

Net Commitment Period Compensation (NCPC)

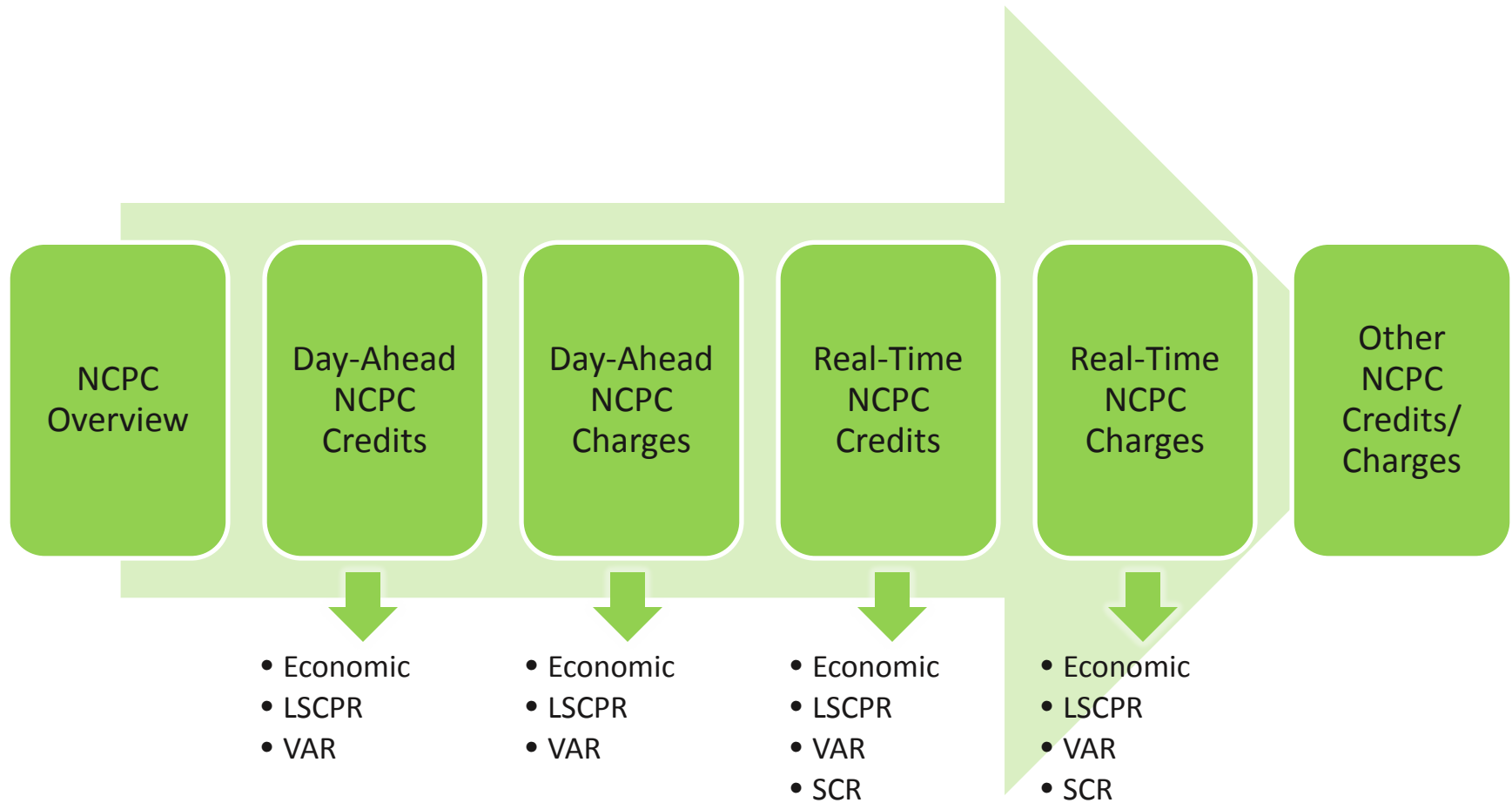
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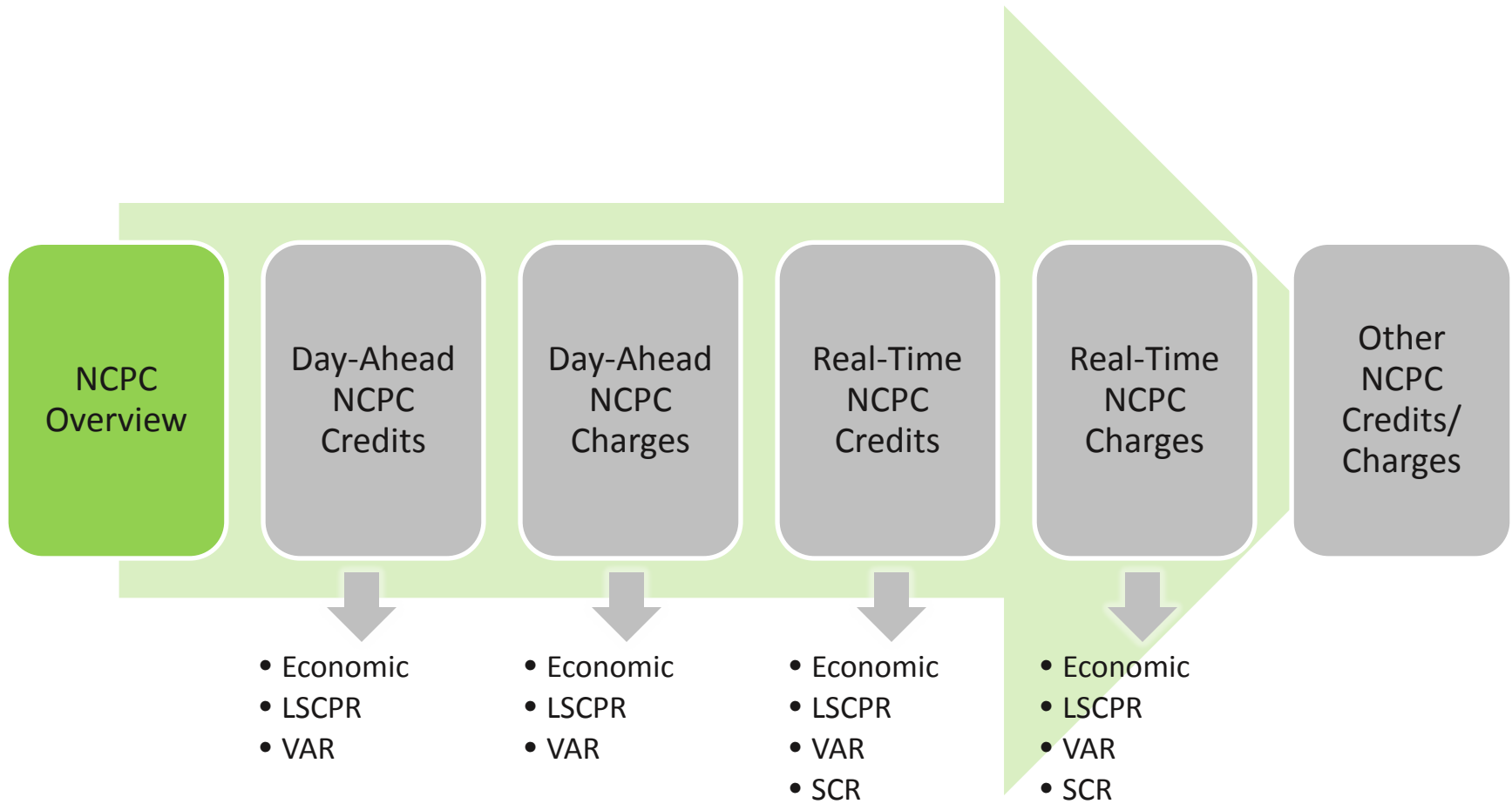
Learning Objectives

- Explain how a Participant's charges and credits are calculated for the NCPC market.
 - DA NCPC Credits and Charges
 - RT NCPC Credits and Charges
 - Other NCPC Credits and Charges
- Walk through examples of how NCPC charges and credits are calculated.



Topics Covered in this Module





NCPC – Governing Documents

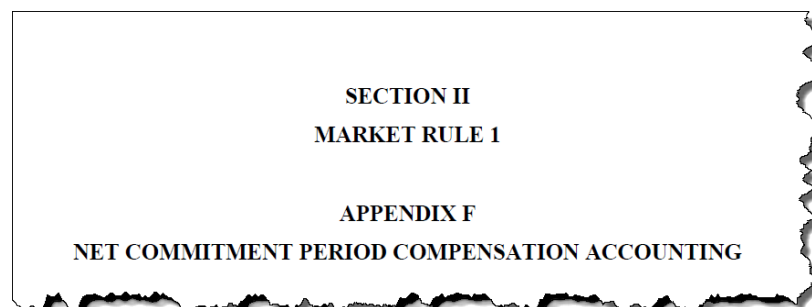
- Market Rule 1, Section III.3.2.3

III.3.2.3 NCPC Credits.

The following paragraphs describe the calculation of NCPC Credits and NCPC Charges. Additional information on these calculations may be found in Appendix F of this Market Rule 1.

(a) Except as otherwise provided for under Section III.3.2.3(f), Market Participants' Pool-Scheduled Resources capable of providing Operating Reserve or Replacement Reserve shall be credited as specified below (an "NCPC Credit") based on the prices offered for the operation of such Resources, provided that the Resources were available for the entire time specified in the Offer Data for such Resource.

- Market Rule 1, Appendix F



What is NCPC?

- “Make-whole” payments made to resources whose hourly commitment and dispatch by ISO-NE resulted in a shortfall between the resource’s offered value in the Energy and Regulation Markets and the revenue earned from output over the course of the day.
- Typically, this is the result of some out-of-merit operation of resources occurring in order to protect the overall resource adequacy and transmission security of specific locations or of the entire control area.
- Total NCPC paid to generators in 2010: ~\$95 Million
Total value of the Energy Market in 2010: ~\$7.2 Billion
NCPC payments as percent of Energy Market: 1.3%

NCPC Overview



- Each generator is evaluated for NCPC on a daily basis
- NCPC calculation is performed for the offer and value on the full 24 hour period.
 - Certain hours of out of merit operation may be recouped through the value in other hours during the day
- NCPC calculation is performed after the Energy Market settlement is complete. Note that even if a unit is not eligible for NCPC payments, every unit is ALWAYS credited/charged for its deviation from the DA schedule.
 - Real-Time Energy Market is the balancing market
 - Settlement is performed at the RT LMP on all deviation MWh
 - If necessary, NCPC is mechanism for **completing** the payment

Types of NCPC



Voltage NCPC Payments (VAR)

- Reliability costs paid to resources operated by the ISO-NE to provide voltage control in specific locations



Distribution NCPC Payments [Special Constraint Resource (SCR)]

- Reliability costs paid to units dispatched at the request of local transmission providers for purpose of managing constraints on the low voltage (distribution) system (Real-Time Market only)



2nd Contingency NCPC Payments [Local Second Contingency Protection Resource (LSCPR)]

- Reliability costs paid to resources providing adequate capacity in constrained areas to respond to a local second contingency. They are committed based on 2nd Contingency protocols



1st Contingency NCPC Payments (Economic)

- Reliability costs paid to eligible resources that are not providing 2nd Contingency, Voltage, or Distribution requirements. These resources may have been providing first contingency coverage (system-wide or locally)

NCPC Calculation

Overview Concepts

- NCPC payment determination is the same for all “types” of NCPC
- NCPC paid to generators is “uplift”, which is collected from Market Participants
- In order to determine who pays the uplift, a sequence of calculations is performed:
 - Daily NCPC payment is allocated to individual hours of the day
 - Hourly payments are aggregated by “type”
 - Total \$ by “type” are charged to the Market Participants through the appropriate allocators, as specified in the Market Rules



NCPC Charge Allocation Summary

NCPC Type	Day-Ahead Market Allocation	Real-Time Market Allocation	Billing
1 st Contingency	Day-Ahead Load Obligation (DALO)	Real-Time Deviations	Hourly Services Bill
2 nd Contingency	Regional DALO	Regional Real-Time Load Obligation*	Hourly Services Bill
Voltage	Regional Network Load + OASIS reservations	Regional Network Load + OASIS reservations	Monthly Bill**
Regional High Voltage	Regional Network Load	Regional Network Load	Monthly Bill**
Distribution	N/A	Transmission or Distribution Owner	Hourly Services Bill
1 st Contingency External Node Transactions ***	Imports: Node DALO Exports: Node Day-Ahead Generation Obligation	Real-Time Deviations (Same as 1 st Contingency above)	Hourly Services Bill

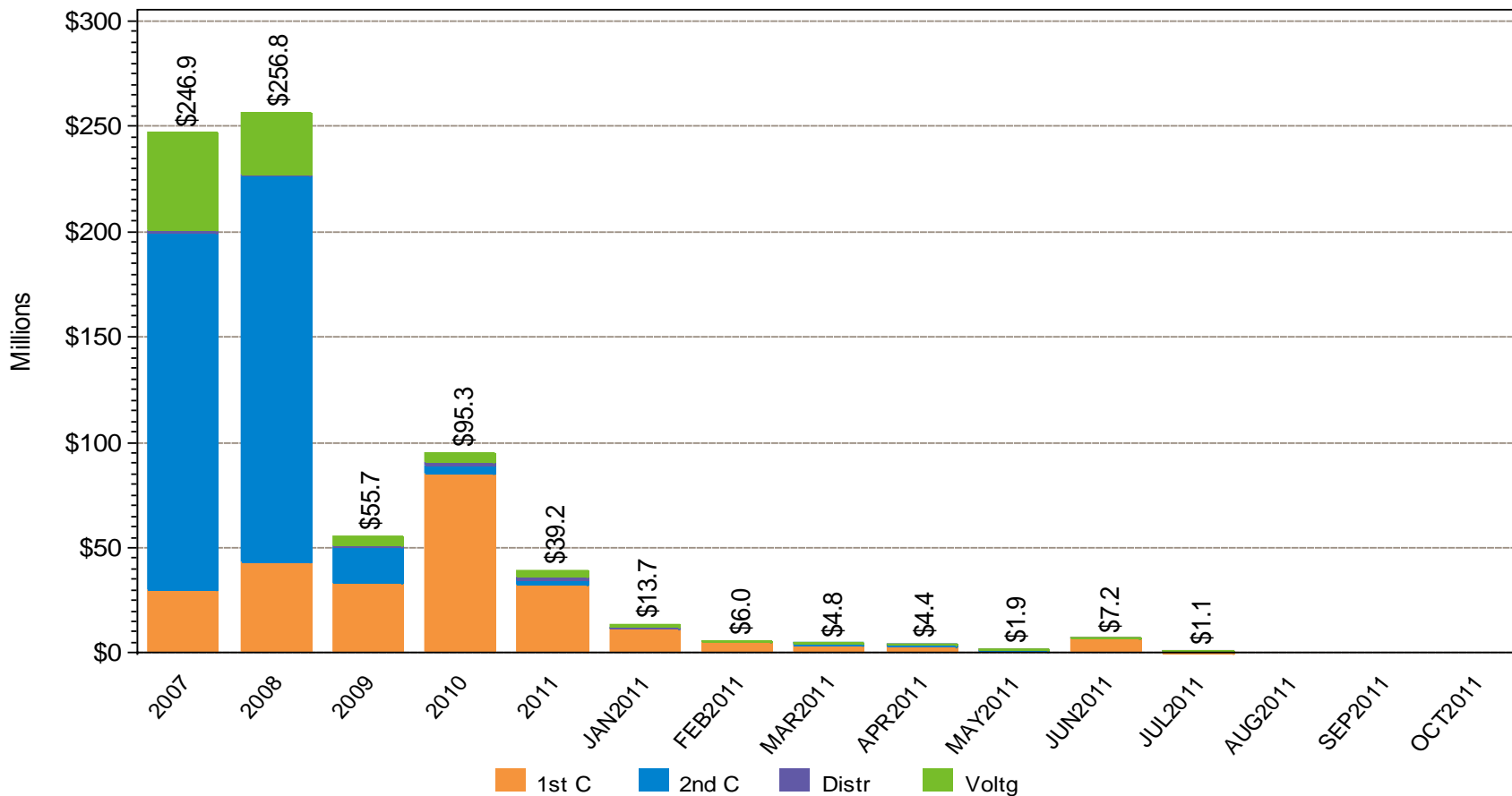
* Under certain trigger conditions, a portion of Real-Time 2nd Contingency charges will be reallocated to Regional Network Load. (See Appendix B.)

** Included in bill issued in second month after last operating day in month.

*** Includes virtual transactions.

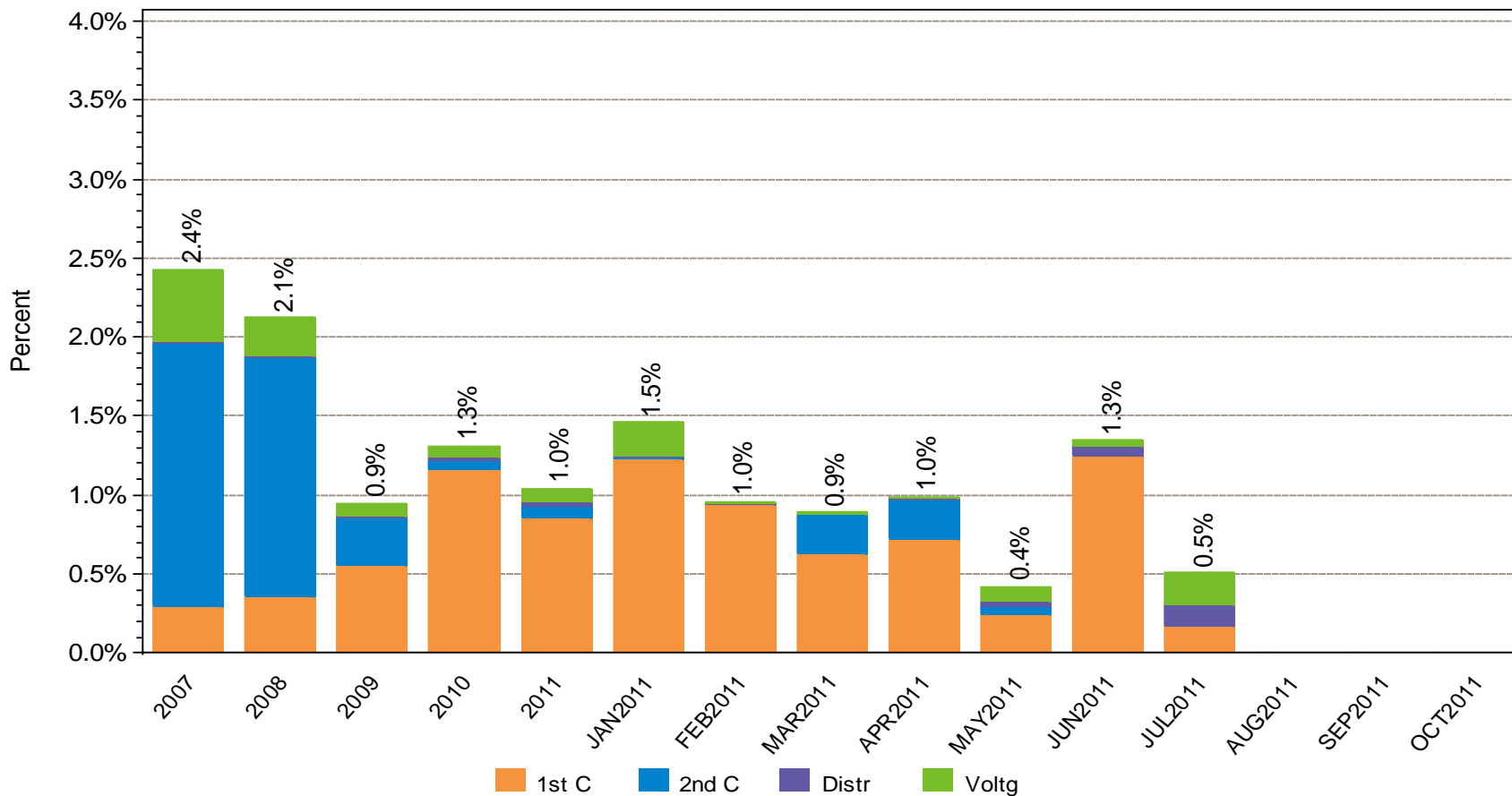
NCPC Payments by Type

Payments by Type of NCPC



NCPC Payments by Percent of Energy Market

NCPC By Type as Percent of Energy Market



Common NCPC Terms

Start-Up Cost, No-Load Cost, and Incremental Energy

Start-Up Cost

- Cost of starting a pool-scheduled unit.
- Three Start-Up costs per unit:
 1. Hot
 2. Intermediate
 3. Cold
- Appropriate Start-Up is applied based on the amount of time the unit was offline prior to the start.

No-Load Cost

A fixed cost for every hour the pool-scheduled unit is on line.

Incremental Energy

Incremental cost for MWhs submitted in up to ten price/MW pairs.

Common NCPC Terms

Pool Schedule and Self-Schedule

Pool-Schedule

Action by the ISO to schedule a resource for which the Participant submitted supply offers to sell energy. The ISO can schedule these resources in the DA Market as well as commit them to provide energy in the RT dispatch.

Self Schedule

Action of a Participant in committing and/or scheduling its resource, to provide service in an hour, whether or not in the absence of that action the resource would have been scheduled or dispatched by the ISO to provide the service.

Common NCPC Terms

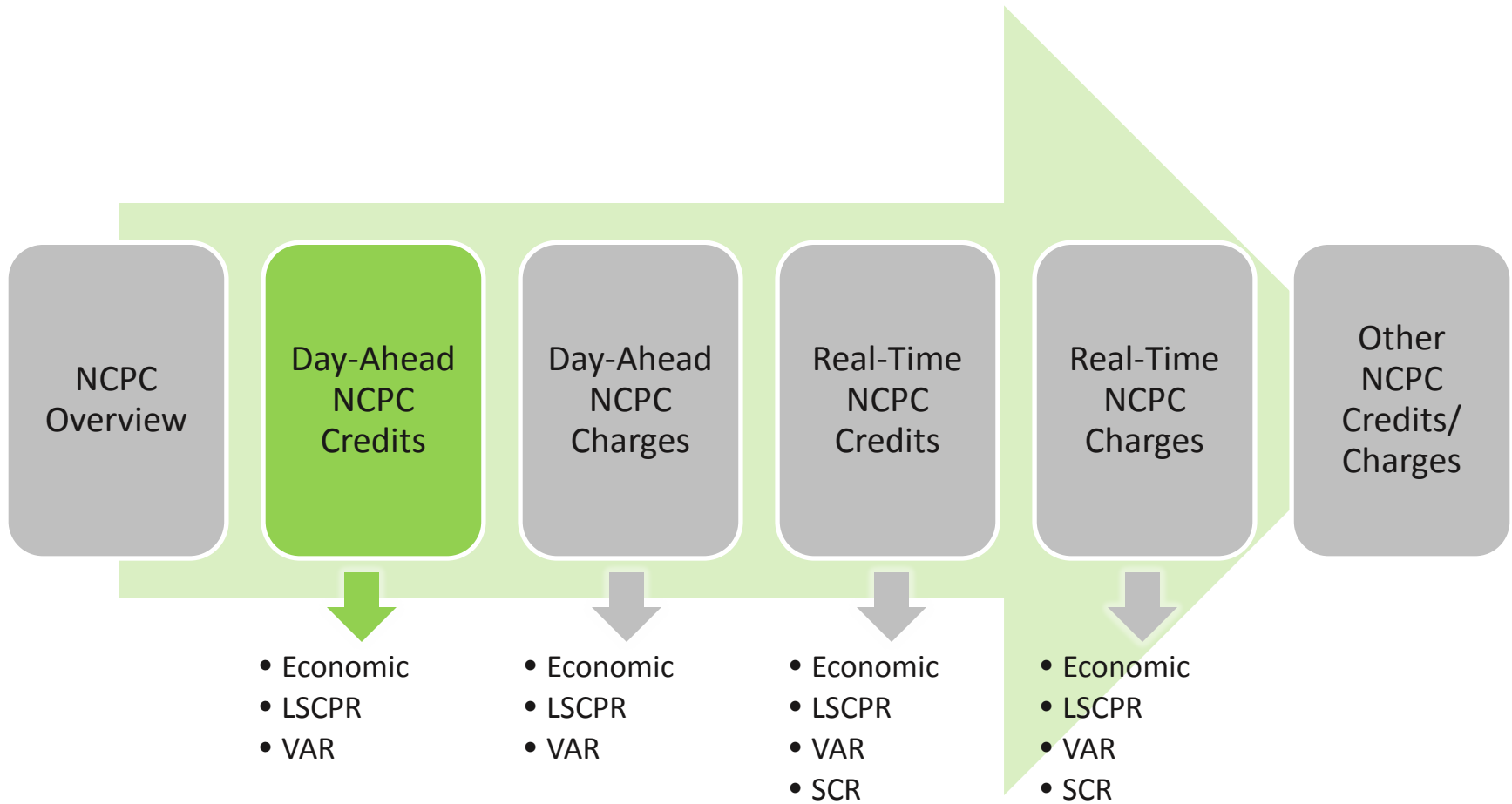
Min Run Time (MRT) and Min Down Time (MDT)

Min Run Time (MRT)

Bid parameter for the minimum time the resource should be online for NCPC eligibility.

Min Down Time (MDT)

Bid parameter for the minimum time the resource should be offline for NCPC eligibility.



DA NCPC: Determine Daily Eligibility

- Resources that submit a Self Schedule as part of their DA supply offer which violates their Minimum Run Time or Minimum Down Time are NOT ELIGIBLE for DA NCPC Credits.

MDT = 2 Hours	Hour End			
	2	3	4	5
	SS	PS	PS	SS
Eligible				

MDT = 2 Hours	Hour End			
	2	3	4	5
	SS	SS	PS	SS
Ineligible				

DA NCPC: Determine Hourly Eligibility

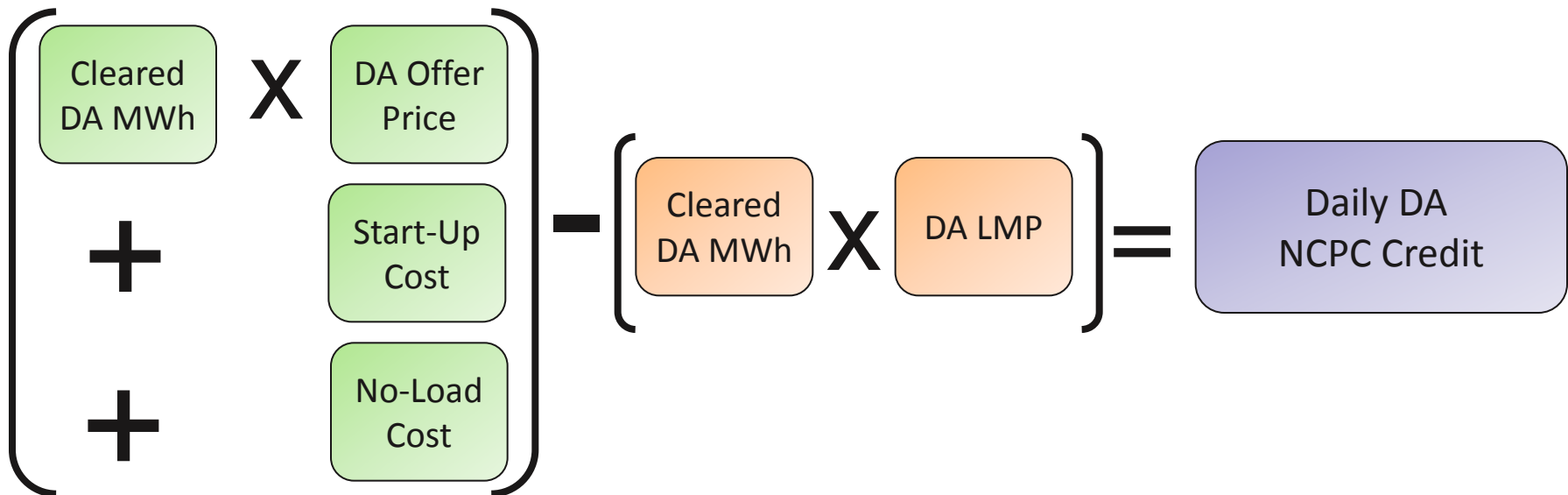
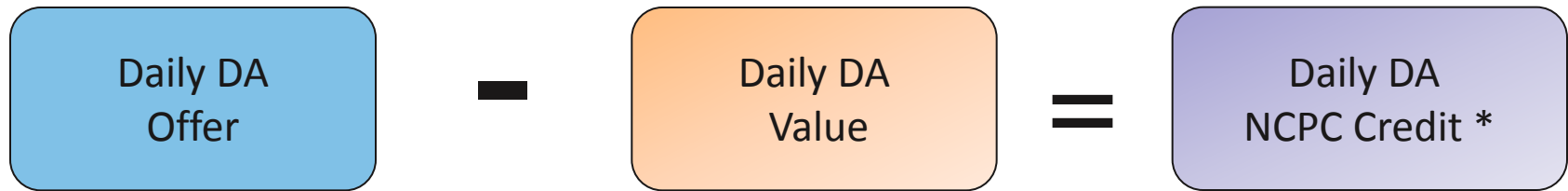
Start-Up Fee

- Units are ELIGIBLE for Start-Up costs if there are no Self Scheduled hours in their contiguous run hours
- Units are NOT ELIGIBLE for Start-Up costs if there is a Self Scheduled hour in their contiguous run hours

No-Load Fee and Incremental Energy

- Pool-Schedules are fully ELIGIBLE for No-Load and Incremental Energy where the resource MWh cleared in the DA Market > 0
- Self Schedules are NOT ELIGIBLE for No-Load and Incremental Energy

DA NCPC: Calculate Daily Credit



*If negative, set DA Generation Credit = 0

Example: DA NCPC

- Pool-Scheduled Resource
 - Hourly No-Load cost: \$100
 - Start-Up cost: \$540 (Cold)
 - Cleared hours: 8 – 14
- Offer Quantities
 - Bid Block 1: 01 - 20 MWhs @ \$20
 - Bid Block 2: 21 - 30 MWhs @ \$28

Example: DA Offer (Incremental Energy)

Hour	Cleared DA MWHs	x	Offer Price	=	Hourly Offer
08	18		\$20.00		\$360
09	20		\$20.00		\$400
10	20		\$20.00		\$400
11	20		\$20.00		\$400
	8		\$28.00		\$224
12	20		\$20.00		\$400
	10		\$28.00		\$280
13	20		\$20.00		\$400
	7		\$28.00		\$196
14	20		\$20.00		\$400
Totals					\$3,460

Example: DA Value (Revenue)

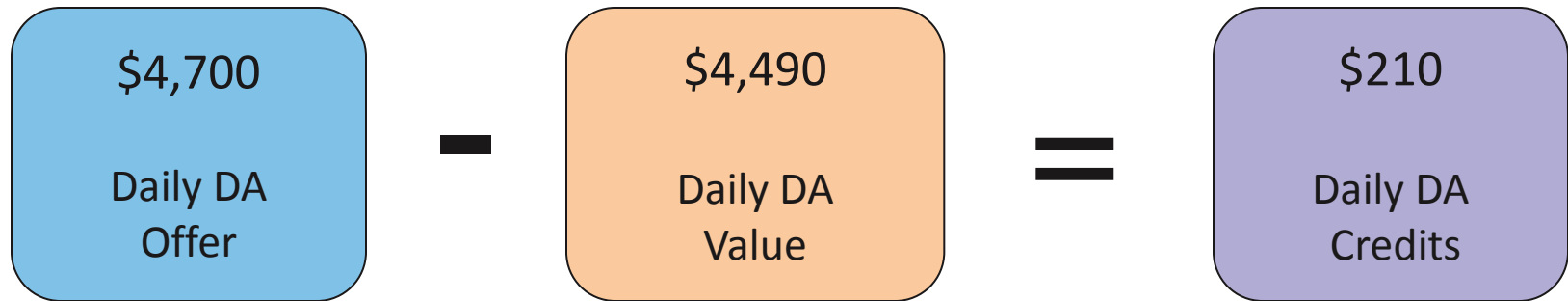
Hour	Cleared DA WHs	x	LMP	=	Hourly Value
08	18		\$20.00		\$360
09	20		\$23.00		\$460
10	20		\$22.00		\$440
11	28		\$28.00		\$784
12	30		\$43.00		\$1,290
13	27		\$28.00		\$756
14	20		\$20.00		\$400
Totals					\$4,490

Example: DA Cost vs. DA Revenue

DA Offer (Cost)		DA Market Value (Revenue)	
No-Load (\$100 x 7 hrs)	\$ 700		
Start-Up	\$ 540		
Incr. Energy	\$3,460		

	\$4,700	←	\$4,490

Example: Calculate DA NCPC Credit



Distribute DA NCPC Credits Across Hours

Step 1...

- Daily DA NCPC Credit for each Resource is allocated to each eligible scheduled hour pro-rata based on the DA Pool Load Obligation in the scheduled hours.



Example: DA Credit Distribution by Hour

Total Daily NCPC Credit = \$210

Hour	Pool Hourly Load (MWh)	%	NCPC Hourly Credit
08	9,000	10.59%	\$22.23
09	10,000	11.76%	\$24.71
10	10,000	11.76%	\$24.71
11	12,000	14.12%	\$29.65
12	14,000	16.47%	\$34.58
13	15,000	17.65%	\$37.06
14	15,000	17.65%	\$37.06
Totals	85,000	100.00%	\$210.00

Distribute DA NCPC Credits by Type

Step 2...

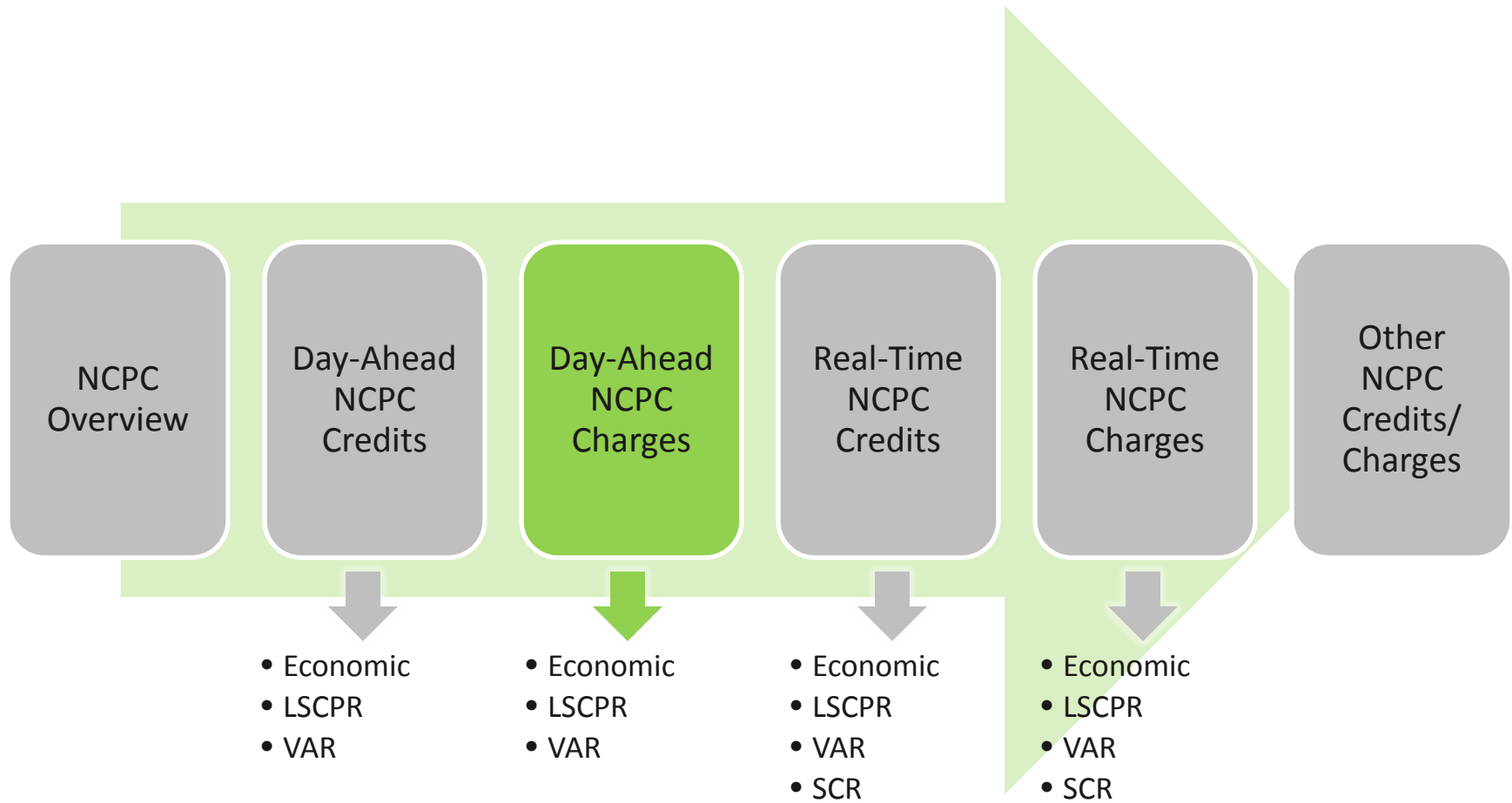
- Assign the type of NCPC credit for each hour:
 - Economic (default)
 - Local Second Contingency Protection Resource (LSCPR)
 - Volt Ampere Reactive (VAR)



Example: DA Credit Distribution by Type

Total Daily NCPC Credit = \$210.00

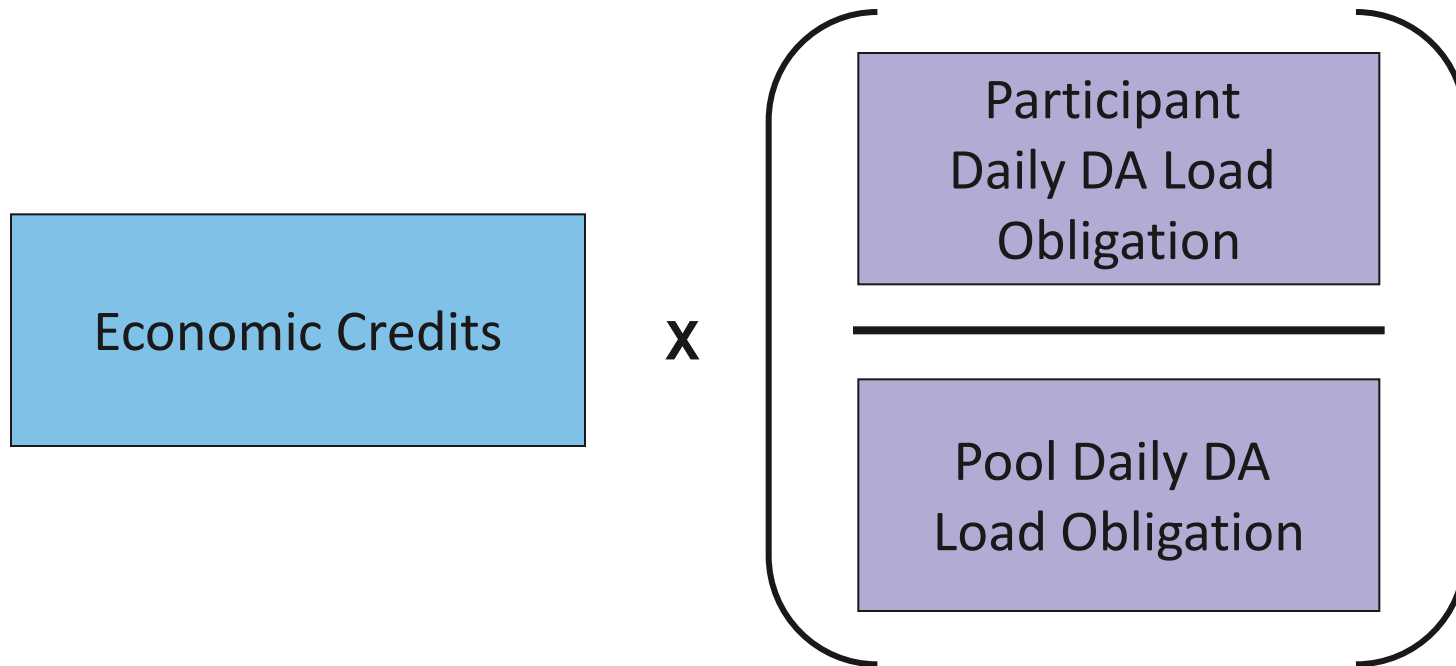
Hour	Pool Hourly Load (MWh)	%	NCPC Hourly Credit	Type
08	9,000	10.59%	\$22.23	LSCPR
09	10,000	11.76%	\$24.71	LSCPR
10	10,000	11.76%	\$24.71	LSCPR
11	12,000	14.12%	\$29.65	VAR
12	14,000	16.47%	\$34.58	Economic
13	15,000	17.65%	\$37.06	Economic
14	15,000	17.65%	\$37.06	Economic
Totals	85,000	100.00%	\$210.00	



DA NCPC Economic Charge

- Daily DA NCPC Economic Charge is the result of the DA NCPC Economic credit multiplied by the Load Ratio Share.
- Load Ratio Share is the Participant's Daily DA Load Obligation divided by the Pool's Daily DA Load Obligation.
- Billed as part of the Hourly Services in twice weekly bills.

Calculate DA NCPC Economic Charge



Example: DA NCPC Economic Charge

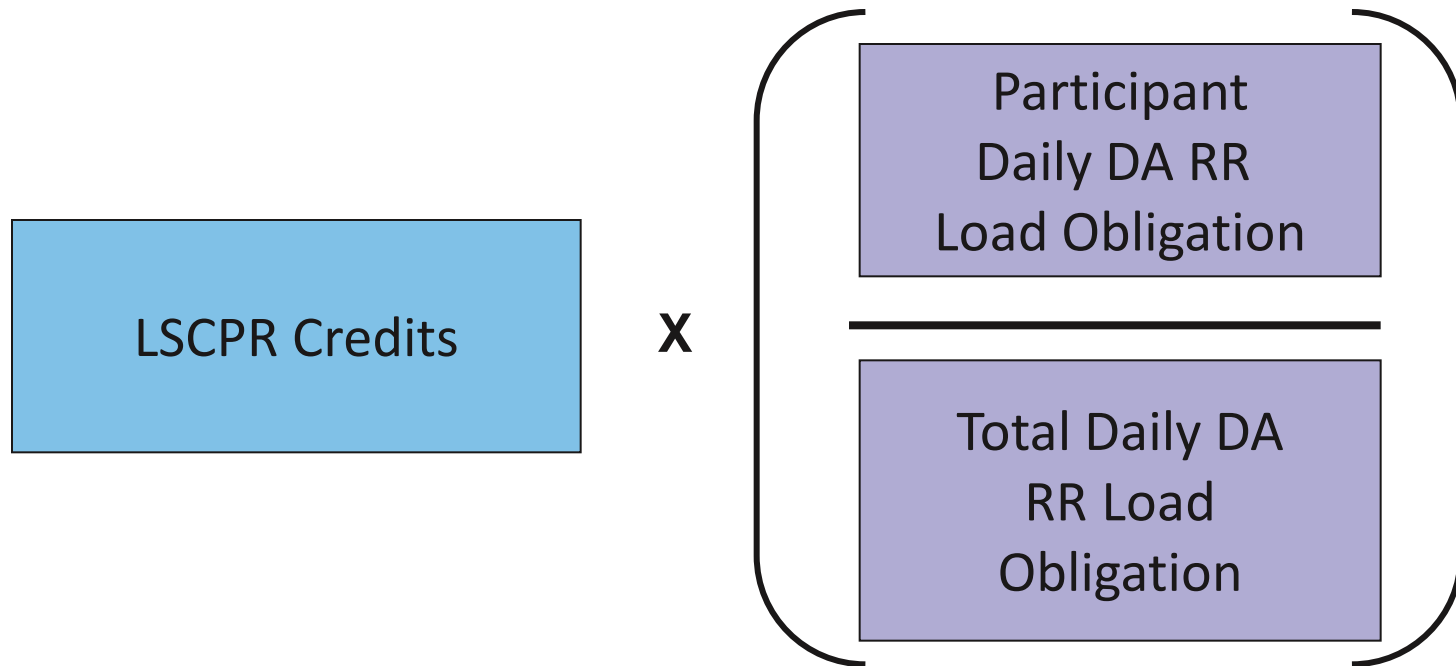
Total NCPC Economic Credits = \$10,000

Participant	Participant Daily DA Load Obligation (MWh)	%	Economic Credit for Day	Total DA Charges
A	35,000	11.55%	\$10,000	(\$1,155.12)
B	16,000	5.28%	\$10,000	(\$528.05)
C	25,000	8.26%	\$10,000	(\$825.08)
D	32,000	10.56%	\$10,000	(\$1,056.11)
E	45,000	14.85%	\$10,000	(\$1,485.15)
F	19,000	6.27%	\$10,000	(\$627.06)
G	32,000	10.56%	\$10,000	(\$1,056.11)
H	41,000	13.53%	\$10,000	(\$1,353.14)
I	28,000	9.24%	\$10,000	(\$924.09)
J	30,000	9.90%	\$10,000	(\$990.10)
Totals	303,000	100.00%	\$10,000	(\$10,000.00)

DA NCPC LSCPR Charge

- DA NCPC LSCPR Charge calculation is similar to the DA NCPC Economic Charge, with the difference of using Load Ratio Share by Reliability Region (RR).
- LSCPR Load Ratio Share is the Participant's Daily DA Load Obligation by Region divided by the total Daily DA Load Obligation by Region.
- Daily DA NCPC LSCPR Charge is the result of the DA NCPC LSCPR Credit multiplied by the Load Ratio Share by Region.
- Billed as part of the Hourly Services each week

Calculate DA NCPC LSCPR Charge



Example: DA NCPC LSCPR Charge

Region 1	Participant	Daily DA RR Load Obligation (MWh)	%	LSCPR Credit	Total DA Charges
	A	11,567	15.86%	\$15,000	(\$2,379)
	B	11,493	15.76%	\$15,000	(\$2,365)
	C	25,884	35.50%	\$15,000	(\$5,324)
	D	23,976	32.88%	\$15,000	(\$4,932)
Total	72,920		Total	(\$15,000)	

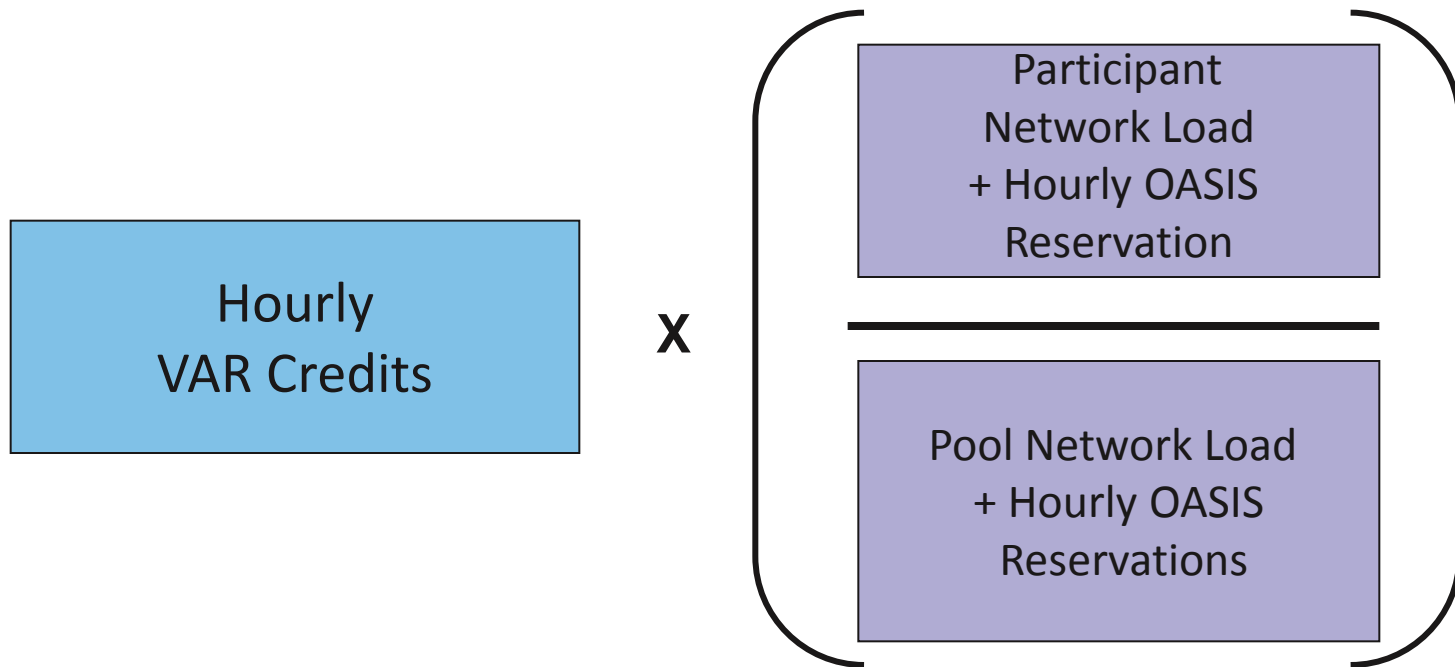
Region 2	E	10,082	15.70%	\$10,000	(\$1,570)
	F	14,886	23.17%	\$10,000	(\$2,317)
	G	39,270	61.13%	\$10,000	(\$6,113)
	Total	64,238		Total	(\$10,000)

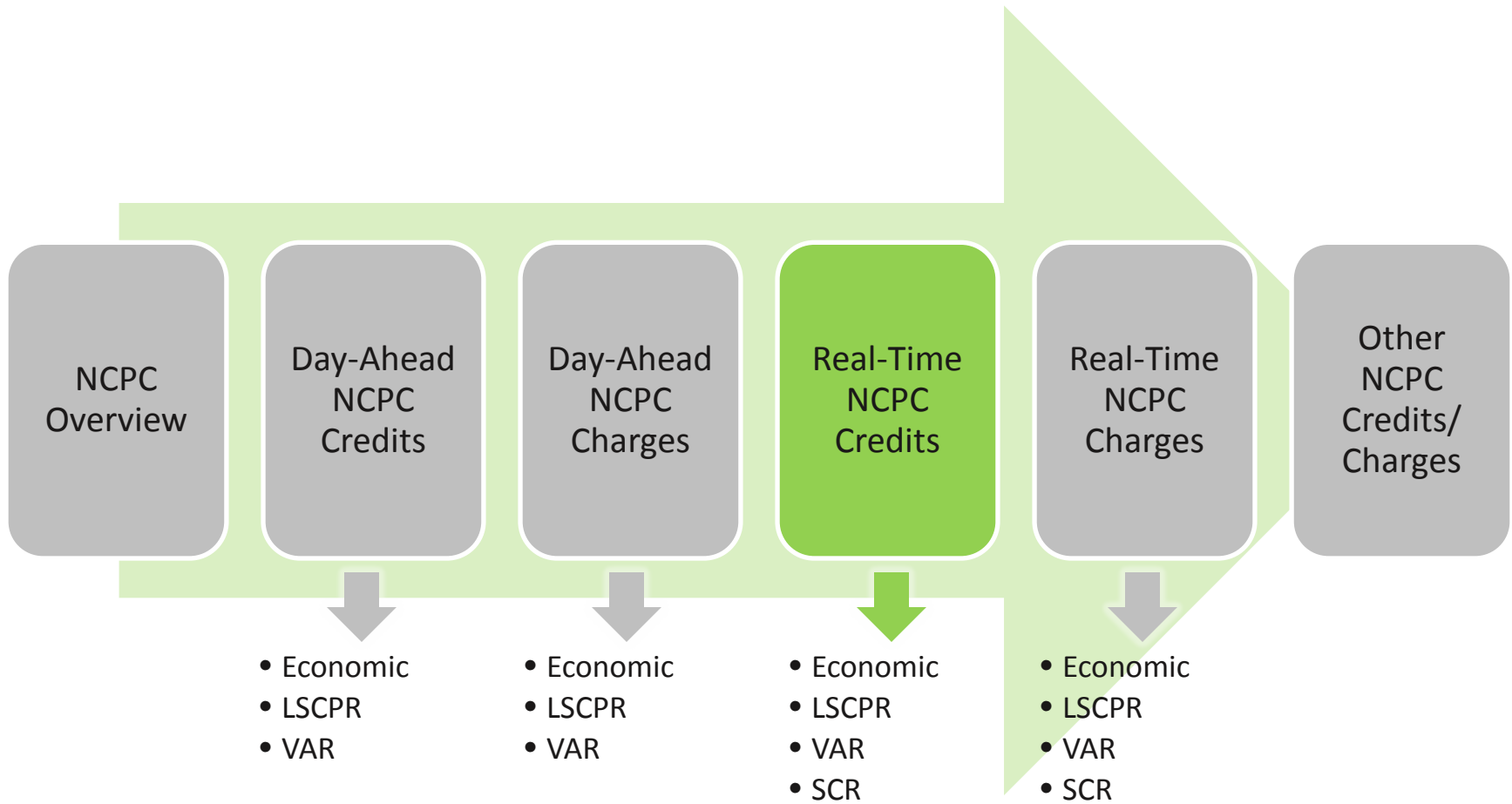
Region 3	H	5,433	12.00%	\$5,000	(\$600)
	I	15,978	35.29%	\$5,000	(\$1,765)
	J	23,862	52.71%	\$5,000	(\$2,635)
	Total	45,273		Total	(\$5,000)

DA NCPC VAR Charge

- DA NCPC VAR Charge is the Participant's share of total daily VAR NCPC Credits and is allocated pro-rata based on Network Load and OASIS reservations
 - Network Load is a monthly peak value
 - OASIS Reservations (Open Access Same-Time Information System) are reservations for external energy transactions
 - Will be discussed in the External Transactions module of the course

Calculate DA NCPC VAR Charge





RT NCPC: Determine Hourly Eligibility

Start-Up Fee and No-Load Fee Eligibility

Start-Up Fee Eligibility

- Resources that are eligible to receive a Start-Up Fee in the DA Market for a RT Market corresponding start are NOT ELIGIBLE for a RT Start-Up Fee.
- Resources that have a Self Schedule in either their DA or RT schedule are NOT ELIGIBLE for a RT Start-Up Fee for that commitment.

No-Load Fee Eligibility

- Self Scheduled hours are NOT ELIGIBLE.
- Hours are ELIGIBLE only when the hours of operation in real-time exceed the total hours cleared in the DA Market and the hour is not associated to the ramp of the resource.

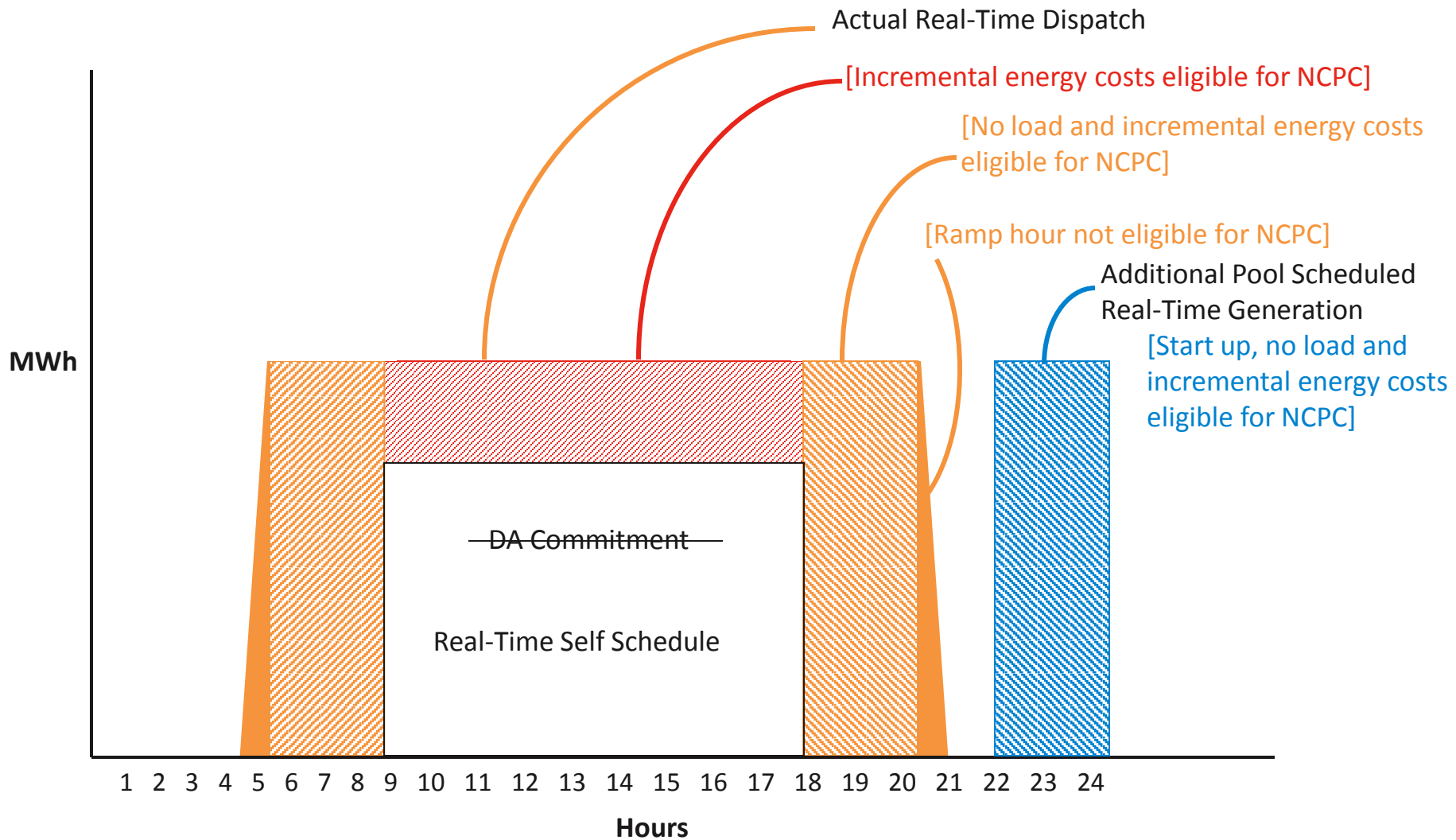
RT NCPC: Determine Hourly Eligibility

Incremental Energy (Offer) Eligibility

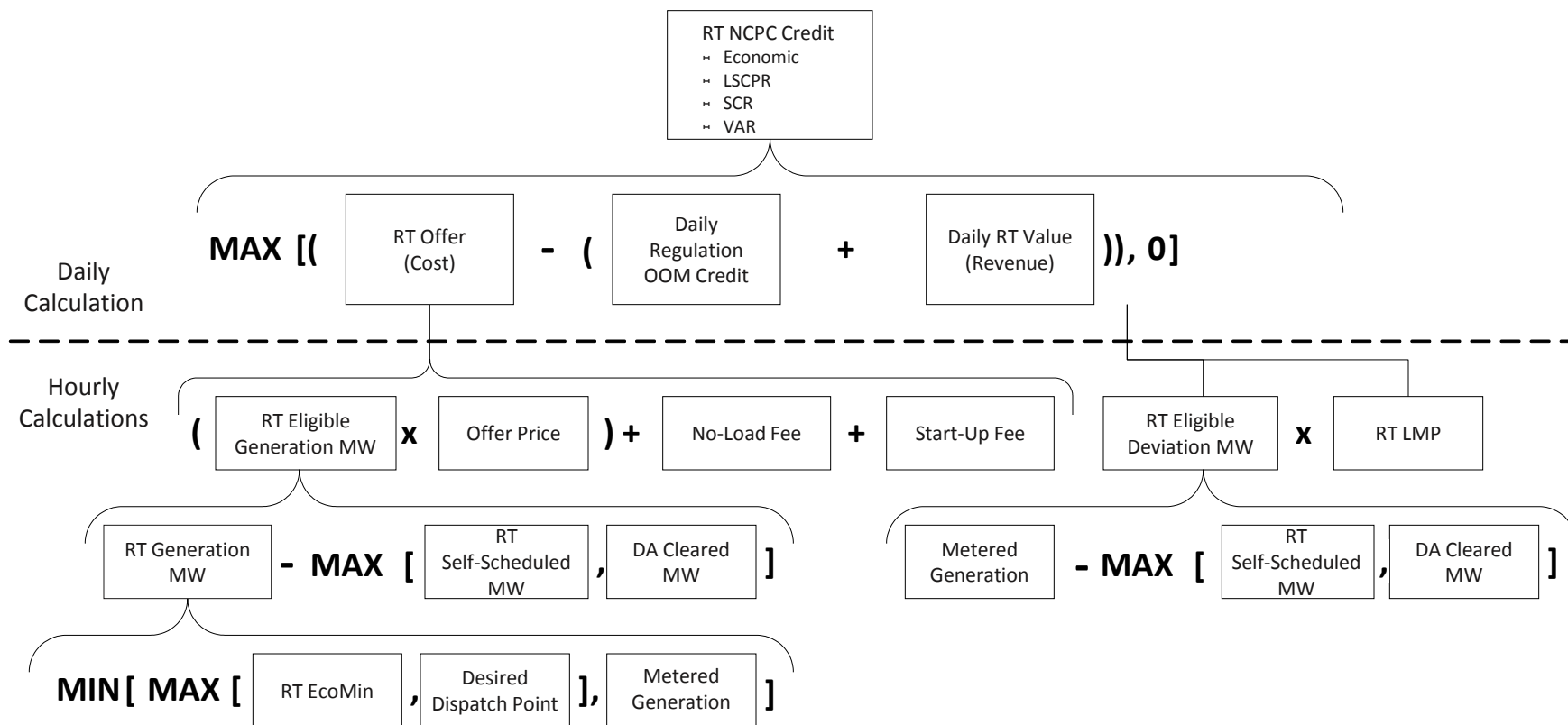
Incremental Energy (Offer) Eligibility

- Pool-Schedule hours are ELIGIBLE as long as:
 - RT MWh are greater than DA Cleared MWh.
 - RT MWh are greater than RT Self Schedule MWh.
 - Resource is following ISO Dispatch Instruction.
 - Resource has been released for dispatch and has not been released for shutdown.
- Hours related to ramping up from or down to an offline state are NOT ELIGIBLE.

NCPC: Real-Time Market



Real-Time NCPC Settlement



Calculate RT Offer

Hour	DA Cleared MWh	RT SS MWh	RT Gen MWh	Eligible Gen MWh	Offer \$/MWh	Hourly Offer \$	No Load \$	Start Up \$
8	100	0	70	0	\$20.00	\$ -	\$ -	\$ -
9	100	0	100	0	\$20.00	\$ -	\$ -	\$ -
10	100	0	150	50	\$20.00	\$1,000	\$ -	\$ -
11	100	0	170	70	\$20.00	\$1,400	\$ -	\$ -
12	100	0	180	80	\$20.00	\$1,600	\$ -	\$ -
13	0	0	180	180	\$20.00	\$3,600	\$1,000	\$ -
14	0	100	170	70	\$20.00	\$1,400	\$ -	\$ -
					Total:	\$9,000	\$1,000	\$ -

Total Daily Offer: \$10,000

Calculate RT Value and NCPC Credit

Hour	DA Cleared MWh	RT SS MWh	Meter MWh	Max DA Clear, RT SS MWh	RT Eligible Deviation MWh	RT LMP \$/MWh	Hourly Value \$
8	100	0	70	100	0	\$20	\$ -
9	100	0	100	100	0	\$20	\$ -
10	100	0	150	100	50	\$20	\$1,000
11	100	0	170	100	70	\$21	\$1,470
12	100	0	180	100	80	\$27	\$ 2,160
13	100	0	180	0	180	\$21	\$3,780
14	0	100	170	100	70	\$19	\$1,330
						Total:	\$9,740

Total Daily Value: \$9,740

$$\begin{aligned}
 \text{RT NCPC Credit} &= \text{Total Daily Offer} - \text{Total Daily Value} \\
 &= \$10,000 - \$9,740 = \$260
 \end{aligned}$$

Distribute RT NCPC Credits Across Hours

Step 1...

- Daily RT NCPC Credit for each Resource is allocated to each eligible dispatch hour based on Pool RT Load Obligation ratio share in each eligible dispatch hour.

Example: RT Credit Distribution by Hour

Total Daily NCPC Credit = \$260

Hour	Pool Load (MWh)	%	NCPC Hourly Credit
10	12,500	17.48%	\$45.46
11	13,500	18.88%	\$49.09
12	14,000	19.58%	\$50.91
13	15,500	21.68%	\$56.36
14	16,000	22.38%	\$58.18
Totals	71,500	100.00%	\$260.00

Distribute RT NCPC Credits by Type

Step 2...

- NCPC credit assigned for each hour by type:
 - Economic (default)
 - Local Second Contingency Protection Resource (LSCPR)
 - Voltage Ampere Reactive (VAR)
 - Special Constraint Resource (SCR)

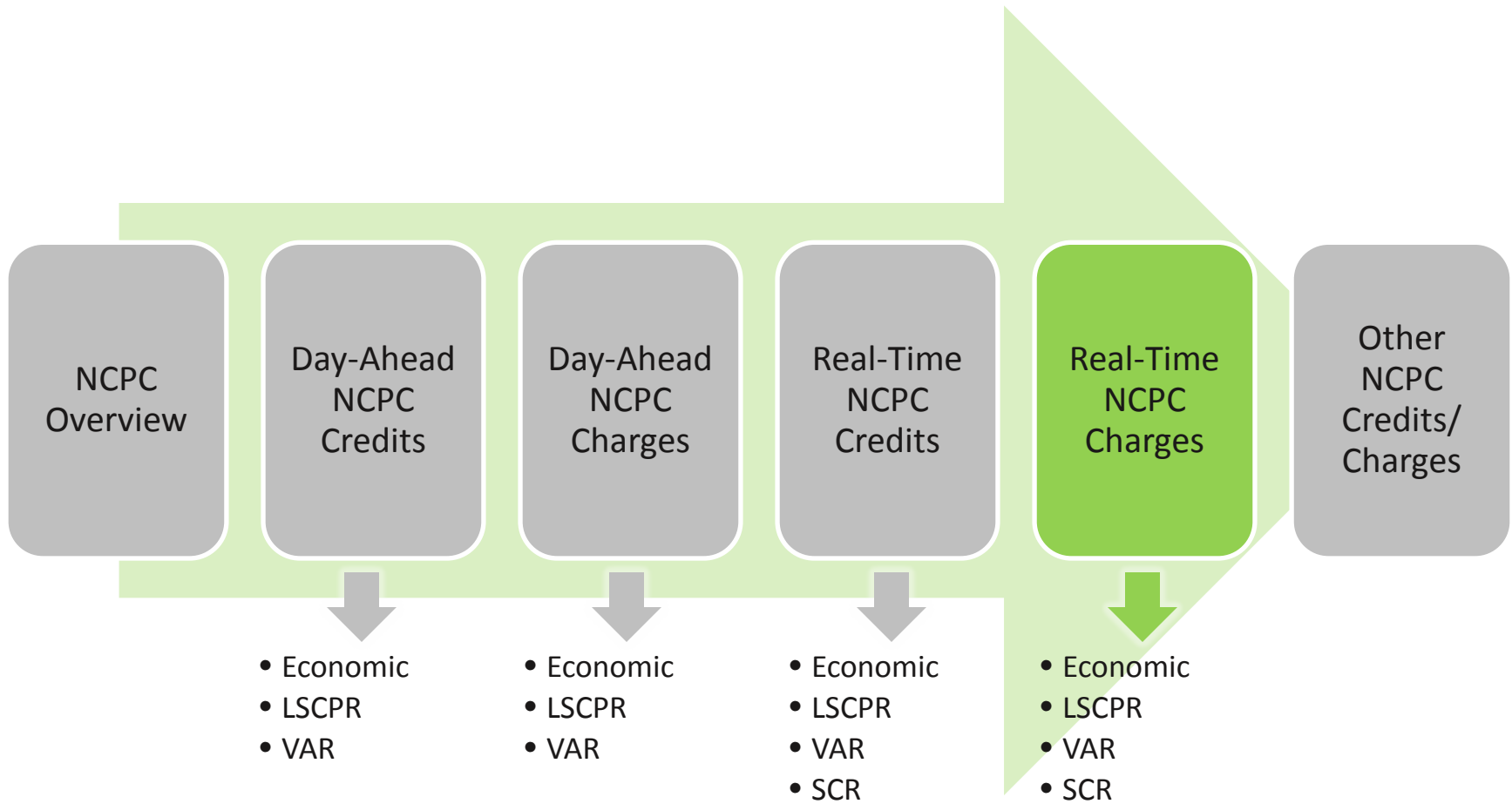
Example: RT Credit Distribution by Type

Total Daily NCPC Credit = \$260

Hour	Pool Load (MWh)	%	NCPC Hourly Credit	Type
10	12,500	17.48%	\$45.46	LSCPR
11	13,500	18.88%	\$49.09	LSCPR
12	14,000	19.58%	\$50.91	VAR
13	15,500	21.68%	\$56.36	VAR
14	16,000	22.38%	\$58.18	Economic
Totals	71,500	100.00%	\$260.00	

Real-Time NCPC “Hands-on” Exercise

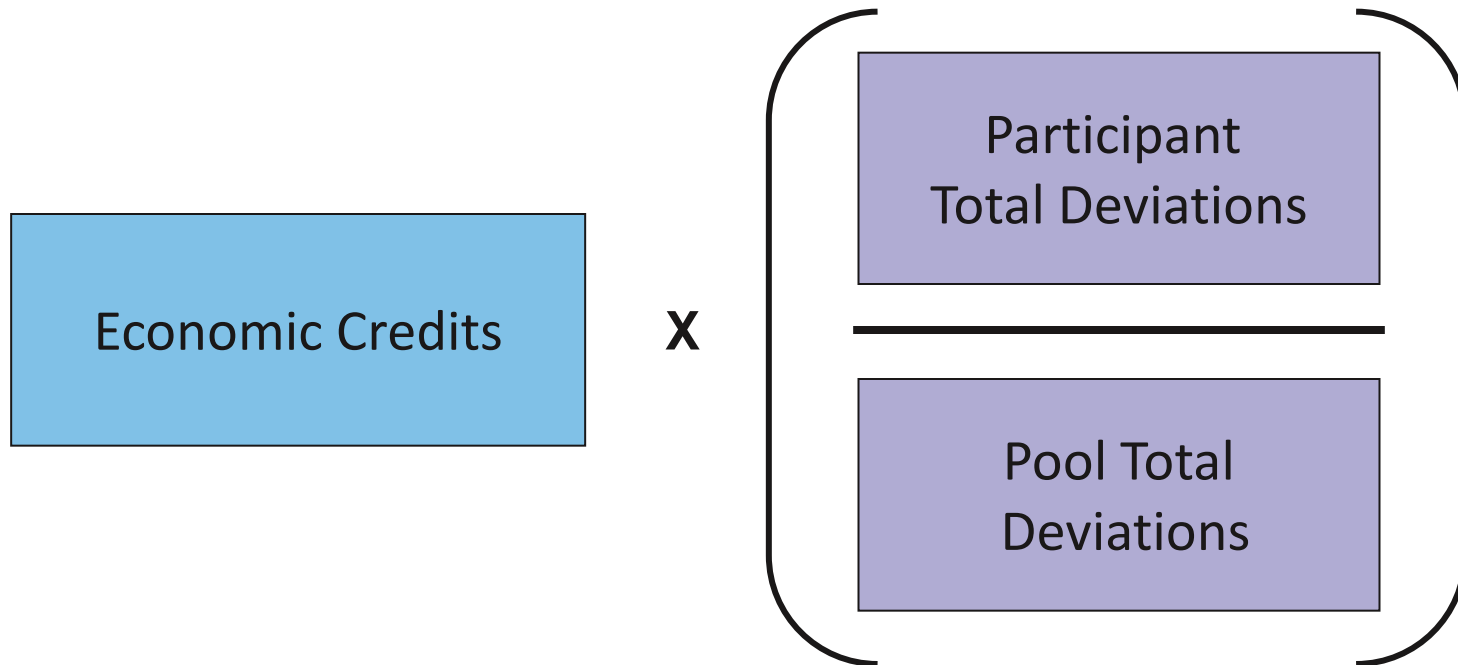




RT NCPC Economic Charge

- Daily pro-rata share of total Participant Daily RT Deviations
- Pro-Rata share based on the daily sum of the Absolute Values of the following:
 - Self Scheduled Generation Deviations
 - Pool-Scheduled Generation Deviations not following dispatch instructions (FTF)
 - Load Obligation Deviations
 - Increment and Import Deviations

Calculate RT NCPC Economic Charge



Example: RT NCPC Economic Charge

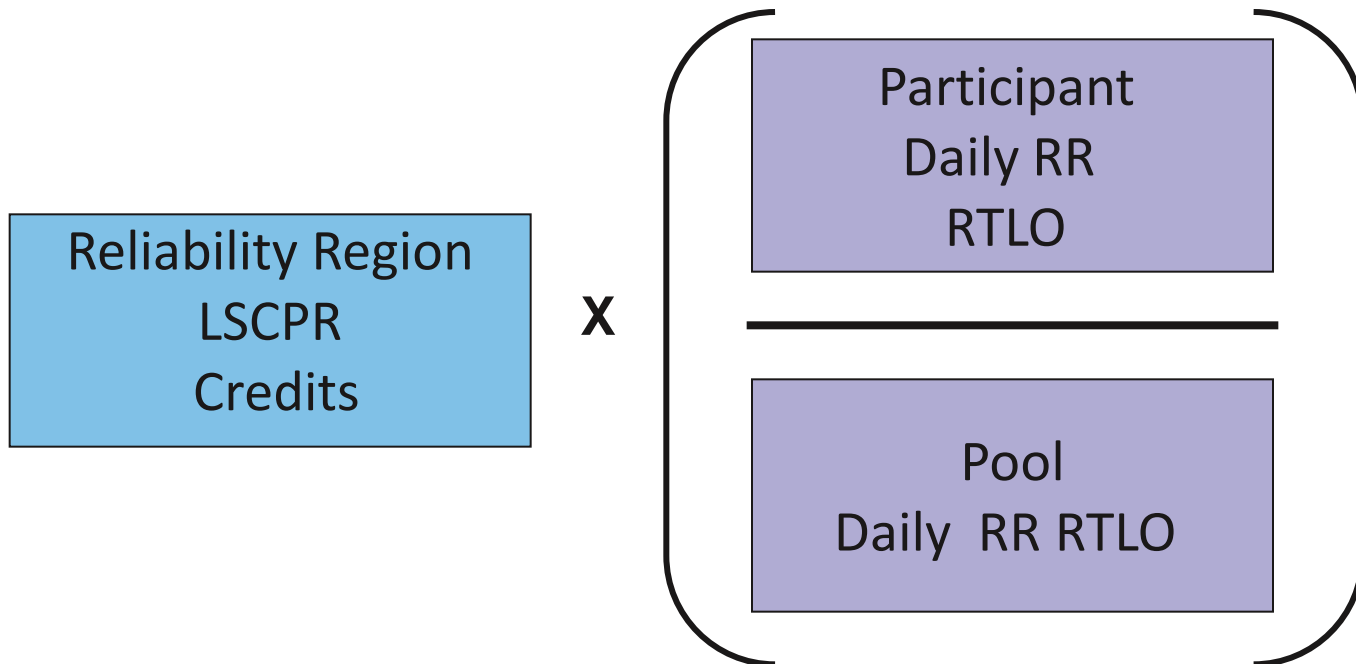
Total Daily NCPC Charge = \$10,000

Participant	Deviations (MWh)	%	Economic Credit for Day	Total RT Economic Charges
A	400	8.00%	\$10,000	(\$800)
B	600	12.00%	\$10,000	(\$1,200)
C	300	6.00%	\$10,000	(\$600)
D	500	10.00%	\$10,000	(\$1,000)
E	1,000	20.00%	\$10,000	(\$2,000)
F	400	8.00%	\$10,000	(\$800)
G	500	10.00%	\$10,000	(\$1,000)
H	600	12.00%	\$10,000	(\$1,200)
I	400	8.00%	\$10,000	(\$800)
J	300	6.00%	\$10,000	(\$600)
Total:		100.00%	\$10,000	(\$10,000.00)

RT NCPC LSCPR Charge

- Participant charges are based upon a pro-rata share of the RTLO:
 - $RR \text{ LSCPR Credits} \times (\text{Total Participant Daily RTLO per RR} / \text{Total Participants Daily RTLO per RR})$.

Calculate RT NCPC LSCPR Charge



Example: RT NCPC LSCPR Charge

Total Daily NCPC Charge = \$6000

Region 1	Participant	RTLO (MWh)	%	LSCPR Credit for Day	Total RT Charges
	A	200	25.00%	\$3,000	(\$750)
	B	300	37.50%	\$3,000	(\$1,125)
	C	200	25.00%	\$3,000	(\$750)
	D	100	12.50%	\$3,000	(\$375)
Total	800		Total	(\$3,000)	

Region 2	E	600	40.00%	\$2,000	(\$800)
	F	500	33.33%	\$2,000	(\$667)
	G	400	26.67%	\$2,000	(\$533)
	Total	1,500		Total	(\$2,000)

Region 3	H	300	50.00%	\$1,000	(\$500)
	I	200	33.33%	\$1,000	(\$333)
	J	100	16.67%	\$1,000	(\$167)
	Total	600		Total	(\$1,000)

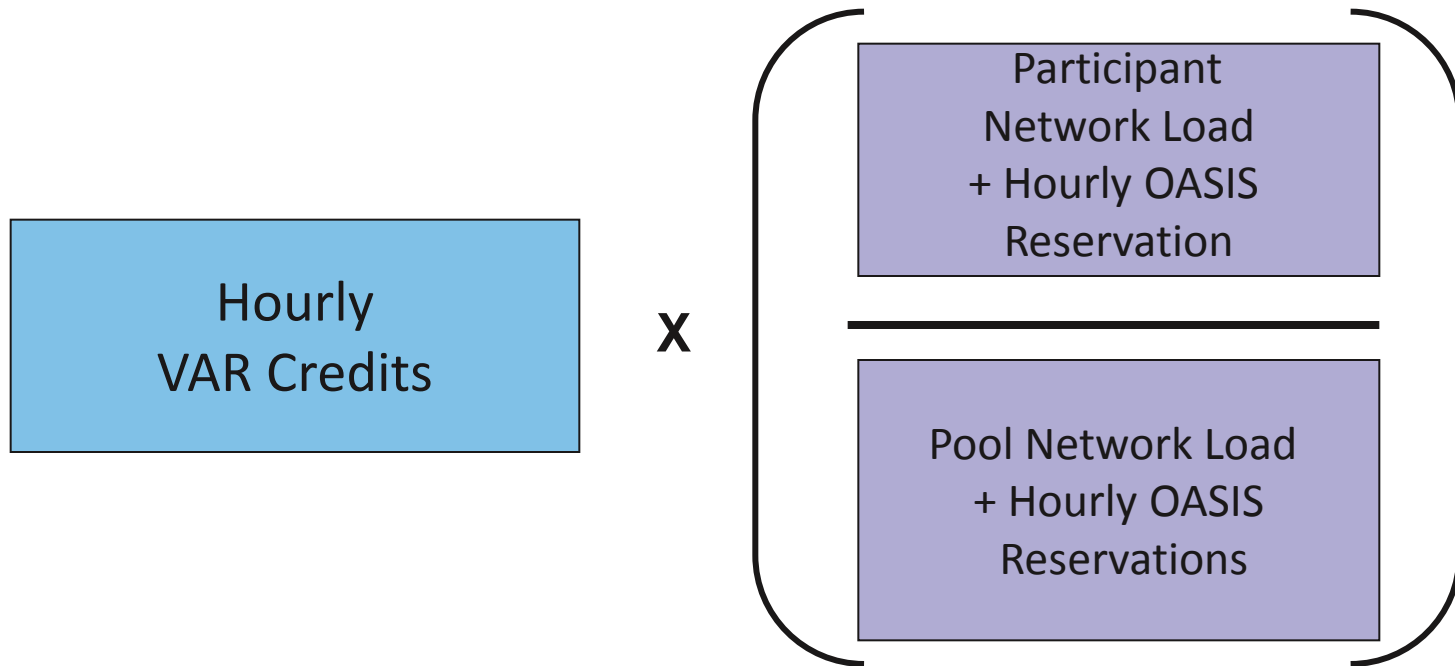
LSCPR (RMR) NCPC Allocation Evaluation

- Settlement Agreement effective July 2007 on the treatment of future LSCPR NCPC payments on a going-forward basis for all reliability regions
- If certain trigger conditions are met in a region, a portion of the Real-Time LSCPR charges will be re-allocated to network load in the region, and the same amount will be credited to energy market customers
 - Monthly and 12-Month trigger
 - Both triggers must be met to cause reallocation
 - Appendix B contains detail and examples of this allocation evaluation.

RT NCPC VAR Charge

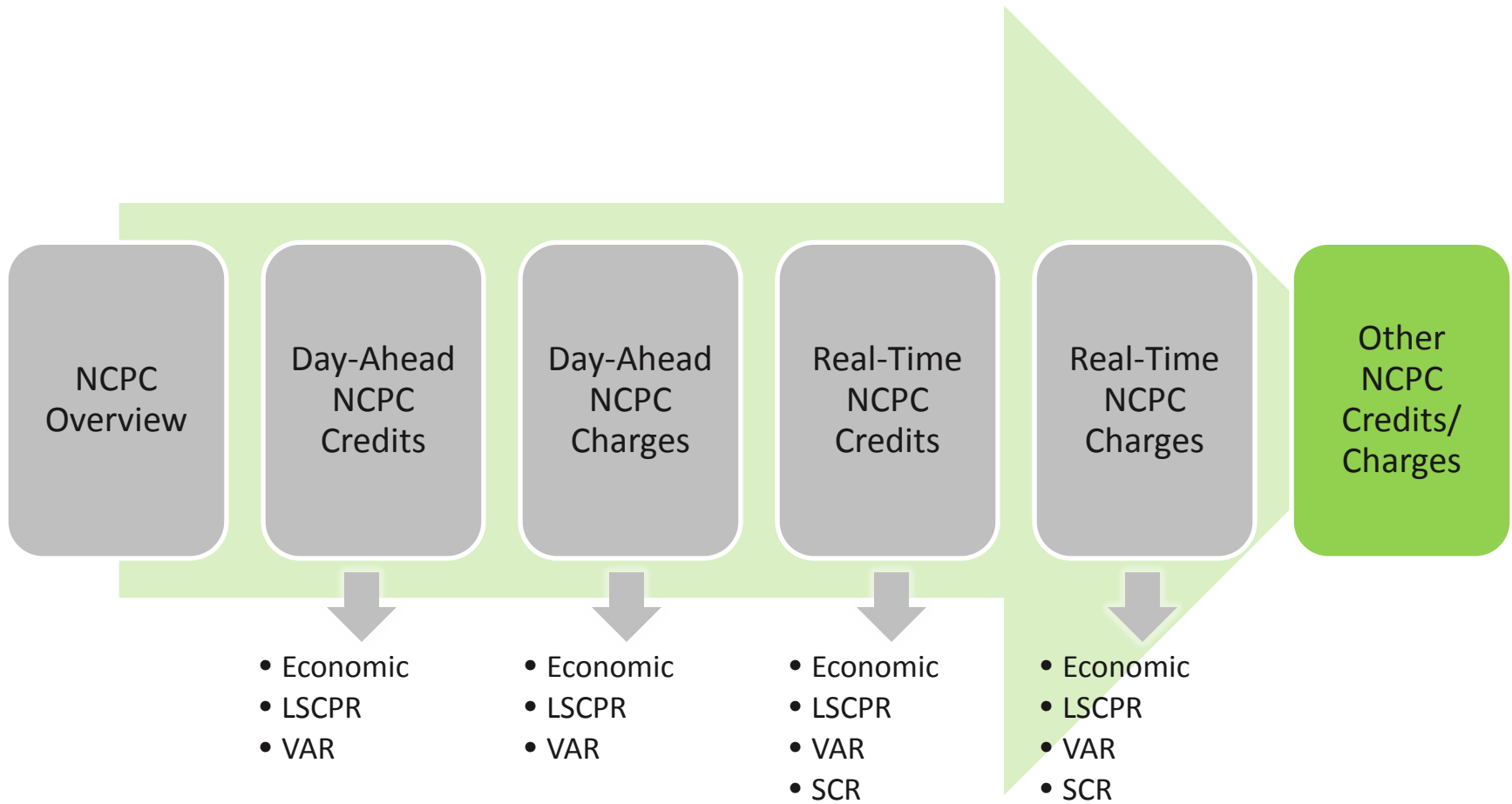
- Participant pro-rata share of total daily RT VAR NCPC Credits as calculated in accordance with Schedule 2 of OATT
 - Pro rata basis according to the Transmission Customer's share of the Network Load and OASIS reservations.

Calculate RT NCPC VAR Charge



RT NCPC SCR Charge

- Participant pro-rata share of total daily SCR (Special Constraint Resource) NCPC Credits as calculated in accordance with Schedule 19 of OATT
 - Transmission owner or distribution company shall be charged for the SCR NCPC credits.



Other NCPC Credits and Charges

Resources cleared DA, not dispatched in RT	MR1, Appendix F, Section III.F.2.1.17
Minimum Generation Emergency	MR1, Appendix F, Section III.F.2.1.18
Pool-Scheduled Synchronous Condensers	MR1, Appendix F, Section III.F.2.2
External Transaction Purchases	MR1, Appendix F, Section III.F.2.3
External Transaction Sales	MR1, Appendix F, Section III.F.2.4
Canceled Starts	MR1, Appendix F, Section III.F.2.5
Posturing for Reliability	MR1, Appendix F, Section III.F.2.6

Cleared DA, Not Dispatched in RT

Credits

- ISO credits any generating resource that is Pool-Scheduled in the Day-Ahead Energy Market that is available, can deliver Energy and is not Postured, but are not economically dispatched in Real-Time
 - If a resource decides to re-offer their bid in Real-Time after clearing in the DA Market, they are no longer eligible for this credit.
 - The only hours where this will be calculated will be when the RT LMP exceeds the DA LMP at the generator's node.
 - $\text{Credit} = (\text{RT LMP} - \text{DA LMP}) \times \text{DA Scheduled MWh}$

Cleared DA, Not Dispatched in RT

Charges

- Available in DA not dispatched in RT charges.
 - Any payments made for each hourly shortfall are added to the total Real-Time economic NCPC Credits, Real-Time LSCPR NCPC Credits or Real-Time VAR Credits, as applicable, for the applicable Operating Day

Min Gen Emergency Credit Eligibility

- Resources must request compensation within twenty business days of Monthly Services bill that included the event day.
 - Resources requesting this credit will be ineligible for any Real-Time NCPC in the hours requested.
 - Eligible RT MWh are calculated for each hour based upon the difference between the resource's Economic Minimum Limit and the lesser of the resource's RT Generation Obligation and Desired Dispatch Point (DDP)
 - If the resource is ramp constrained and is forced to operate above its EcoMin then this value will be zero.
- All credits and charges will be included on the bill with the Data Reconciliation Process (DRP) Resettlement for the month.

Min Gen Emergency

Credits and Charges

- Min Gen Emergency Credits
 - Offer = (Eligible RT MWh x Supply Offer Price) + No-Load Fee
 - Revenue = (RT Metered Output - DA Cleared) x RT LMP
 - Credit = Offer – Revenue, where a negative value is set to zero.
- Min Gen Emergency Charges by Reliability Region
 - Calculate Participant Eligible Generation Obligation (GO)
 - Generation Obligation - (Eligible RT MWh x Ownership %)
 - Calculate Participant Eligible GO Ratio Share
 - Participant Generation MWh / Total Participant Generation MWh
 - Calculate each Participants charge
 - Participant Eligible GO Ratio Share x Total Min Gen Emergency Credit

External Transactions – Purchases

Hourly and Daily Credits

- Hourly Credits for Dispatchable DA External Purchases
 - DA Revenue = DA Purchase MWh x DA LMP
 - DA Offer = DA Purchase MWh x DA Offer Price
 - DA Credit = DA Offer - DA Revenue, where a negative value is set to 0
- Daily Credits for RT Dispatchable External Purchases
 - RT Revenue = (RT Purchase MWh - DA Purchase MWh) x RT LMP
 - RT Offer = (RT Purchase MWh - DA Purchase MWh) x RT Offer Price
 - RT Credit = RT Offer - RT Revenue, where a negative value is set to 0



External Transactions – Purchases

Charges

- Charges for External Purchases – Economic NCPC
 - DA NCPC is charged to load obligation at the External Node in the hour
 - RT NCPC is charged to daily RT deviations



External Transactions – Sales

Credits

- Credits for Dispatchable DA External Sales
 - $DA\ Cost = DA\ Sales\ MWh \times DA\ LMP$
 - $DA\ Bid = DA\ Sales\ MWh \times Bid\ Price$
 - $DA\ Credit = DA\ Cost - DA\ Bid$, where a negative value is set to 0
- Credits for RT Dispatchable External Sales
 - $RT\ Cost = (RT\ Sales\ MWh - DA\ Sales\ MWh) \times RT\ LMP$
 - $RT\ Bid = (RT\ Sales\ MWh - DA\ Sales\ MWh) \times Bid\ Price$
 - $RT\ Credit = RT\ Cost - RT\ Bid$, where a negative value is set to 0



External Transactions – Sales

Charges



- Charges for External Sales – Economic NCPC
 - DA NCPC is charged to generation obligation at the External Node in the hour
 - RT NCPC is charged to daily RT deviations

DA NCPC External Transaction Adjustment

- Adjustment for offsetting transactions at an External Node
 - A dispatchable Day-Ahead transaction for which a Participant has an equal number of fixed offset MWh is not eligible for NCPC payment
 - For example, in the Day-Ahead Market, Participant has 100 MWh fixed export and 100 MWh of cleared dispatchable import at the same external node. The dispatchable import will not be eligible for NCPC payments.
 - For example, in the Day-Ahead Market, Participant has 100 MWh fixed export and 125 MWh of cleared dispatchable import. The 125 MWh of cleared dispatchable imports will be ranked from highest to lowest in price; the highest priced 100 MWh will not be eligible for NCPC payments.

Canceled Starts

- Canceled Start NCPC Credit
 - ISO credits each Participant for cancellation based on a pro-rata share of the Generator Start-Up Fee and associated Notification Time parameter (Hot, Intermediate, and Cold) utilized by the ISO in the original commitment decision.
 - Credit for cancelled starts is calculated as follows:
 - Canceled Start Credit =
Generator Start-Up Fee x (1- Cancel Time / Notification Time)
- Canceled Start NCPC Charge
 - Charge is allocated based upon the type (e.g., LSCPR, VAR, Economic, SCR) of RT NCPC credit assigned to the canceled resource.

Posturing – Credits

- ISO credits Participants for each generating Resource for each hour reduced or suspended based on the following calculation:
 - For generating Resources without daily energy restrictions, the posturing credit for each hour of reduced or suspended operation is:

$$\text{Posturing Credit} = (\text{PAG} - \text{AG}) \times (\text{ULMP} - \text{UB}) - \text{GRC}$$

- For generating Resources with daily energy restrictions, the posturing credit is calculated for all remaining hours in the day from the time at which the resource was postured:

$$\text{Posturing Credit} = (\text{PAG} - \text{AG}) \times (\text{ULMP} - \text{UB}) - \text{GRC}$$

Posturing – Charges

- Posturing NCPC Charges
 - Charges are allocated pro-rata on daily Real Time Load Obligations (RTLO), excluding RTLO associated with postured Dispatchable Asset Related Demand resources
- For additional information: Market Rule 1, Appendix F, Section III.F.2.6.2

MIS Reports – NCPC Settlement

Day-Ahead Market

Day-Ahead Market	
SD_DAUNITOP	Day-Ahead Unit Operations Report
SD_DANCPCPMT	Day-Ahead NCPC Unit Payment Report
SD_DANCPCRM	Day-Ahead NCPC RMR (LSCPR) Unit Payment Report
SD_DANCPCPMTDTL	Day-Ahead NCPC Unit Payment Details Report
SR_DANCPCSTL	Day-Ahead NCPC Settlement Report

MIS Reports – NCPC Settlement

Real-Time Market

Real-Time Market	
SD_RTUNITOP	Real-Time Unit Operations Report
SD_RTNCPCPMT	Real-Time NCPC Unit Payment Report
SD_RTNCPCRMR	Real-Time NCPC RMR (LSCPR) Unit Payment Report
SD_RTNCPCPMTDTL	Real-Time NCPC Unit Payment Details Report
SR_RTNCPCSTL	Real-Time NCPC Settlement Report

MIS Report Location Information

- SMD MIS FTP access
 - Web site address: misftp.iso-ne.com
 - ISO-NE Customer Service provides Participants with information on how to access their secure ftp sites
- SMD MIS WWW access
 - Web site address: www.iso-ne.com
 - Menu
 - Settlements
 - ISO & RTO Tariff
 - Resettlement Information
 - Billing Details
 - Markets
 - Other Markets

MIS Report Documentation

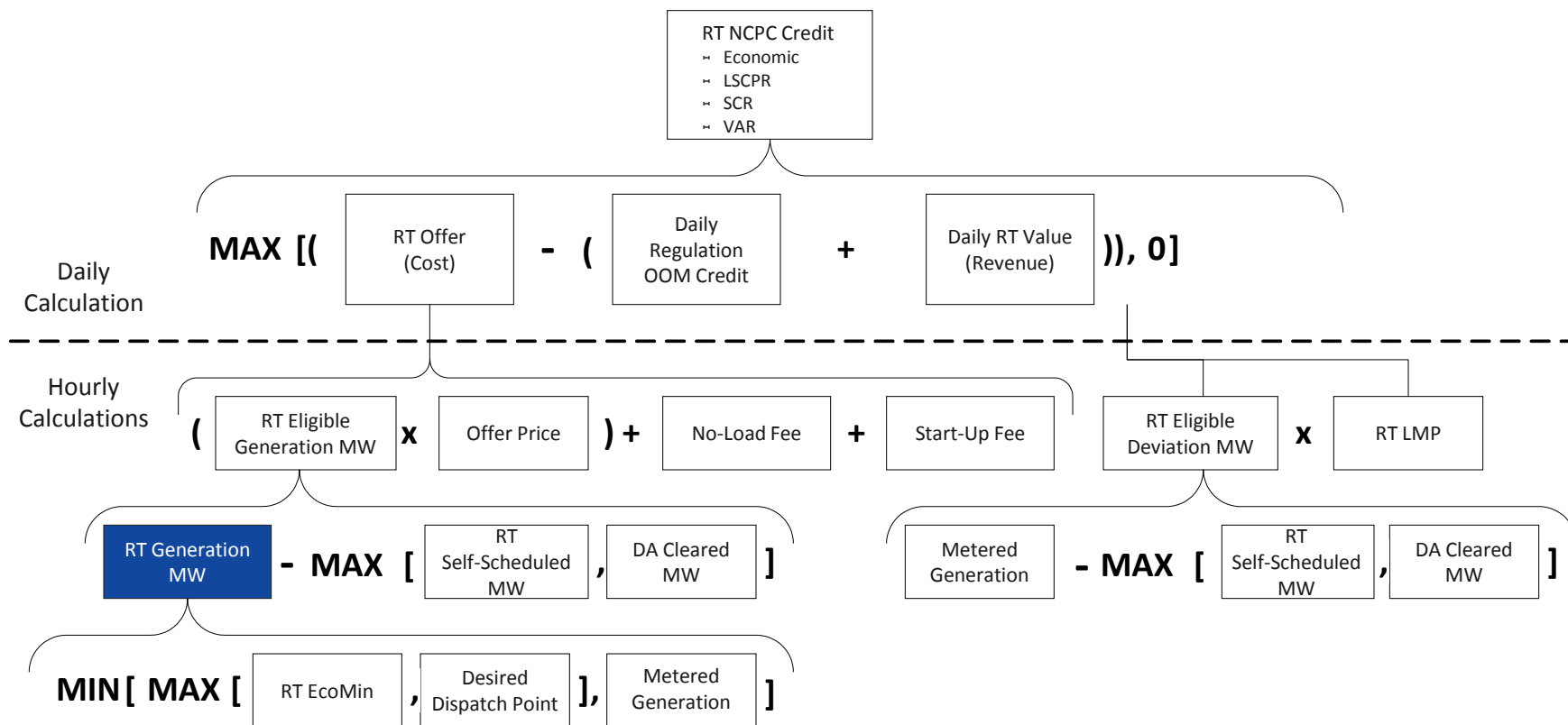
- Formats and data descriptions of the reports are posted on the ISO-NE website at: [Understanding the Bill > Report Descriptions, Templates & Samples](#)



Appendix A

Real-Time NCPC Settlement Calculations

Real-Time NCPC Settlement



Calculate RT Generation MWh

Generator Data

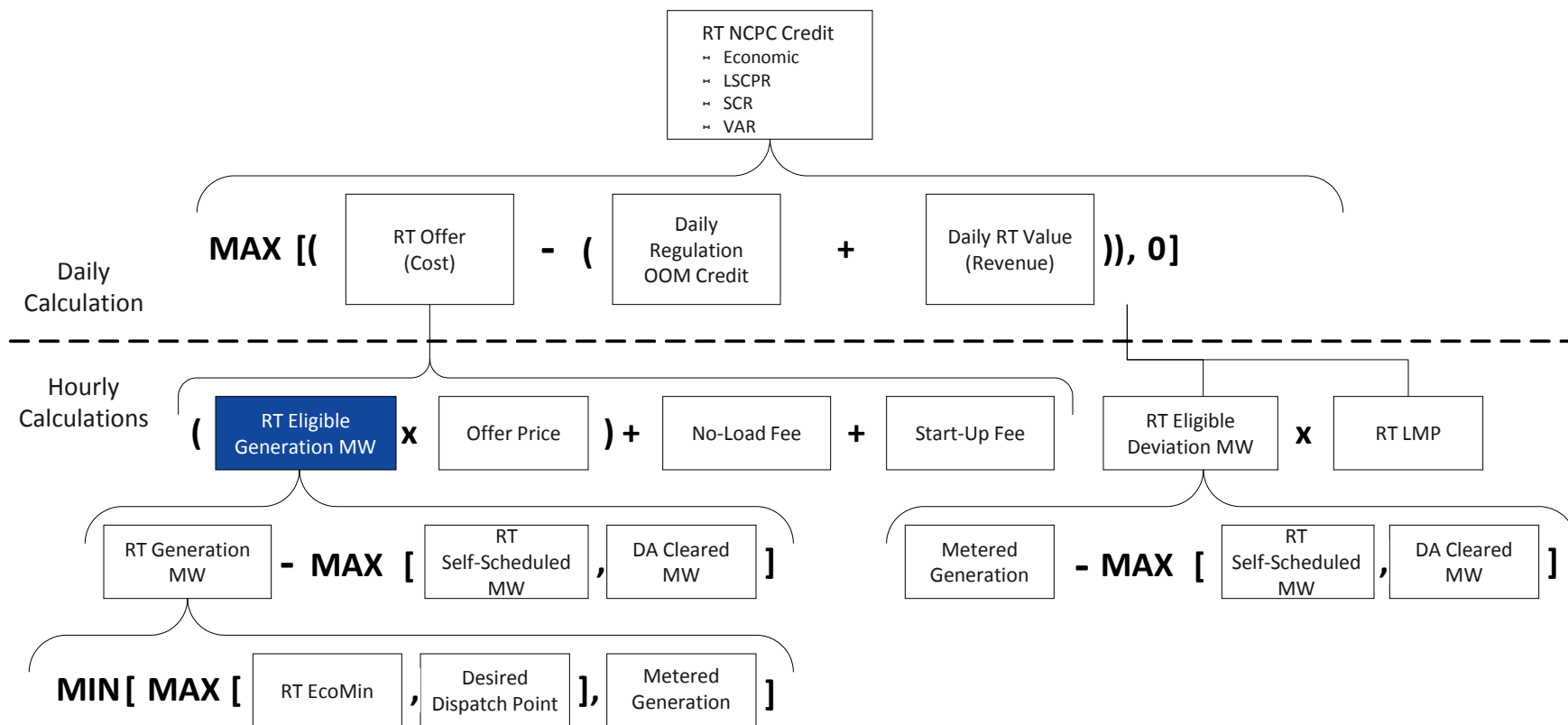
1 Hours	2 EcoMin MW	3 DDP MW	4 Meter MW
8	100	80	70
9	100	90	100
10	100	150	150
11	100	180	170
12	100	180	180
13	100	180	190
14	100	170	180

Generation MW

5 Max 2, 3	6 Gen MW Min 4, 5
100	70
100	100
150	150
180	170
180	180
180	180
170	170

$$\text{MIN}[\text{MAX} [\text{RT ECOMin} , \text{Desired Dispatch Point}], \text{Metered Generation}]$$

Real-Time NCPC Settlement

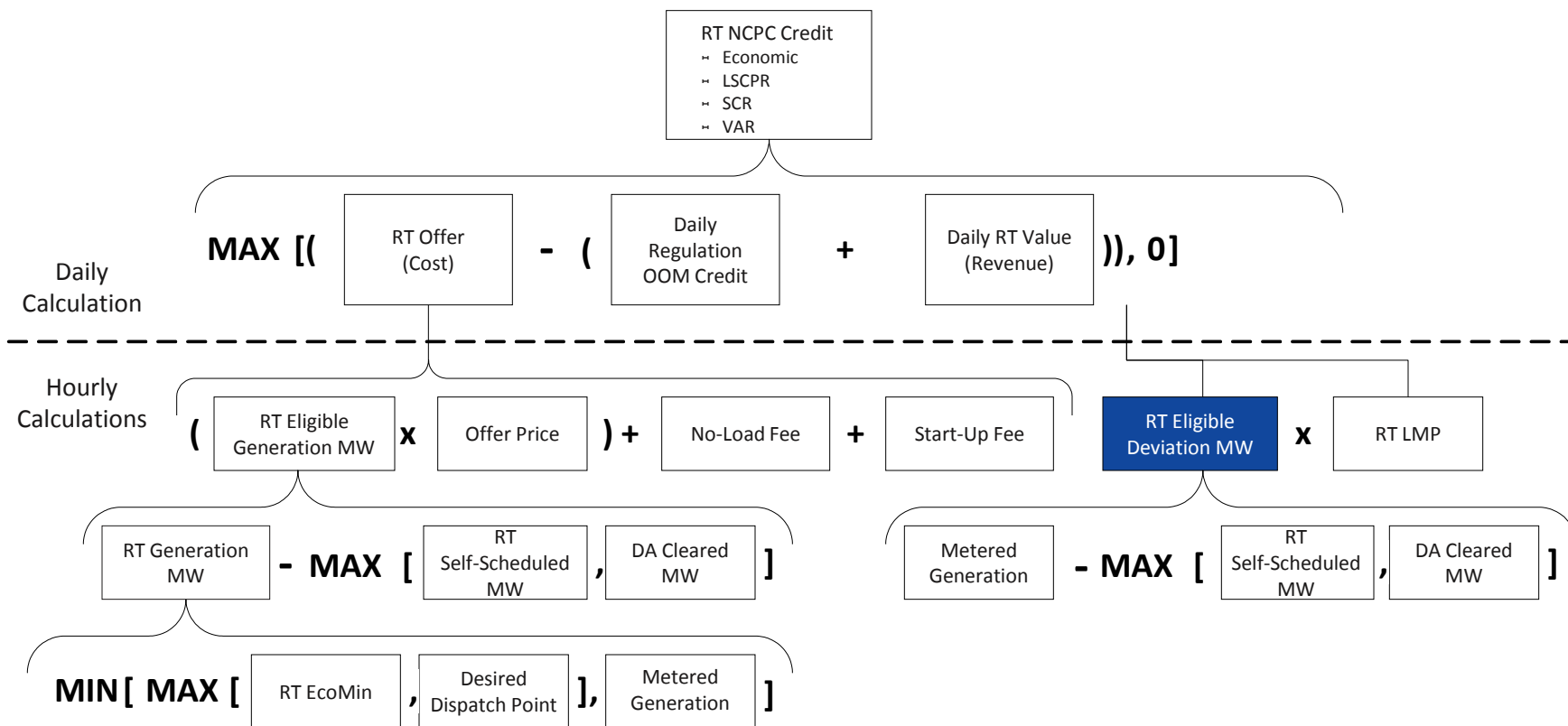


Calculate RT Eligible Generation MWh

1 Hours	2 DA Cleared MW	3 RT SS MW	4 Gen MW	5 Eligible Gen MW
8	100	0	70	0
9	100	0	100	0
10	100	0	150	50
11	100	0	170	70
12	100	0	180	80
13	0	0	180	180
14	0	100	170	70

$$\text{RT Generation MWh} = \text{MAX} [\text{RT Self-Scheduled MWh}, \text{DA Cleared MWh}]$$

Real-Time NCPC Settlement



Calculate RT Eligible Deviation MWh

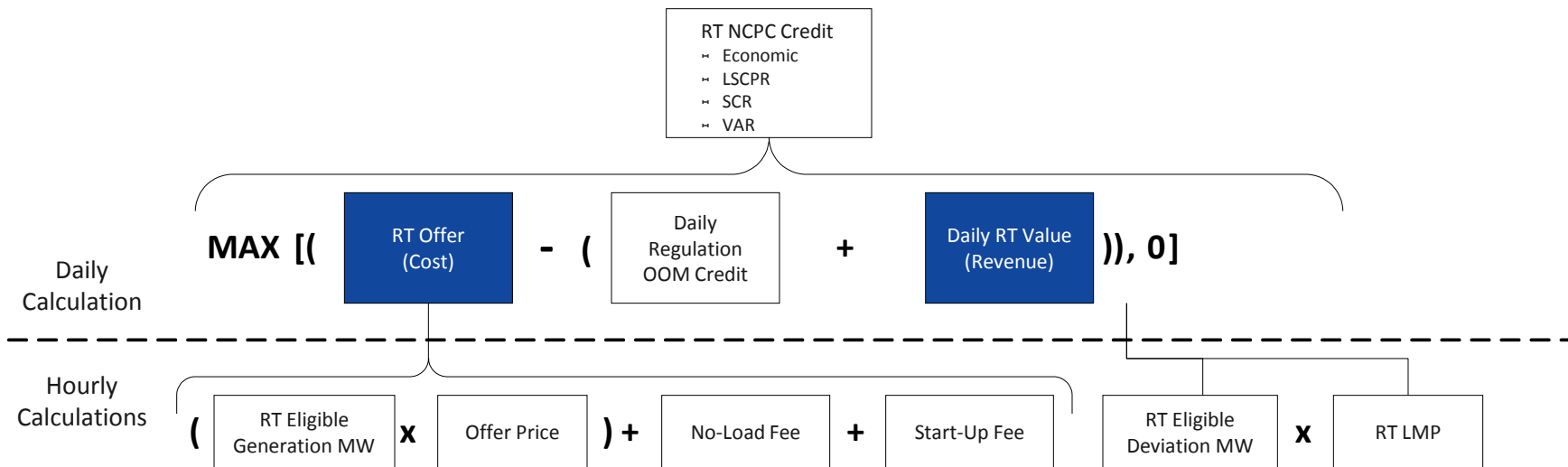
1 Hours	2 DA Cleared MW	3 RT SS MW	4 Meter MW	5 Max (2,3)	6 RT Eligible Dev MW
8	100	0	70	100	0
9	100	0	100	100	0
10	100	0	150	100	50
11	100	0	170	100	70
12	100	0	180	100	80
13	0	0	190	0	190
14	0	100	180	100	80

$$\text{Metered Generation} - \text{MAX} [\text{RT Self-Scheduled MWh}, \text{DA Cleared MWh}]$$

Example: RT NCPC Settlement

- Pool-Scheduled Resource
 - No-Load cost: \$1000
 - Start-Up cost: \$5400 (Cold)
 - Dispatch hours: 8-14
- Offer quantities
 - Bid Block 1 is 0–200 MWhs @ \$20
- Note that example here is shown for illustrative purposes of many aspects of the calculations; the data are not drawn from actual settlement on a specific unit

Real-Time NCPC Settlement



Calculate RT Offer

Hour	DA Cleared MW	RT SS MW	RT Gen MW	Eligible Gen MW	Offer \$/MWh	Hourly Offer \$	No Load \$	Start Up \$
8	100	0	70	0	\$20.00	\$ -	\$ -	\$ -
9	100	0	100	0	\$20.00	\$ -	\$ -	\$ -
10	100	0	150	50	\$20.00	\$1,000	\$ -	\$ -
11	100	0	170	70	\$20.00	\$1,400	\$ -	\$ -
12	100	0	180	80	\$20.00	\$1,600	\$1,000	\$ -
13	0	0	180	180	\$20.00	\$3,600	\$ -	\$ -
14	0	100	170	70	\$20.00	\$1,400	\$1,000	\$ -
Total:						\$9,000	\$1,000	\$ -

Total Daily Offer: \$10,000

Calculate RT Value and NCPC Credit

Hour	DA Cleared MW	RT SS MW	Meter MW	Max DA Clear, RT SS MW	RT Eligible Deviation MW	RT LMP \$/MWh	Hourly Value \$
8	100	0	70	100	0	\$20	\$ -
9	100	0	100	100	0	\$20	\$ -
10	100	0	150	100	50	\$20	\$1,000
11	100	0	170	100	70	\$21	\$1,470
12	100	0	180	100	80	\$22	\$1,760
13	0	0	190	0	190	\$21	\$3,990
14	0	100	180	100	80	\$19	\$1,520
Total:						\$9,000	\$9,740

$$\begin{aligned}
 \text{RT NCPC Credit} &= \text{Total Daily Offer} - \text{Total Daily Value} \\
 &= \$10,000 - \$9,740 \\
 &= \$260
 \end{aligned}$$

Total Daily Value: \$9,740

Appendix B

LSCPR NCPC Allocation Evaluation

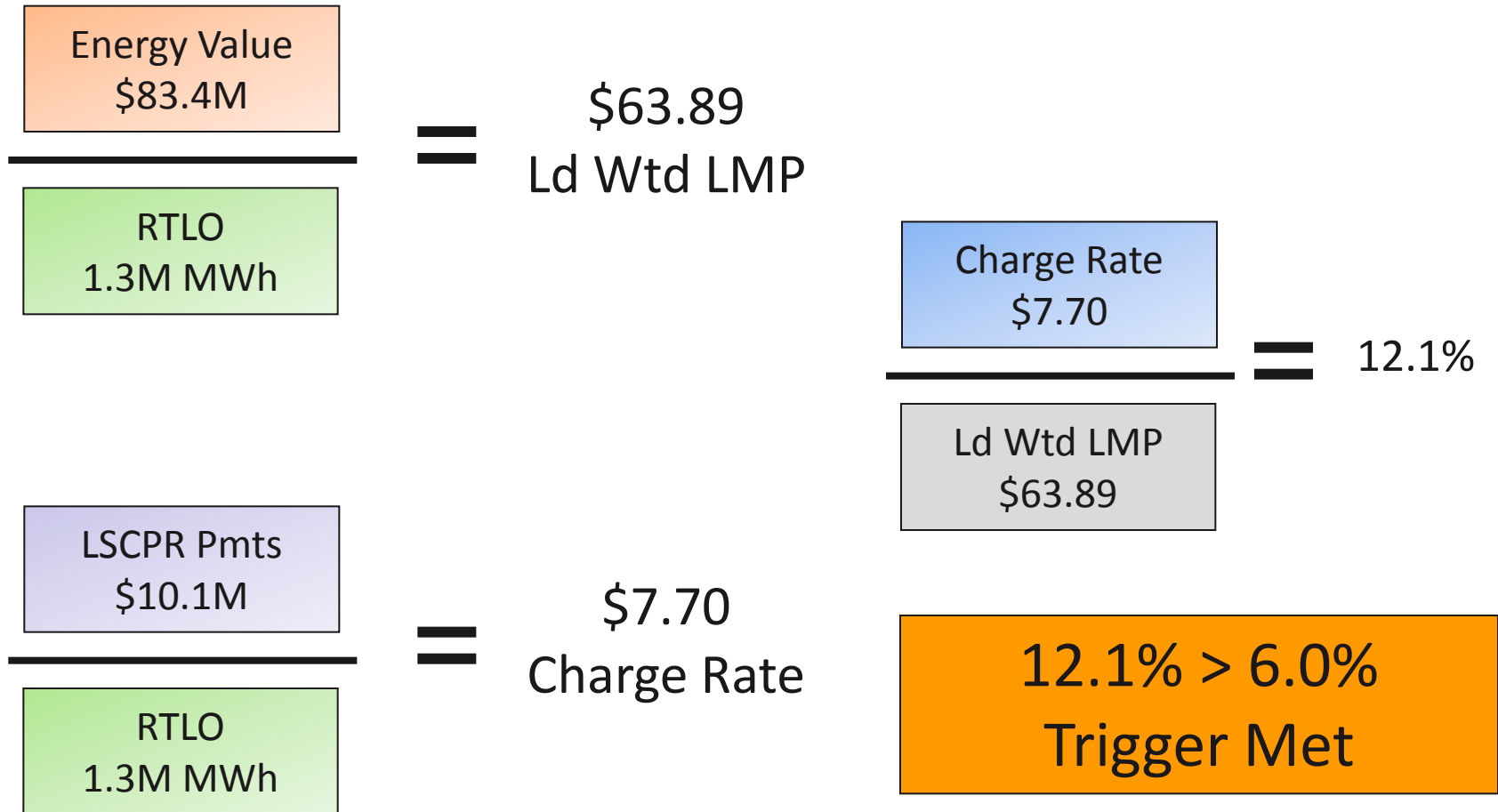
LSCPR NCPC Allocation Evaluation

- Settlement Agreement effective July 2007 on the treatment of future LSCPR NCPC payments on a going-forward basis for all reliability regions
- If certain trigger conditions are met in a region, a portion of the Real-Time LSCPR charges will be re-allocated to network load in the region, and the same amount will be credited to energy market customers
 - Monthly and 12-Month trigger
 - Both triggers must be met to cause reallocation

Trigger 1: Monthly LSCPR Rate

- LSCPR Rate as Percent of Load-Weighted LMP
 - Hourly: Multiply zonal RTLO and nodal RTLO by the appropriate LMP to derive the energy market value in the hour for the zone
 - Sum the hourly RTLO and energy market value over the month
 - Divide the total energy market value by total RTLO to derive Load Weighted LMP
 - Compute the LSCPR rate as the total Real-Time Second Contingency payments in the zone divided by total RTLO above
 - If the LSCPR Rate is more than 6% of the Load-Weighted LMP for the zone, then THIS trigger condition has been met

Trigger 1: Example



Trigger 2: 12-Month Rolling LSCPR Rate

- LSCPR Rate as % of most recent 12-month average
 - Average the monthly LSCPR rate for the most recent 12 months EXCLUDING the current month
 - Compute the LSCPR rate as % of 12-month average
 - If the LSCPR Rate is more than 200% of the 12-month average then THIS trigger condition has been met

Trigger 2: Example

$$\frac{\text{Charge Rate } \$7.70}{\text{Ld Wtd LMP } \$63.89} = 12.1\%$$
$$\text{12-Month Average Rate } 8.3\% \times 200\% = 16.6\%$$

12.1% < 16.6%
Trigger NOT Met

One More Step...

- If both triggers are met, a reallocation is performed
- Each of the two triggers' rates (\$/MWh) in excess of the threshold is calculated and the one that is LOWER is used
- Selected rate times the RTLO defines the amount of charges that will be reallocated pro-rata to Network Load
- Commensurate adjustments must be made to:
 - Credit the original payers
 - Allocate the “reallocation” to charge the appropriate Network Load

Example: Finding and Applying the Rate

$$\begin{array}{|c|} \hline \text{Charge Rate} \\ \hline \$6.22 \\ \hline \end{array} - \begin{array}{|c|} \hline 6\% \times \text{Wtd LMP} \\ \hline \$3.30 \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Condition 1 Rate} \\ \hline \$2.92 \\ \hline \end{array}$$

$$\begin{array}{|c|} \hline \text{Charge Rate} \\ \hline \$6.22 \\ \hline \end{array} - \begin{array}{|c|} \hline 200\% \times 12 \text{ Mo Avg.} \\ \hline \times \text{Wtd LMP} \\ \hline \$3.46 \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Condition 2 Rate} \\ \hline \$2.77 \\ \hline \end{array}$$

$$\begin{array}{|c|} \hline \text{Condition 2 Rate} \\ \hline \$2.77 \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{RTLO} \\ \hline 1.3\text{M MWh} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Reallocation} \\ \hline \$3.7\text{M} \\ \hline \end{array}$$

$$\begin{array}{|c|} \hline \text{Monthly LSCPR} \\ \hline \$8.3\text{M} \\ \hline \end{array} - \begin{array}{|c|} \hline \text{Reallocation} \\ \hline \$3.7\text{M} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Final LSCPR} \\ \hline \$4.6\text{M} \\ \hline \end{array}$$

