

# **2006 Demand Response Evaluation**

Price-Responsive Load Working Group  
January 31, 2007

*Draft – for Discussion Purposes Only*

# EDRP/SCR 2006 Performance

*Draft – for Discussion Purposes Only*

# Detail of 2006 ICAP/SCR Program Participation Level by Resource Type

Resource Type	ICAP			ICAP UnSold		
	# SCRs	# Participants	Sold MW	# SCRs	# Participants	Subscribed MW
Individual Resources	146	165	610.9	1	1	1.5
Aggregated Resources	67	1580	605.3	3	18	5.7
<b>Total</b>	<b>213</b>	<b>1745</b>	<b>1216.2</b>	<b>4</b>	<b>19</b>	<b>7.2</b>

- Based on August 2006 registration

# Program Participation Summary by Curtailment Service Provider Type

CSP Type #	Agent Type	EDRP <sup>(1)</sup>			ICAP UnSold <sup>(2)</sup>			ICAP <sup>(3)</sup>			DADRP <sup>(4)</sup>		
		# CSP	# Part.	MW	# CSP	# Part.	MW	# CSP	# Part.	MW	# CSP	# Part.	MW
21	Aggregator	0	0	0.0	4	19	7.2	22	1580	645.7	0	0	0.0
2	Curtailment Program End-Use Customer	0	0	0.0	0	0	0.0	2	2	140.9	0	0	0.0
1	Direct Customer	0	0	0.0	0	0	0.0	1	2	2.6	0	0	0.0
6	LSE	1	61	19.2	0	0	0.0	6	140	253.4	4	4	32.5
7	Transmission Owner	7	769	546.9	0	0	0.0	5	21	173.6	4	14	353.4
<b>37</b>	<b>Total</b>	<b>8</b>	<b>830</b>	<b>566.1</b>	<b>4</b>	<b>19</b>	<b>7.2</b>	<b>36</b>	<b>1745</b>	<b>1216.2</b>	<b>8</b>	<b>18</b>	<b>385.9</b>

Note 1: The sum of EDRP and ICAP UnSold = Total EDRP.

Note 2: Participants in the ICAP program with UnSold capacity are considered as EDRP resources in the month(s) that capacity is unsold. MW represent reductions registered in the ICAP program, but not sold.

Note 3: MW represent reduction MW sold in the ICAP program.

Note 4: Total NYISO participation is not necessarily the sum of all programs due to the rules that state that participants are allowed to participate in a reliability program (EDRP or ICAP) and economic (DADRP).

- Increase of 2 CSPs over 2005 figures
- 7% increase in registered MW vs. 2005

# 2005 Program Participation by Zone

Zone	EDRP <sup>(1)</sup>		ICAP UnSold <sup>(2)</sup>		ICAP <sup>(3)</sup>		DADRP <sup>(4)</sup>	
	#	MW	#	MW	#	MW	#	MW
A	23	34.3	0	0.0	111	333.5	4	138.0
B	11	6.4	0	0.0	36	61.6	0	0.0
C	70	27.5	0	0.0	35	80.5	2	37.4
D	9	104.5	0	0.0	3	84.1	1	100.0
E	42	38.6	0	0.0	17	23.1	1	10.0
F	43	43.8	0	0.0	25	65.6	7	84.0
G	24	34.4	1	1.5	9	16.8	0	0.0
H	9	6.8	0	0.0	1	1.0	0	0.0
I	19	7.5	0	0.0	20	13.8	1	2.0
J	112	121.7	5	1.2	1173	351.9	1	2.5
K	468	140.6	13	4.5	315	184.3	1	12.0
<b>Total</b>	<b>830</b>	<b>566.1</b>	<b>19</b>	<b>7.2</b>	<b>1745</b>	<b>1216.2</b>	<b>18</b>	<b>385.9</b>

Note 1: The sum of EDRP and ICAP UnSold = Total EDRP.

Note 2: Participants in the ICAP program with UnSold capacity are considered as EDRP resources in the month(s) that capacity is unsold. MW represent reductions registered in the ICAP program, but not sold.

Note 3: MW represent reduction MW sold in the ICAP program.

Note 4: Total NYISO participation is not necessarily the sum of all programs due to the rules that state that participants are allowed to participate in a reliability program (EDRP or ICAP) and economic (DADRP).

# Program Enrollment Changes

- Resources = registered ID
- Participants = individual account
- Multiple participants can aggregate as a single resource

## Program Enrollment by Resources - Changes 2005 to 2006

	2005		2006		Percent Change From 2005 to 2006		Subscribed MW per Participant		
	Count	MW	Count	MW	Participant Count	Subscribed MW	2005	2006	Percent Change
EDRP	957	577.6	830	566.1	-13%	-2%	0.60	0.68	13%
ICAP UnSold	5	11.8	4	7.2	-20%	-39%	2.36	1.80	-24%
ICAP	203	1083.3	213	1216.2	5%	12%	5.34	5.71	7%
DADRP	18	385.9	18	385.9	0%	0%	21.44	21.44	0%

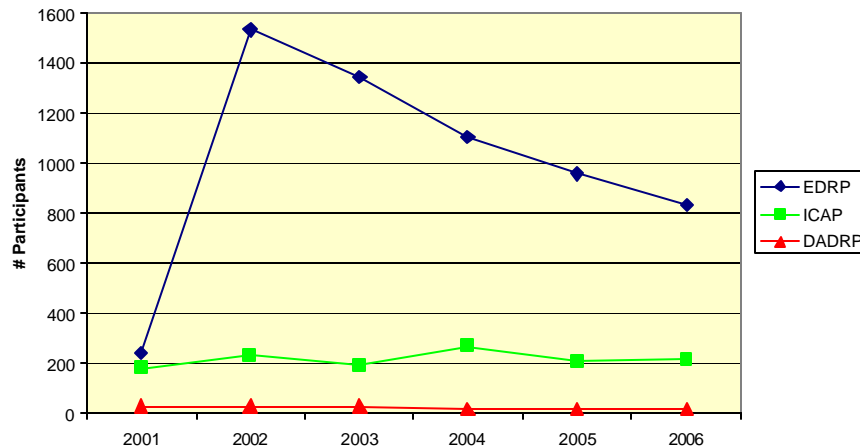
## Program Enrollment by Participants – Changes 2005 to 2006

	2005		2006		Percent Change From 2005 to 2006		Subscribed MW per Participant		
	Count	MW	Count	MW	Participant Count	Subscribed MW	2005	2006	Percent Change
EDRP	957	577.6	830	566.1	-13%	-2%	0.60	0.68	13%
ICAP UnSold	5	11.8	19	7.2	280%	-39%	2.36	0.38	-84%
ICAP	1782	1083.3	1745	1216.2	-2%	12%	0.61	0.70	15%
DADRP	18	385.9	18	385.9	0%	0%	21.44	21.44	0%

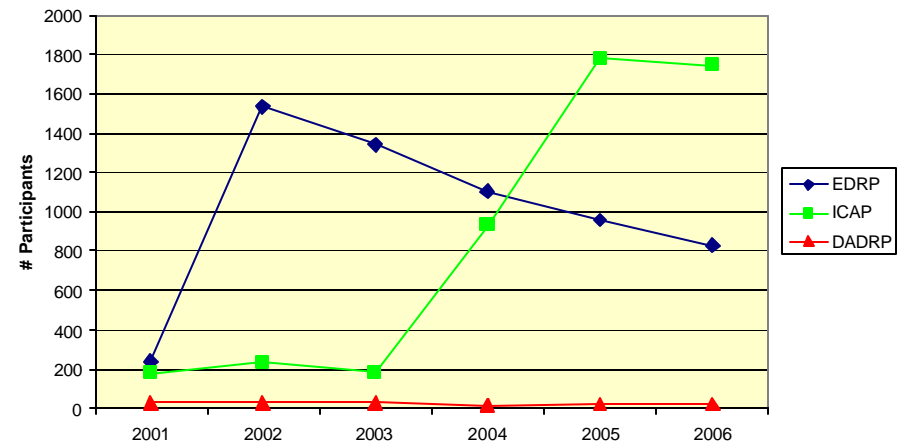
*Draft – for Discussion Purposes Only*

# Enrollment by Resources and Participants, 2001-2006

Demand Response Programs 2001 - 2006  
Participants by Resource ID

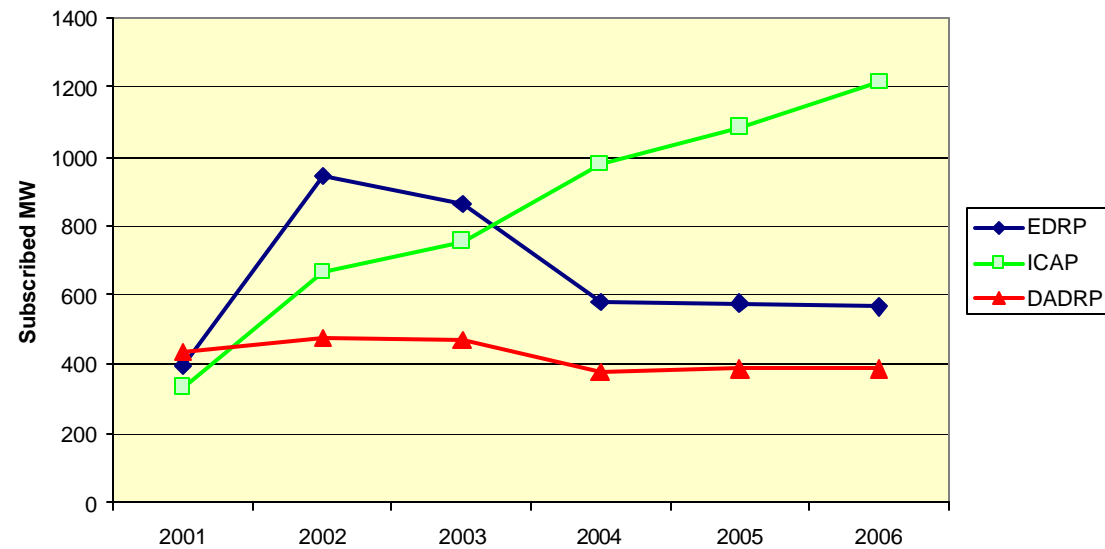


Demand Response Programs 2001 - 2006  
Individual Participants  
ICAP participants aggregated 2001 - 2003. Disaggregation of ICAP resources began in 2004



# MW Subscribed, 2001-2006

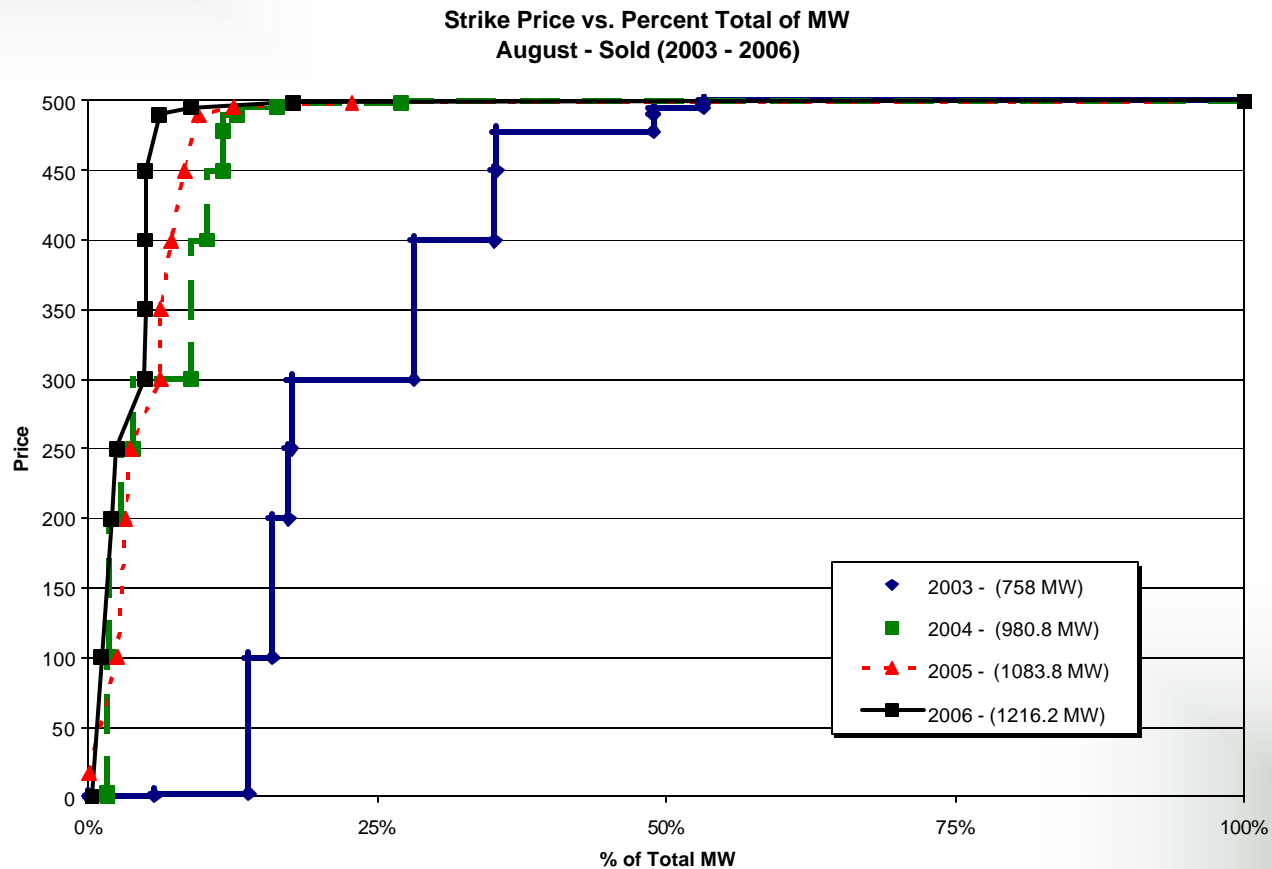
Demand Response Programs 2001 - 2006  
Subscribed MW



*Draft – for Discussion Purposes Only*



# Trend in SCR Strike Price, 2003-2006



*Draft – for Discussion Purposes Only*

# SCR Performance (All 2006 Events)

## Based on APMD

Zone	18-Jul		19-Jul		1-Aug		2-Aug		3-Aug	
	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW
A							88.2%	264.5		
B							104.6%	61.7		
C							84.9%	67.9		
H	0.0%	-								
I	86.3%	12.9								
J	87.3%	290.7	73.2%	243.6	50.2%	166.3	65.6%	219.2	69.3%	231.6
K	54.3%	92.4			28.8%	50.3	46.4%	79.9	45.3%	77.9
Total	76.3%	396.0			42.8%	216.6	73.4%	693.2	61.2%	309.5

## Based on CBL

Zone	18-Jul		19-Jul		1-Aug		2-Aug		3-Aug	
	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW
A							80.8%	201.9		
B							46.2%	22.7		
C							8.7%	5.8		
H	0.0%	-								
I	29.3%	4.4								
J	40.3%	134.1	32.7%	108.9	43.8%	144.8	45.2%	147.4	42.8%	142.8
K	55.9%	95.1			65.5%	114.5	69.8%	108.0	61.9%	106.4
Total	45.0%	233.5			51.3%	259.4	57.9%	485.8	49.3%	249.3

The number of resources submitted using the APMD method is greater than those submitted using the CBL method

*Draft – for Discussion Purposes Only*

# SCR MW Performance (Aug 2 Event Details)

## Based on APMD

2-Aug	MWh								
Zone	HB13	HB14	HB15	HB16	HB17	HB18	Estimated	% perf	Avg perf
A	0.0	281.4	347.6	347.5	348.4	262.1	300.0	88.2%	264.5
B	0.0	78.4	79.6	79.4	79.5	53.6	59.0	104.6%	61.7
C	0.0	70.4	82.8	85.7	86.4	82.1	80.0	84.9%	67.9
J	169.3	213.9	237.0	247.7	225.3	221.9	334.0	65.6%	219.2
K	70.2	78.4	83.5	86.5	81.4	79.3	172.0	46.4%	79.9
Total	239.5	722.5	830.4	846.8	821.0	699.1	945.0	73.4%	693.2

## Based on CBL

2-Aug	MWh								
Zone	HB13	HB14	HB15	HB16	HB17	HB18	Estimated	% perf	Avg perf
A	0.0	237.9	248.6	246.2	244.6	234.2	300.0	80.8%	201.9
B	0.0	32.8	30.4	26.7	24.5	21.9	59.0	46.2%	22.7
C	0.0	8.2	8.2	7.9	5.1	5.5	80.0	8.7%	5.8
J	129.5	148.1	167.0	157.1	145.5	137.3	334.0	45.2%	147.4
K	47.6	133.9	127.6	122.9	121.2	94.5	172.0	69.8%	108.0
Total	177.1	561.0	581.8	560.8	540.9	493.5	945.0	57.9%	485.8

During the peak performance hour on August 2, approximately 90% of expected performance was realized

# EDRP Energy Reduction (All 2006 Events)

## All 2006 Events

Zone	18-Jul		19-Jul		1-Aug		2-Aug		3-Aug	
	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW	% of Estimated	Avg MW
A							48.4%	13.5		
B							163.7%	1.6		
C							100.4%	14.1		
H	57.9%	1.7								
I	100.0%	2.0								
J	73.7%	59.7	102.8%	83.3	56.5%	53.7	95.4%	90.7	61.4%	64.5
K	46.6%	25.6			83.5%	43.4	64.7%	56.3	46.3%	24.1
Total	64.0%	89.0			66.1%	97.1	76.2%	171.3	56.4%	88.6

## Aug. 2 Event Details

Zone	2-Aug MWh						Estimated	% perf	Avg perf
	HB13	HB14	HB15	HB16	HB17	HB18			
A	0.0	14.6	16.5	13.6	13.3	9.7	28.0	48.4%	13.5
B	0.0	1.8	2.1	1.7	1.6	1.1	1.0	163.7%	1.6
C	0.0	16.4	16.5	14.1	12.3	10.9	14.0	100.4%	14.1
J	70.9	81.7	91.3	94.2	108.6	97.5	95.0	95.4%	90.7
K	66.9	2.4	68.7	75.3	66.1	58.4	87.0	64.7%	56.3
Total	137.8	116.9	195.0	198.9	201.7	177.6	225.0	76.2%	171.3

**EDRP performance was well above historical (40-45%) levels**

*Draft – for Discussion Purposes Only*

# 2006 Energy Curtailment Payments

---

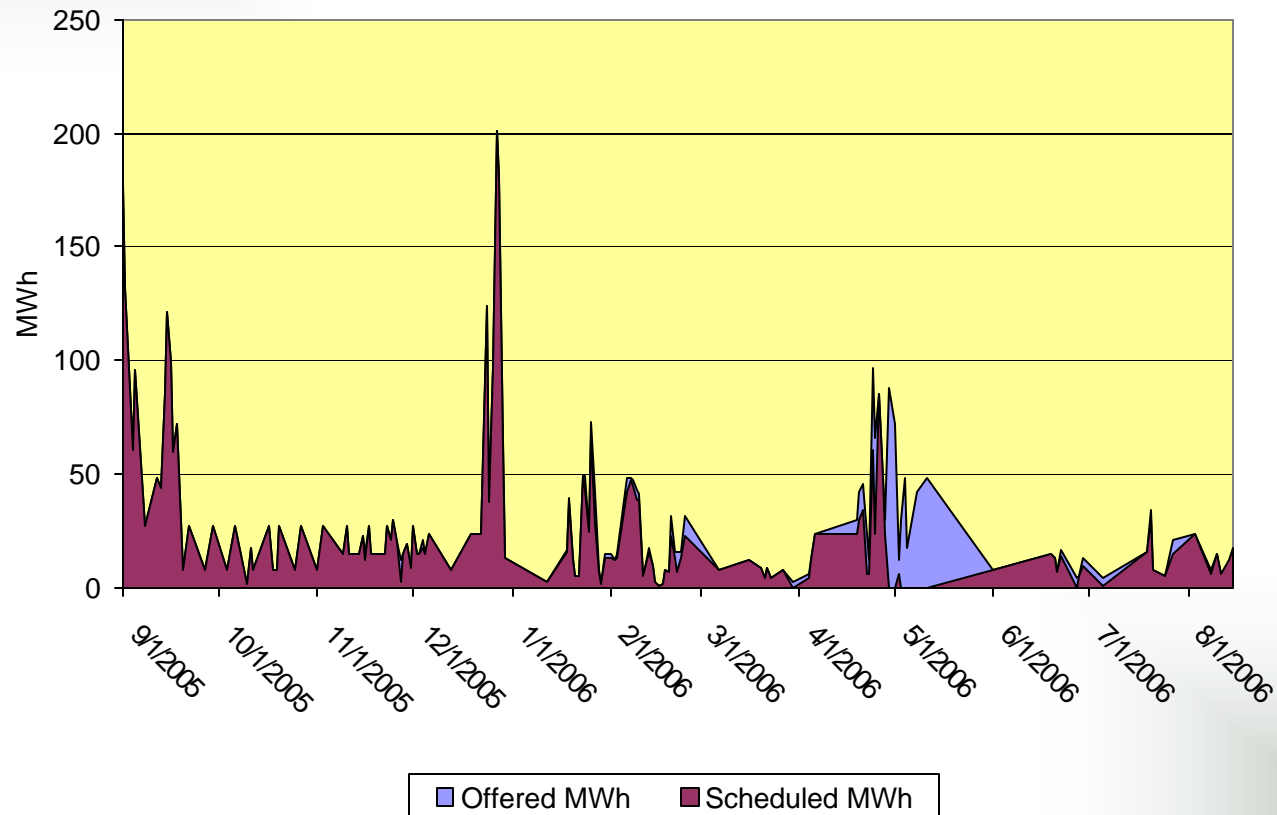
(includes both EDRP and SCR)

- ◆ July 18: \$1,712,790
- ◆ July 19: \$850,926
- ◆ August 1: \$886,635
- ◆ August 2: \$1,957,268
- ◆ August 3: \$993,150
  
- ◆ Total 2006 payments: \$6,400,769

# DADRP 2006 Performance

*Draft – for Discussion Purposes Only*

# DADRP MWh, Bid vs. Scheduled



*Draft – for Discussion Purposes Only*

# Total and Scheduled Bids and MWh

Bidder	Total Bids	Scheduled Bids	Bid MWh	Scheduled MWh
Resource 1	733	642	1,935	1,513
Resource 2	62	62	74	74
Resource 3	295	295	631	550
Resource 4	191	191	1,302	1,302
Resource 5	20	20	40	40
<b>Total</b>	<b>1,301</b>	<b>1,210</b>	<b>3,982</b>	<b>3,479</b>

- All offers submitted at \$75/MWh
- Scheduled MWh increased approximately 75% over 2005
- Offers generally not made during hours with highest DAM prices



# DADRP Market Impacts

Zone	Performance (MWh)	Program Payments (\$)	Average DAM LBMP (\$/MWh)	Transfer Benefits			Social Welfare Benefits		
				Average Price Reduction (\$/MWh)	Market Bill Savings (\$)	Hedge Contract Savings (\$)	Benefits to Payment Ratio	Reduction in Deadweight Loss (\$)*	Benefits to Payment Ratio
NYC	0	\$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LI	0	\$0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Western NY	1,342	\$132,952	\$100.53	\$0.12	\$38,183	\$67,697	0.80	\$47,217	0.36
Hudson River	2,137	\$199,988	\$95.28	\$0.10	\$92,805	\$142,448	1.18	\$70,376	0.35
<b>Total</b>	<b>3,479</b>	<b>\$332,941</b>	<b>\$96.32</b>	<b>\$0.10</b>	<b>\$130,988</b>	<b>\$210,145</b>	<b>1.02</b>	<b>\$117,593</b>	<b>0.35</b>

\* This represents gross benefits. Net Social Welfare can be calculated by subtracting program payments

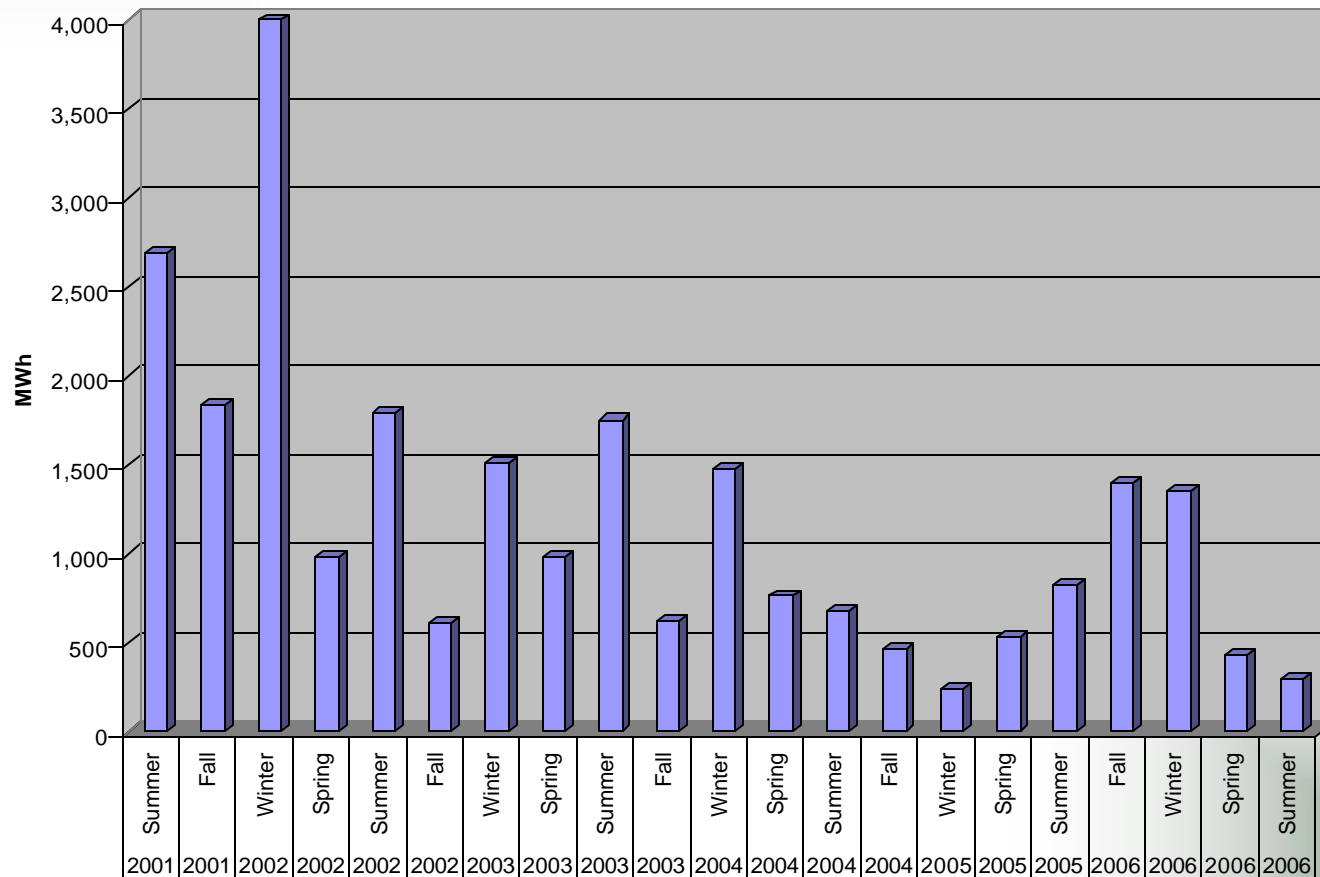
- **Market Bill Savings = savings to DAM energy buyers**
- **Hedge Contract Savings = savings due to downward pressure on forward contracts**
- **Reduction in Deadweight Loss = savings of improved resource efficiency**
- **Net Social Welfare = Reduction in Deadweight Loss minus Program Payments**

# DADRP Market Impacts by Month

Month	Performance (MWh)	Program Payments (\$)	Average DAM LBMP (\$/MWh)	Transfer Benefits			Social Welfare Benefits		
				Average Price Reduction (\$/MWh)	Market Bill Savings (\$)	Hedge Contract Savings (\$)	Benefits to Payment Ratio	Reduction in Deadweight Loss (\$)*	Benefits to Payment Ratio
Sep-05	899	\$96,090	\$110.28	\$0.08	\$24,323	\$38,666	0.66	\$55,542	0.58
Oct-05	165	\$21,226	\$128.41	\$0.06	\$5,187	\$8,981	0.67	\$16,843	0.79
Nov-05	332	\$28,757	\$88.22	\$0.04	\$5,045	\$8,807	0.48	\$5,023	0.17
Dec-05	690	\$66,744	\$100.50	\$0.20	\$28,388	\$52,578	1.21	\$12,104	0.18
Jan-06	307	\$26,291	\$84.93	\$0.14	\$21,370	\$32,203	2.04	\$3,168	0.12
Feb-06	361	\$29,934	\$81.87	\$0.13	\$19,778	\$29,586	1.65	\$3,093	0.10
Mar-06	54	\$4,245	\$78.78	\$0.03	\$1,750	\$2,576	1.02	\$606	0.14
Apr-06	370	\$29,335	\$78.76	\$0.13	\$9,326	\$15,290	0.84	\$835	0.03
May-06	6	\$496	\$82.59	\$0.29	\$279	\$462	1.49	-\$13	-0.03
Jun-06	72	\$7,505	\$105.03	\$0.06	\$4,555	\$5,881	1.39	\$5,214	0.69
Jul-06	76	\$7,378	\$95.91	\$0.03	\$1,790	\$2,558	0.59	\$3,877	0.53
Aug-06	147	\$14,938	\$97.35	\$0.07	\$9,197	\$12,558	1.46	\$11,304	0.76
	<b>3,479</b>	<b>\$332,941</b>	<b>\$96.32</b>	<b>\$0.10</b>	<b>\$130,988</b>	<b>\$210,145</b>	<b>1.02</b>	<b>\$117,593</b>	<b>0.35</b>

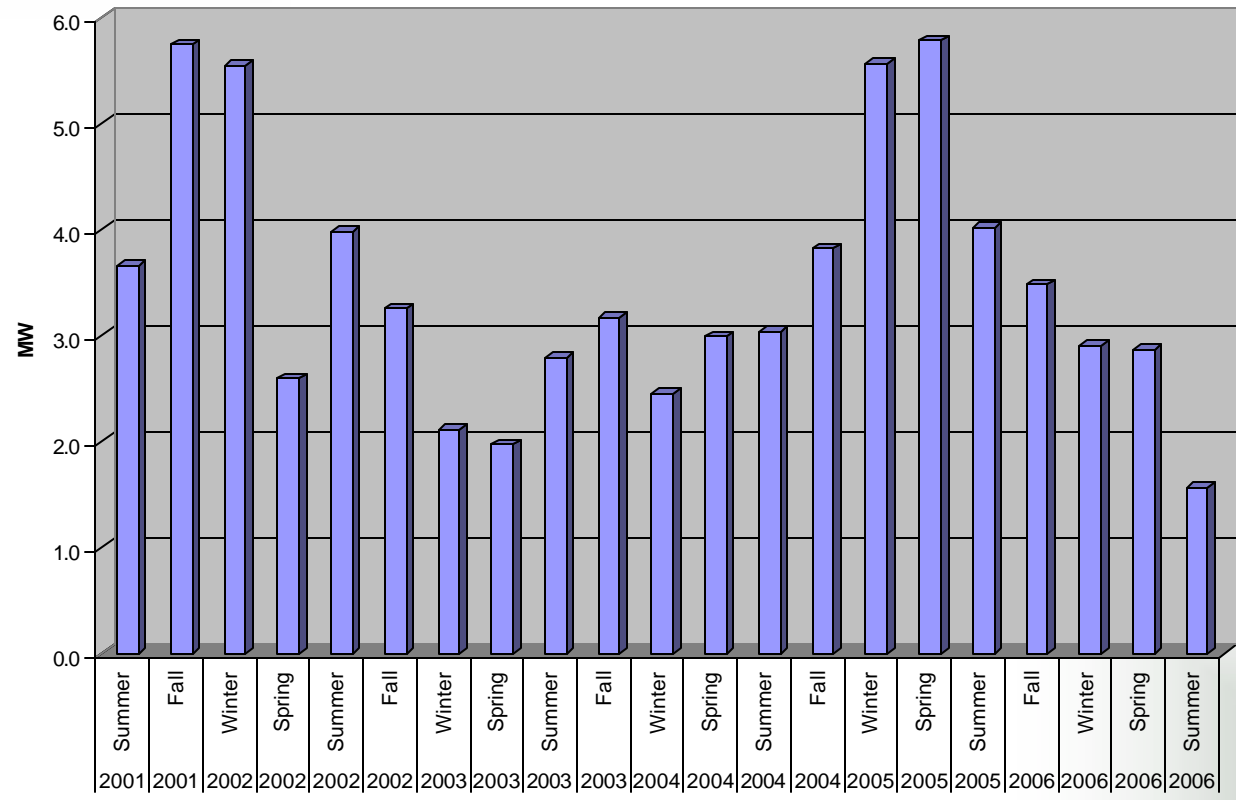
\* This represents gross benefits. Net Social Welfare can be calculated by subtracting program payments

# Total MWh Scheduled in DADRP, 2001-2006, by Season and Year



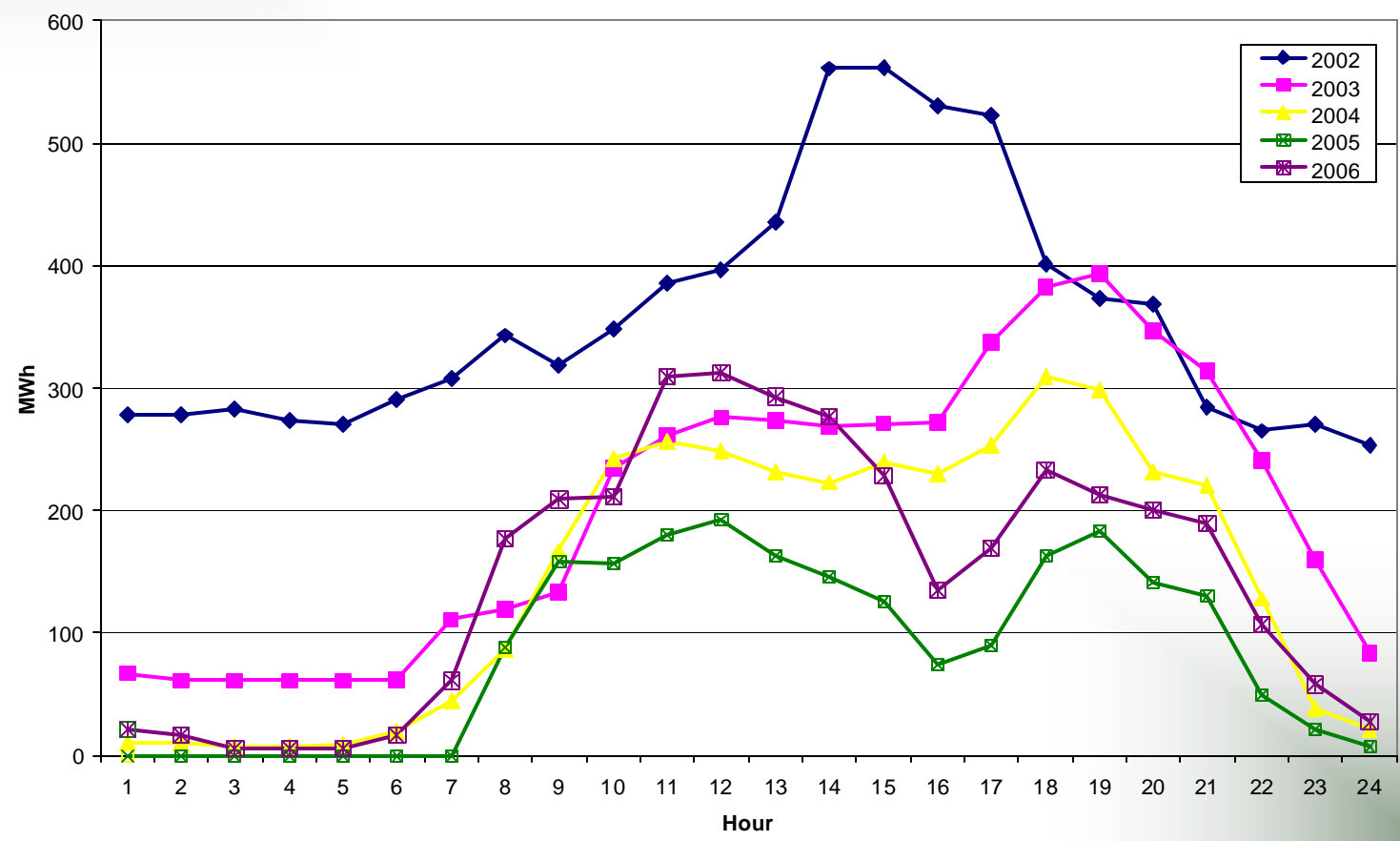
*Draft – for Discussion Purposes Only*

# Average Scheduled Hourly DADRP Offers (MW) by Season and Year



*Draft – for Discussion Purposes Only*

# Total Scheduled DADRP Offers (MWh) By Hour and Program Year (9/1 – 8/31)



*Draft – for Discussion Purposes Only*

# DADRP Market Effects

	Scheduled DADRP MWHs	Collateral Savings	Reduction in Hedge Cost	Total Market Effect	Program Payments	Change in NSW	% Change	Impact Ratio
2001	2,694	\$892,140	\$682,358	\$1,574,498	\$217,487	N/A		7.2
2002	1,468	\$236,745	\$202,349	\$439,094	\$110,216	N/A	-72%	4.0
2003	1,752	\$45,773	\$161,558	\$207,331	\$121,144	-\$72,271	-53%	1.7
2004	675	\$8,996	\$36,940	\$45,936	\$40,651	-\$27,408	-78%	1.1
2005	2,070	\$109,789	\$155,366	\$265,155	\$172,376	-\$90,300	477%	1.5
2006	3,479	\$130,988	\$210,145	\$341,133	\$332,941	-\$215,348	29%	1.0