Flexible use-limited resource management

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Market Surveillance Committee Meeting

General Session

Managing use-limited resources

- Resources that have monthly and annual use-limitations and are flexible would have a must-offer requirement to offer into the day-ahead and real-time market economically.
- Identified problems:
  - Inefficient dispatch; the ISO may dispatch the resource at the “wrong” time and cause the resource not to be available during a high ramping need period.
  - Higher risk; the generator may be dispatched in a manner where it is no longer available to economically bid in and therefore would be penalized by the flexible capacity incentive mechanism.

Potential solutions

- Allow use-limited resources to economically adjust their start-up, minimum load, and energy bid costs.
  - Opportunity cost methodology, where the cost of not running in a future, higher priced hour with a greater ramping need is incorporated into the resources bidding strategy.
- Impose hard stops when resources near their use limits.
- A mixture of both.

Pricing use-limitations: Opportunity Cost

- A method for influencing the ISO dispatch is to allow opportunity costs in the bid-limits for start-up, minimum load, and default energy bid costs.
- The concept is to allow use-limited resources to determine and include an opportunity cost, not to mandate they include one.
- Opportunity cost based bids would be for verified physical use limitations only.

Application of Opportunity Cost

- When resources are subject to local market power mitigations, the ISO's calculated opportunity cost based bids would apply.
- Otherwise scheduling coordinators could include their own assessment of costs within specific bounds.
  - Bid floor and bid cap
  - 150% of OC for start-up and minimum load

Topics for MSC discussion

- Methods and potential difficulties with calculating an opportunity cost.
- Hard stop use.

Standard Flexible Capacity Product: Incentive Payment Options

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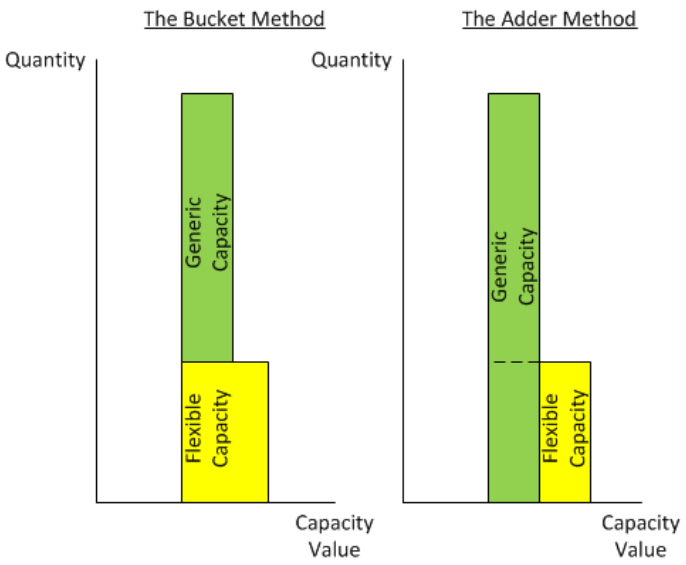
Determining the availability charges

Two options for determining availability options:

1. The Bucket Method
2. The Adder Method



	Bucket Method	Adder Method
Treatment of Capacity	Each MW is either generic system or flexible capacity.	Each MW that is flexible also has a generic component.
Replacement Formula Capacity Value	Generic Capacity: CPM price Flexible Capacity: CPM price (current proposal, but could be different)	Generic Capacity: CPM price Flexible Capacity: CPM price + Flexible Capacity Adder
Treatment under SCP and/or SFCP	Each MW either falls under the SCP or SFCP	Value of generic capacity availability calculated, separate calculation for availability of flexible capacity
Compliance hours in day for conventional resources*	Flexible: 18 Generic: 0	Flexible: 18 Generic: 5

* For illustrative purposes, the compliance period used is 18 hours. The actual compliance interval is 17 hours.

Examples to compare the two methods

- Example 1: Flexible capacity resource self-schedules all day for 5 days in June
- Example 2: Flexible capacity resource take outages for 10 afternoons in June from 1:00 PM though 10:00 PM

- Assumptions
  - Monthly SCP % 97%
  - Monthly FSCP % 97%
  - Bucket Method
    - CPM price ($/kw-yr) $67.50
    - FCPM price ($/kw-yr) $67.50
    - Flex non-compliance cost ($/MWh) $10.41
    - Generic non-compliance cost ($/MWh) $0.00
  - Adder Method
    - CPM ($/kw-yr) $67.50
    - Flex Adder ($/kw-yr) $20.00
    - Flex non-compliance cost ($/MWh) $3.09
    - Generic non-compliance cost ($/MWh) $37.50
  - NQC = EFC = 100 MW
  - Symmetric behavior in day-ahead and real-time markets

Example 1: Self-schedule

Bucket Accounting		
	SCP	**DA/RT SFCP**
Percent deviation allowed	94.50%	94.50%
Percent deviation appreciated	99.50%	99.50%
Monthly Eligible Capacity	0	100
5 days MW	2,500	0
25 days MW	12,500	45,000
Total MW Availability	15,000	45,000
Monthly Hours	150	540
Monthly Avg Avail Capacity	0.00	83.33
Incentive	0.00	0.00
Payment	0.00	11.17
Monthly charge rate	$5,625	$5,625
% contribution to charge	100%	100%
Incentive	**$0**	**$0**
Charge	**$0.00**	**-$62,813**
Total Charge	**-$62,813**	

Adder Accounting		
	SCP	**DA/RT SFCP**
Percent deviation allowed	94.50%	94.50%
Percent deviation appreciated	99.50%	99.50%
Monthly Eligible Capacity	100	100
5 days MW	2,500	0
25 days MW	12,500	45,000
Total (F)SCP Availability	15,000	45,000
Monthly Hours	150	540
Monthly Avg Avail Capacity	100.00	83.33
Incentive	0.50	0.00
Payment	0.00	11.17
Monthly charge rate	$5,625	$1,667
% contribution to charge	100%	100%
Incentive	**$2,813**	**$0**
Charge	**$0**	**-$18,611**
Total Charge	**-$15,799**	

Example 2: Afternoon Outage

Bucket Accounting		
	SCP	**DA/RT SFCP**
Percent deviation allowed	94.50%	94.50%
Percent deviation appreciated	99.50%	99.50%
Monthly Eligible Capacity	0	100
10 days MW	0	9000
20 days MW	10000	36000
Total MW Availability	10000	45000
Monthly Hours	150	540
Monthly Avg Avail Capacity	0.00	83.33
Incentive	0.00	0.00
Payment	0.00	11.17
Monthly charge rate	$5,625	$5,625
% contribution to charge	100%	100%
Incentive	**$0**	**$0**
Charge	**$0.00**	**-$62,813**
Total Charge	**-$62,813**	
SCP Today	**-$156,563**	

Adder Accounting		
	SCP	**DA/RT SFCP**
Percent deviation allowed	94.50%	94.50%
Percent deviation appreciated	99.50%	99.50%
Monthly Eligible Capacity	100	100
10 days MW	0	9000
20 days MW	10000	36000
Total (F)SCP Availability	10000	45000
Monthly Hours	150	540
Monthly Avg Avail Capacity	66.67	83.33
Incentive	0.00	0.00
Payment	27.83	11.17
Monthly charge rate	$5,625	$1,667
% contribution to charge	100%	100%
Incentive	**$0**	**$0**
Charge	**-$156,563**	**-$18,611**
Total Charge	**-$175,174**	

Topics for MSC discussion

- Which method should be used to determine the charges and credits for the Standard Flexible Capacity Incentive Mechanism:
  1. The Bucket Method
     - The appropriate price for replacement capacity?
  2. The Adder Method
     - The correct level for the flexibility adder?
- Weighing compliance with the bidding obligations in day-ahead vs. real-time towards the SFCP