

# Using Forecasted Peaks To Set Capacity Obligations

RAA-Reliability Committee  
April 16, 2002

# Review of Events

- PJM Staff proposed using forecasted peaks to set PJM East capacity obligations, effective 2003/04 planning period [Y. M. Brown letter of 11/11/01]
- RAA-RC approved the proposal at the 11/14/01 meeting
- RAA-RC assigned the Load Analysis Subcommittee to develop the forecast procedure
- LAS status report to RAA-RC at the 2/15/02 meeting

# The Proposals

- Four viable proposals were developed:
  - Natural Float
  - Natural Float with Assigned Growth
  - Entity with Residual
  - Entity with Scaling - PJM Recommendation

### General Principles

- Obligations based on load forecast from PJM entity model
- All peak load contributions uploaded, including EDC peak (no residual method)
- Peak load contributions added and deleted throughout the year
- Sum of load tickets scaled to meet zonal share of entity forecast at start of each interval

### Details

- Obligations through 5/31/03 determined under current rules
- April 1 - PJM publishes Entity forecast and zonal allocation of upcoming summer peak. Zonal share of Entity forecast held constant for full planning period.
- April 1 - Summer scaling factor for each zone effective June 1 released. Example:
  - Zone forecast: 10,000
  - Sum of PLCs = 9,800
  - Scale Factor =  $10,000/9,800 = 1.02$

### Details

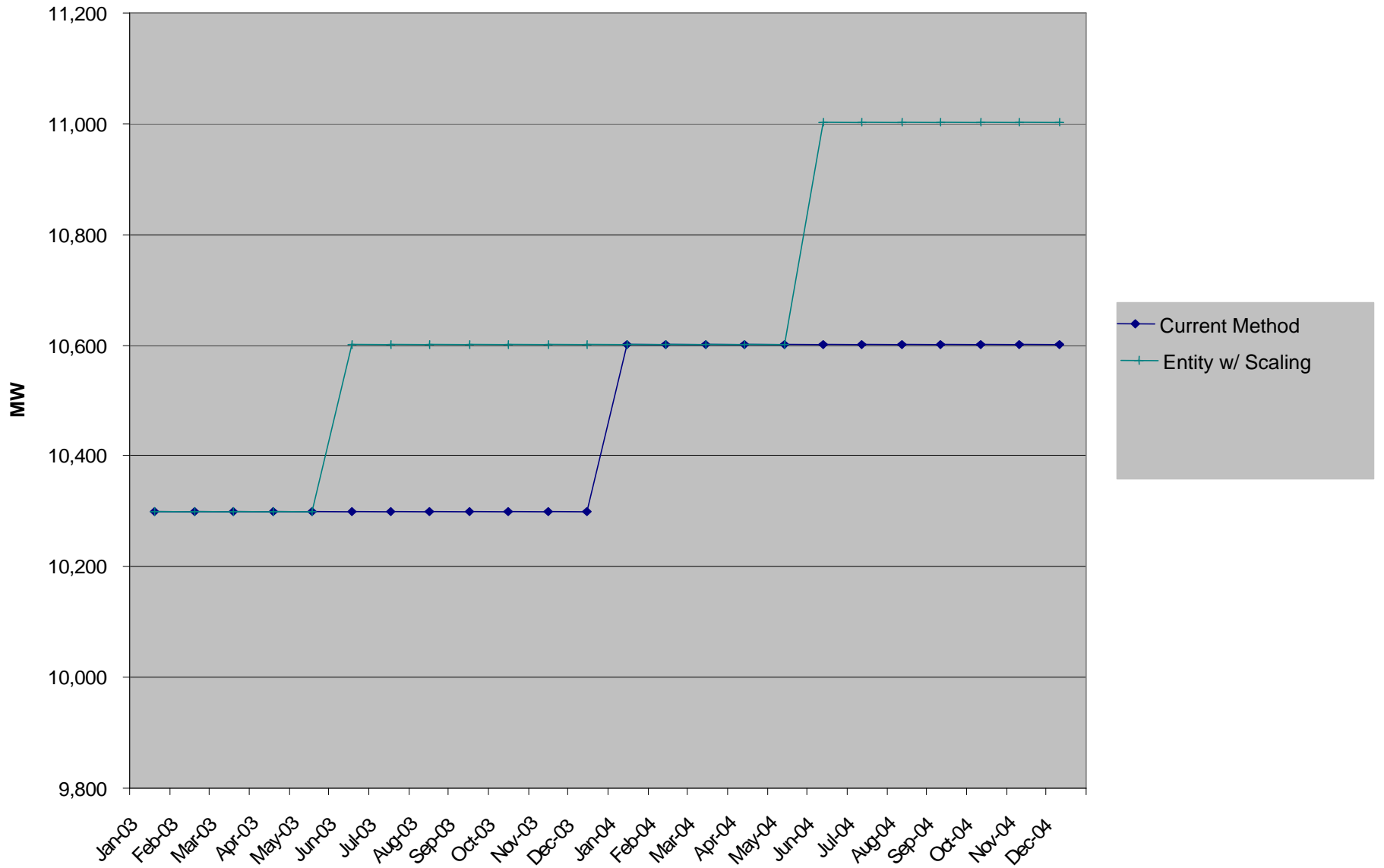
- June 1 - New obligations based on forecasted peak are effective.
- June 1 - September 30: Daily bottom-up uploads occur. Summer scaling factor is applied.
- September 1 - Fall scaling factor for each zone effective October 1 released.
- October 1 - New obligations for fall interval become effective.
- October 1 - December 31: Daily bottom-up uploads occur. Fall scaling factor is applied.

### Details

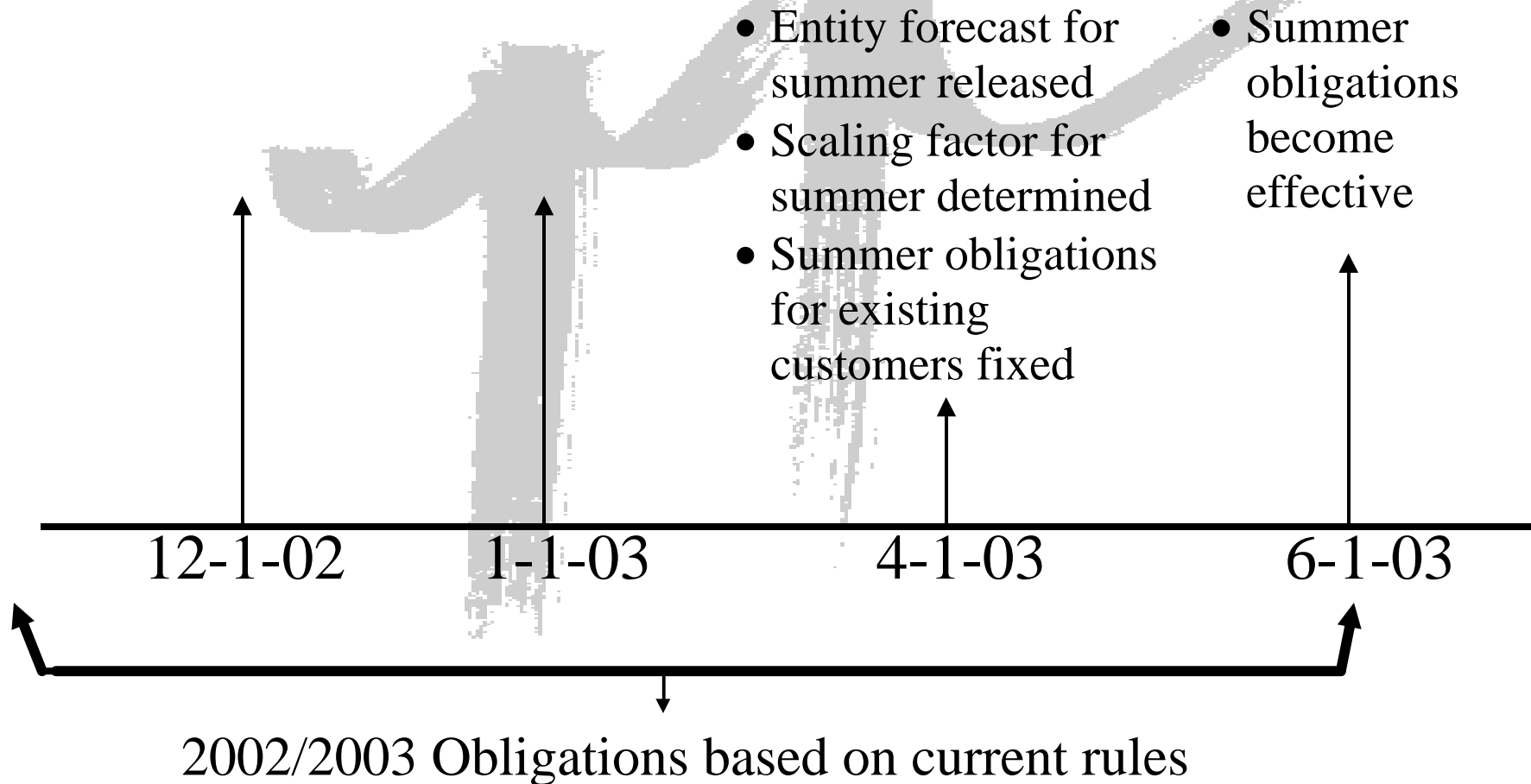
- Mid October - Normalization and allocation of PJM previous summer peak released
- December 1 - EDCs finalize peak load contributions for existing customers based on previous summer peak
- December 1 - Winter scaling factor for each zone effective January 1 released.
- January 1 - New obligations for winter interval become effective.
- January 1 - May 31: Daily bottom-up uploads occur. Winter scaling factor is applied.



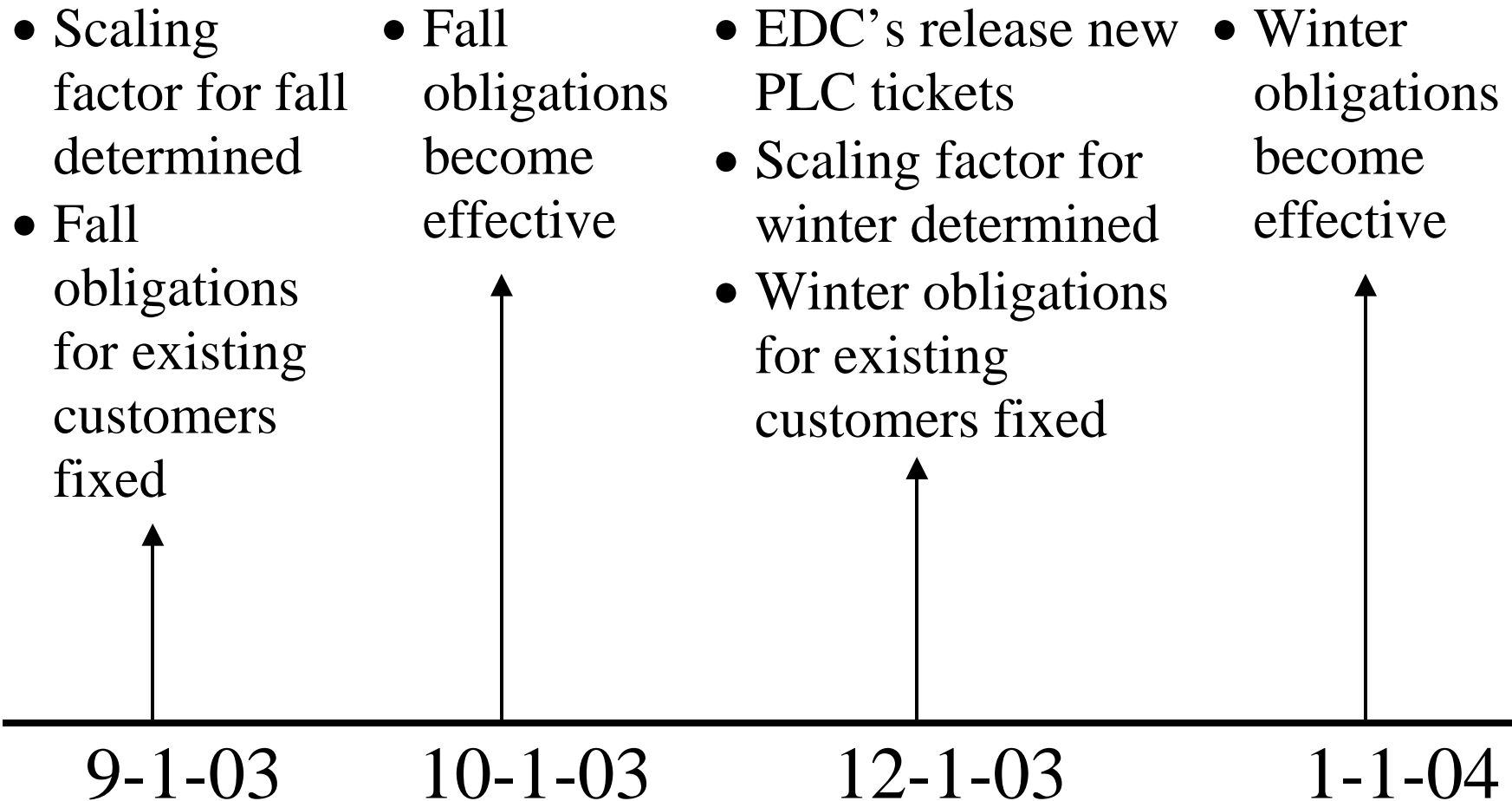
## Example: Peak Loads Used To Set Capacity Obligation



# Proposed Timeline



# Proposed Timeline (cont'd)



### Benefits

- Maintains pool reliability at “1 in 10”
  - Recognizes load growth from both new and existing customers
  - Sets obligations consistent with R Study model
- Equal treatment of all participants
  - EDC’s and alternate LSE’s treated the same (no residual)
  - Both new and existing customers treated the same
- Relatively easy to implement
  - No effect on existing EDC ticketing procedures
  - Minimizes cost of eCapacity changes
  - Adaptable to JCAG proposals

## Ex-Post Study of Forecast Accuracy for: ENTITY Model

### Same Year Accuracy

<u>Year Forecast Produced</u>	<u>Year Forecasted</u>	<u>Forecast</u>	<u>Normal</u>	<u>Error</u>	<u>% Error</u>	<u>Absolute % Error</u>
1994	1994	45,413	45,050	363	0.8%	0.8%
1995	1995	47,014	47,070	-56	-0.1%	0.1%
1996	1996	46,742	46,490	252	0.5%	0.5%
1997	1997	48,173	48,500	-327	-0.7%	0.7%
1998	1998	49,703	49,610	93	0.2%	0.2%
1999	1999	50,842	50,510	332	0.7%	0.7%
2000	2000	52,099	52,350	-251	-0.5%	0.5%
2001	2001	53,396	54,240	-844	-1.6%	1.6%
<b>Mean Percent Error =</b>					<b>-0.1%</b>	<b>0.6%</b>

### One Year Ahead Accuracy

<u>Year Forecast Produced</u>	<u>Year Forecasted</u>	<u>Forecast</u>	<u>Normal</u>	<u>Error</u>	<u>% Error</u>	<u>Absolute % Error</u>
1994	1995	46,777	47,070	-293	-0.6%	0.6%
1995	1996	47,758	46,490	1268	2.7%	2.7%
1996	1997	47,662	48,500	-838	-1.7%	1.7%
1997	1998	49,006	49,610	-604	-1.2%	1.2%
1998	1999	50,306	50,510	-204	-0.4%	0.4%
1999	2000	51,725	52,350	-625	-1.2%	1.2%
2000	2001	53,183	54,240	-1057	-1.9%	1.9%
<b>Mean Percent Error =</b>					<b>-0.6%</b>	<b>1.4%</b>

### Two Year Ahead Accuracy

<u>Year Forecast Produced</u>	<u>Year Forecasted</u>	<u>Forecast</u>	<u>Normal</u>	<u>Error</u>	<u>% Error</u>	<u>Absolute % Error</u>
1994	1996	48,130	46,490	1640	3.5%	3.5%
1995	1997	49,070	48,500	570	1.2%	1.2%
1996	1998	48,664	49,610	-946	-1.9%	1.9%
1997	1999	49,862	50,510	-648	-1.3%	1.3%
1998	2000	51,350	52,350	-1000	-1.9%	1.9%
1999	2001	53,115	54,240	-1125	-2.1%	2.1%
<b>Mean Percent Error =</b>					<b>-0.4%</b>	<b>2.0%</b>

## Allocation of PJM 2002 Summer ENTITY Forecast

Geographic Zone	<u>Zone Share of PJM (%)</u>			Allocated Share of PJM Entity
	Extrapolated 5-Year Trend			
	<u>Actual 2001</u>	<u>Forecast 2002</u>	<u>Average</u>	
AE	4.5928%	4.7264%	4.6596%	2,565.1
BC	12.0783%	11.9816%	12.0299%	6,622.5
DPL	6.7408%	7.0017%	6.8713%	3,782.6
GPU	19.7500%	19.8577%	19.8038%	10,902.0
PE	14.3489%	14.3823%	14.3656%	7,908.2
PEP	11.3890%	11.3045%	11.3467%	6,246.4
PL	12.6150%	12.5376%	12.5763%	6,923.2
PS	18.4852%	18.2083%	18.3468%	10,099.9
<b>PJM</b>				<b>55,050.0</b>

## Future Steps

- Comments from RAA-RC on proposal and timeline.
- Draft RAA changes provided in time for May 16, 2002 RAA-RC meeting.
- Numerical examples of zonal obligation effects to be provided by May 16, 2002 RAA-RC meeting.
- Formal endorsement of proposal at 5/16/02 RAA-RC meeting for 6/1/03 effective date.