Inc.	Binh Le	binh.le@constellation.com	212-883-5880 x6409
Consumerpowerline.org	Michael Gordon	mgordon@consumerpowerline.org	914-282-7000
eBidenergy Inc.	Robert Camera	rcamera@ebidenergy.com	585-427-2610
ECONergy Energy Company Inc.	Nathan Katzenstein	katzensteinn@econnergy.com	845-371-2288 x1104
Electrotek Concepts Inc	Craig Gruber	scr-response@wptinc.com	732-248-4336
Energy Analytics Inc.	William Hillis	wjhjr.1@juno.com	845-278-5062
Prenova Inc.	Mark Breuker	mbreuker@prenova.com	678-581-8111
Select Energy New York Inc.	Mike Mahoney	mahoneymt@nmenergy.com	315-460-3094
Sempra Energy Solutions	Raul Contreras	pcontreras@semprasolutions.com	619-696-3034
SourceOne	Mike Byrnes	mbyrnes@s1inc.com	646-935-0230 x221
Strategic Energy LLC	John E. Molinda	jmolinda@sel.com	412-394-6956
WebGen Systems	Michael Ciaccio	mciaccio@webgensystems.com	617-349-0742 x114
WPS Energy Services Inc.	Marc Hess	mhess@wpsenergy.com	920-617-6083
<b>Utilities</b>			
Central Hudson Gas & Electric Corp.	James Valleau	jvalleau@cenhud.com	845-486-5257
Consolidated Edison Co. of New York Inc.	Anita Ma	maa@coned.com	212-460-1328
Long Island Power Authority	Kevin Harrison	kharrison@keyspanenergy.com	631-436-4230
New York Power Authority	Michael Lupo	michael.lupo@nypa.gov	914-390-8119
New York State Electric & Gas Corp.	Frank Roma	jjzdimal@nyseg.com	607-762-7975
Rochester Gas & Electric Corp.	Frank Roma	jjzdimal@nyseg.com	607-762-7975
Niagara Mohawk Power Corp.	John Sierotnik	john.sierotnik@us.ngrid.com	315-428-5022



## Where Can I Get More Money?

### New York State Energy Research & Development Authority's PON 733-02 Peak Load Reduction Program

- ✍ Downloadable at [www.nyserda.org/733pon.pdf](http://www.nyserda.org/733pon.pdf)
- ✍ NYSERDA 1-866-NYSERDA (697-3732)
  - ✍ Elizabeth Perry (NYC office) 212-971-5342 x 3017
  - ✍ Chris Smith ext 3360
  - ✍ Pete Savio ext 3334
  - ✍ Lee Smith ext 3313



# Peak Load Reduction Program

- ✍ Standard Offer/Open enrollment
- ✍ Performance based incentive (\$/kW reduced)
- ✍ Foster NYISO DRP markets
- ✍ Targeted to projects that can be rapidly implemented
- ✍ Incentives capped at 70% of project cost
- ✍ Implementation date extended to 3/31/04
- ✍ Replacement option for emergency generators
- ✍ Aggregation Incentive offered

## Program Components

- ✍ Permanent Demand Reduction Efforts (PDRE)
- ✍ Load Curtailment/Shifting (LC/S)  
(direct load control encouraged)
- ✍ Dispatchable Emergency Generator Initiatives (DEGI)
- ✍ Interval Meters (IM)

# Reimbursement Incentive Levels <sup>1</sup>

Permanent Demand Reduction Efforts		Load Curtailment/Shifting		Distributed Emergency Generator Incentive	Interval Metering Incentive
Con Edison Service Territory	Non-Con Edison Service Territory	Con Edison Service Territory	Non-Con Edison Service Territory	Con Edison Service Territory only	Statewide
\$475/kW	\$175/kW	\$175/kW	\$55/kW	\$125/kW	\$2,500/meter

<sup>1</sup> NOTE: Contractors will be reimbursed the lesser of 70% of the Eligible Project Costs or the incentive caps set forth in Table 1. The Facility owner/operator must contribute no less than 30% of Eligible Project Costs.



## Permanent Demand Reductions

- ✍ Quickly implemented projects that result in long term demand reduction
- ✍ Common measures include lighting, motors, cooling system upgrades, etc
- ✍ 70% of eligible costs up to \$475/kW by 3/31/04

## Load Curtailment/Shifting

- ✍ Identify and control discretionary loads
- ✍ Supports Utility/NYI SO Demand Reduction Programs
- ✍ Direct load control encouraged
- ✍ Common measures include duty cycling, process shifting, lighting reductions, etc



## Aggregation Incentive

- ✍ Incentive of \$100,000 provided to aggregators who provide greater than 10 MW of verified load curtailment
- ✍ Rewards those aggregators who install hardware to enable 10 MW of new load reduction
- ✍ Interval Meters and behavior modifications are ineligible to receive the aggregation incentive
- ✍ Limit one per contractor

## Interval Meters

- ✍ Interval metering for primary service or significant equipment
- ✍ Intended to support NYISO & Utility Demand Reduction Programs
- ✍ Installed in accordance with NYS PSC
- ✍ PSC revenue grade
- ✍ Meter must be on PSC approved list, installed in accordance with New York State Public Service Commission regulations
- ✍ [http://www.dps.state.ny.us/approved\\_meter\\_list.pdf](http://www.dps.state.ny.us/approved_meter_list.pdf)



# Dispatchable Emergency Generator Initiatives

- ✍ Energy & environmental controls & enhancements to improve operations and responsiveness
- ✍ Supports NYISO EDRP and ICAP SCR
- ✍ Eligibility limited to facilities in Con-Edison service territory and machines with NO<sub>x</sub> emissions less than 35 lbs/MWh
- ✍ Common measures include switchgear, controls, test & tunes, dual fuel conversions, etc
- ✍ Replacement option w/emissions limits
  - ✍ New units must meet or exceed:
    - ✍ 18 lbs/MWh of NO<sub>x</sub>
    - ✍ .70 lbs/MWh of PM10
  - ✍ New units must emit less than ½ the NO<sub>x</sub> of the unit it's displacing
  - ✍ New unit should be of similar size to old unit





# Questions?

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