

# Forward Capacity Market Working Group

## Alternative Capacity Price Rule

October 29, 2009

# Agenda

- When is the APR triggered?
- APR categories
- Terminology and Examples
  - APR Triggers
  - Carried Forward Excess Out-of-Merit Capacity
- Administrative Pricing Rules
- Time-limit on Carry Forward

# 10,000 foot level – When does APR set a new capacity price?

	<b>New capacity is needed (captured by current APR rules)</b>	<b>New capacity is not needed (new APR rules and triggers)</b>
<b>There was carried forward out of market capacity from a previous period</b>	Not Triggered	If carried forward out of market capacity plus new capacity required greater than zero → trigger APR (APR-2)
<b>In the current period there is out of market capacity</b>	If current period out of market capacity minus new capacity required greater than zero → trigger APR (APR-1)	Not Triggered

# APR Triggers

- For discussion purposes, labeled as APR 1-3
- APR-1 is a slightly revised version of the Alternative Price Rule as it currently exists in the FCM rules, which applies where new capacity is required.
- APR-2 is a new mechanism that will apply where no new capacity is required, is designed to account for past excess out-of-market capacity and is described in the INTMMU Report.
- APR-3 is a new mechanism that will apply where no new capacity is required, and is designed to account for rejected de-list bids. This is an issue identified in the development of the original FCM rules, which must be addressed in a filing with FERC by May 17, 2010.

# Summary of APR Triggers

- APR-1 Triggers

- New capacity requirement + cleared permanent de-list bids  $> 0$ , and
- New Out-of-Market Capacity  $\geq$  New capacity requirement + cleared permanent de-list bids
  - Alternative Capacity Price Rule in current rules with minor revisions
  - Uses current APR price mechanism

- APR-2 Triggers

- New capacity requirement + cleared permanent de-list bids  $\leq 0$ , and
- New capacity requirement + cleared permanent de-list bids + previous Out-of-Market Capacity  $> 0$ 
  - Uses current APR price mechanism

# Summary of APR Triggers

- APR-3 Triggers
  - New capacity requirement + cleared permanent de-list bids  $\leq 0$ , and
  - New capacity requirement + cleared permanent de-list bids + previous Out-of-Market Capacity  $\leq 0$ , and
  - Some rejected de-list bids
    - A new pricing mechanism intended to reflect prices that would be established by competitively submitted de-list bids will apply when APR-3 is triggered.

# Acronym Key

- NICR: Net ICR
- NCR: New Capacity Required
  - The definition of NCR will remain unchanged; may be negative
- PDBC: Cleared Permanent De-List Bids
  - The MW quantity of Permanent De-List Bids clearing in the instant FCA.
- OOM: Out-of-Market Capacity
  - The amount of Out-of-Market Capacity shall be revised to include the MW quantity of Permanent De-List Bids and Non-Price Retirement Requests Rejected for reliability reasons.
- CFEOC: Carried-Forward Excess OOM Capacity
- DBR: Rejected De-list Bid
- NC Cleared: New Competitive Capacity Cleared in FCA

# APR-1 Examples

Scenario ID	1	2	3	4
Trigger Conditions	<b>NCR + PDBC &gt; 0 and OOM &gt;= NCR + PDBC</b>			
APR Triggered?	<i>No</i>	<i>APR-1</i>	<i>No</i>	<i>APR-1</i>
NICR	33,000	33,000	33,000	33,000
Existing Capacity	32,500	32,500	33,100	33,100
NCR	500	500	(100)	(100)
PDBC	-	-	400	400
DBR	-	-	-	-
CFEOC	-	-	-	-
OOM	200	600	-	600

# APR-2 Examples

Scenario ID	5	6	7
Trigger Conditions	<b>NCR + PDBC ≤ 0 and NCR + PDBC + CFEOC &gt; 0</b>		
APR Triggered?	<i>No</i>	<i>APR-2</i>	<i>No</i>
NICR	33,000	33,000	33,000
Existing Capacity	33,500	33,500	33,500
NCR	(500)	(500)	(500)
PDBC	-	-	-
DBR	-	-	-
CFEOC	100	600	100
OOM	600	100	300

# APR-3 Examples (Scenario 7 same as previous slide)

Scenario ID	7	8
Trigger Conditions	<b>NCR + PDBC &lt;= 0 and NCR + PDBC + CFEOC &lt;= 0 And DBR &gt; 0</b>	
APR Triggered?	<i>No</i>	<i>APR-3</i>
NICR	33,000	33,000
Existing Capacity	33,500	33,500
NCR	(500)	(500)
PDBC	-	-
DBR	-	100
CFEOC	100	100
OOM	300	300

# Compare DBD logic to Market Monitoring Scenarios – same results

Scenario ID	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 4
FCA	FCA7				FCA8
Scenario	NCR <=0 No CFEOC	OOM Needed to Meet NCR	NC Cleared Satisfied NCR	OOM Needed for NCR & CFEOC	APR 2 Triggered Due to CFEOC
APR Triggered?	<i>No</i>	<i>APR-1</i>	<i>No</i>	<i>APR-1</i>	<i>APR-2</i>
NICR	30,500	33,500	33,500	33,500	33,863
Existing Capacity	33,120	33,120	33,120	33,120	34,620
NCR	(2,620)	380	380	380	(757)
PDBC	-	-	-	-	-
NC Cleared	-	-	380	-	-
CFEOC	-	-	-	-	1,120
OOM	-	380	-	1,500	-

# 10,000 foot level – What OOM is carried forward each year?

	If new capacity is required	If no new capacity is required
<b>APR triggered</b>	No previous OOM is carried forward and some current OOM will be carried forward	Some previous OOM is carried forward and all current OOM is carried forward
<b>APR not triggered</b>	No previous OOM is carried forward and no current OOM is carried forward	All previous OOM is carried forward and all current OOM will be carried forward

# Carried-Forward Excess OOM Capacity logic for use in APR-2 trigger

- Calculate ***Carried Forward Excess OOM Capacity*** when new capacity was required in previous FCA:
- If  $(\text{New Capacity Required}_{t-1} + \text{Cleared Permanent De-List Bids}_{t-1}) > 0$ , then **Carried Forward Excess OOM Capacity<sub>t</sub>** = **Out-of-Market Capacity<sub>t-1</sub>** - **(New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub>)**.

# Carried Forward Excess OOM Capacity logic for use in APR-2 trigger

- Calculate ***Carried Forward Excess OOM Capacity*** when new capacity was not required in previous FCA:
- If  $(\text{New Capacity Required}_{t-1} + \text{Cleared Permanent De-List Bids}_{t-1}) \leq 0$ , then  $\text{Carried Forward Excess OOM Capacity}_t = \text{Out-of-Market Capacity}_{t-1} + \min[\text{Carried Forward Excess OOM Capacity}_{t-1}, (0 - (\text{New Capacity Required}_{t-1} + \text{Cleared Permanent De-List Bids}_{t-1}))]$

# Carry-Forward Examples

New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub> > 0

Scenario ID	1	2	3	4
	<b>NCR<sub>t-1</sub> + PDBC<sub>t-1</sub> &gt; 0</b>			
APR Triggered <sub>t-1</sub> ?	No	APR-1	No	APR-1
NICR <sub>t-1</sub>	33,000	33,000	33,000	33,000
Existing Capacity <sub>t-1</sub>	32,500	32,500	33,100	33,100
NCR <sub>t-1</sub>	500	500	(100)	(100)
PDBC <sub>t-1</sub>	-	-	400	400
CFEOC <sub>t-1</sub>	-	-	-	-
OOM <sub>t-1</sub>	200	600	-	600
<b>NCR<sub>t-1</sub> + PDBC<sub>t-1</sub></b>	<b>500</b>	<b>500</b>	<b>300</b>	<b>300</b>
CFEOC <sub>t</sub>	-	100	-	300

If (New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub>) > 0, then **Carried Forward Excess OOM Capacity<sub>t</sub>** = **Out-of-Market Capacity<sub>t-1</sub>** - (New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub>)

# Carry Forward Examples

New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub> ≤ 0

Scenario ID	5	6	7
	<b>NCR<sub>t-1</sub> + PDBC<sub>t-1</sub> ≤ 0</b>		
<b>APR Triggered<sub>t-1</sub>?</b>	No	APR-2	No
<b>NICR<sub>t-1</sub></b>	33,000	33,000	33,000
<b>Existing Capacity<sub>t-1</sub></b>	33,500	33,500	33,500
<b>NCR<sub>t-1</sub></b>	<b>(500)</b>	<b>(500)</b>	<b>(500)</b>
<b>PDBC<sub>t-1</sub></b>	-	-	-
<b>CFEOC<sub>t-1</sub></b>	<b>100</b>	<b>600</b>	<b>100</b>
<b>0 - (NCR<sub>t-1</sub> + PDBC<sub>t-1</sub>)</b>	<b>500</b>	<b>500</b>	<b>500</b>
<b>OOM<sub>t-1</sub></b>	<b>600</b>	<b>100</b>	<b>300</b>
<b>CFEOC<sub>t</sub></b>	<b>700</b>	<b>600</b>	<b>400</b>

If  $(NCR_{t-1} + PDBC_{t-1}) \leq 0$ , then

Carried Forward Excess OOM Capacity<sub>t</sub> = **Out-of-Market Capacity<sub>t-1</sub>** + **min**[**Carried Forward Excess OOM Capacity<sub>t-1</sub>**, **(0 - (New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub>))**]

# Administrative Pricing Rules

- In no case will the application of any of the three APR mechanisms result in lowering the Capacity Clearing Price that otherwise results from the FCA.
- APR-1
  - Same pricing provisions as the current APR.
- APR-2
  - Same pricing provisions as the current APR.
- APR-3
  - A new pricing mechanism intended to reflect prices that would be established by submitted de-list bids will apply.

# APR-3 Pricing

- At FCA prices at or below \$2.95/kW-month, if APR-3 is triggered in a Capacity Zone, the Capacity Clearing Price in that Capacity Zone will be determined by the intersection of the aggregate supply curve as described in Section III.13.2.3.3 and a demand curve where each price / quantity pair results in the same total costs as the price at which the trigger condition (described below) is met multiplied by the quantity demanded at that price. The trigger condition shall be when the excess capacity remaining in the FCA in that Capacity Zone is less than or equal to the total quantity of capacity associated with all Non-Price Retirement Requests, Permanent De-List Bids, Static De-List Bids, Export Bids, Administrative Export De-List Bids, or Dynamic De-List Bids rejected for reliability reasons pursuant to Section III.13.2.5.2.5.

# APR-3 Pricing

- Assume that conditions for APR-3 are met ( $NCR + PDDBC \leq 0$ ,  $NCR + PDDBC + CFEOC \leq 0$ , i.e. APR-2 not triggered, and some de-list bids are rejected)
  - Beginning at  $0.6 \times CONE$  in the FCA, a demand curve can be triggered
  - Demand curve is triggered when the excess remaining in the FCA  $\leq$  total MW of rejected de-list bids, that is, at point where the FCA would have closed but for denied de-list bids
  - Demand curve has constant consumer costs
  - FCA stops when supply equals demand; resources may continue to de-list until FCA stops

# APR-3 Pricing Example

- Assume that conditions for APR-3 are met ( $NCR + PDBC \leq 0$ ,  $NCR + PDBC + CFEOC \leq 0$ , i.e. APR-2 not triggered, and some de-list bids are rejected)
- At \$2.95, excess capacity  $>$  denied de-list bids
  - Auction continues normally
- Additional resources de-list as auction clocks drops below \$2.95
- At \$1.25, a 100 MW de-list bid is submitted and accepted
  - At that point, excess capacity  $<$  denied de-list bids and excess supply is still  $> 0$
  - Demand curve is triggered at \$1.25
- Final price is \$1.18, with an additional resource de-listing

# Roll Off of Carried Forward Excess OOM Capacity

- In the calculation of Carried Forward Excess OOM Capacity, past excess Out-of-Market Capacity shall not carry forward for more than four years.

# Roll Off of Carried Forward Excess OOM Capacity

- Carried Forward Excess OOM (year t) =  
Excess OOM Capacity from year (t – 1) + min[0 - (New Capacity Required<sub>t-1</sub> + Cleared Permanent De-List Bids<sub>t-1</sub>), Excess OOM Capacity from year (t – 2) + min[ 0 - (New Capacity Required<sub>t-2</sub> + Cleared Permanent De-List Bids<sub>t-2</sub>), Excess OOM Capacity from year (t – 3) + min[0 - (New Capacity Required<sub>t-3</sub> + Cleared Permanent De-List Bids<sub>t-3</sub>), Excess OOM Capacity from year (t – 4)]]]

# Example of Roll Off of Carried Forward Excess OOM Capacity versus no Roll Off

Yr	NCR + PDBC	OOM	Carried Forward Excess OOM Capacity From Previous (without roll off)	Carried Forward Excess OOM Capacity From Previous (with roll off)
1	-5000	2000	0	NA
2	-4000	150	2000	NA
3	-3000	100	2150	NA
4	-2000	120	2250	NA
5	-1520	300	2120	NA
6	-1000	100	1820	670
7	-250	100	1100	620
8	-150	100	350	350
9	-300	500	250	250
10	-300	100	750	750
11	100	1500	400	400
12	-1000	1000	1400	1400
13	-2000	100	2000	2000
14	-1200	0	2100	2100
15	-600	100	1200	1200
16	-500	600	700	700
17	-1000	100	1100	800
18	-700	0	1100	800
19	300	0	700	700
20	-200	0	0	0

# Example of Roll Off of Carried Forward Excess OOM Capacity versus no Roll Off

Yr	NCR + PDBC	OOM	Carried Forward Excess OOM Capacity From Previous (without roll off)	Carried Forward Excess OOM Capacity From Previous (with roll off)
1	-5000	2000	0	NA
2	-4000	150	2000	NA
3	-3000	100	2150	NA
4	-2000	120	2250	NA
5	-1520	300	2120	NA
6	-1000	100	1820	670
7	-250	100	1100	620
8	-150	100	350	350
9	-300	500	250	250
10	-300	100	750	750
11	100	1500	400	400
12	-1000	1000	1400	1400
13	-2000	100	2000	2000
14	-1200	0	2100	2100
15	-600	100	1200	1200
16	-500	600	700	700
17	-1000	100	1100	800
18	-700	0	1100	800
19	300	0	700	700
20	-200	0	0	0

# Example of Roll Off of Carried Forward Excess OOM Capacity Calculation for Year 6

- Carried Forward Excess OOM (year 6) =  
(300-0)+ (year 5)  
Min(1520,(120+ (year 4)  
Min(2000,(100+ (year 3)  
Min(3000,150)))) (year 2)  
  
= 670