

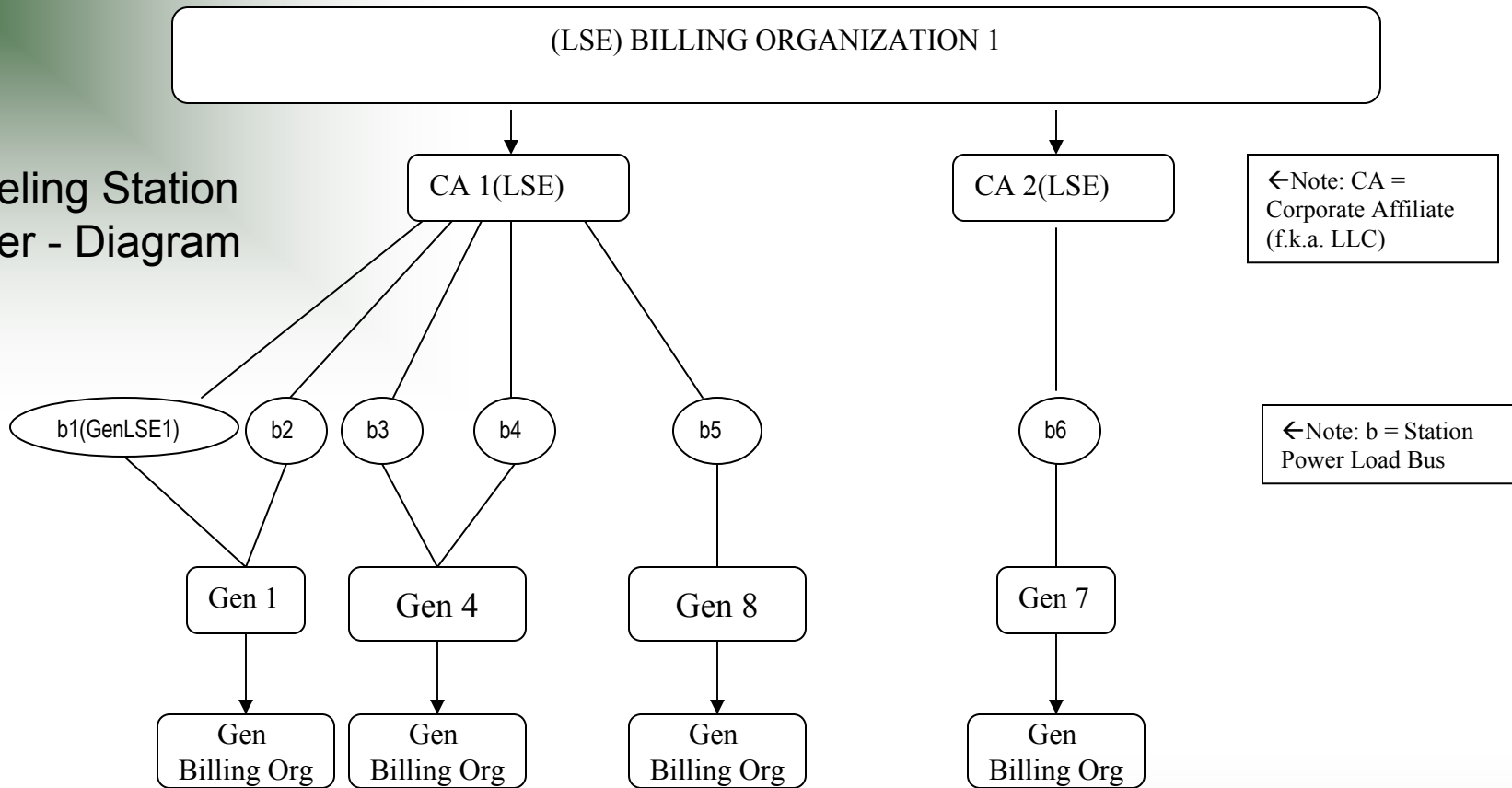
# **Station Power**

**BAWG Presentation  
May 19, 2005  
NYISO**

## FERC Definition of Station Power

- **Electric energy used for:**
  - *The heating, lighting, air-conditioning and office equipment needs of the buildings on a generating facility's site*
  - *Operating the electric equipment that is on the generating facility's site*

# Modeling Station Power - Diagram



Station Power Groups	
Gen	Group
Gen 2	Gen 4
Gen 3	
Gen 5	Gen 8
Gen 6	

# Modeling Station Power – Explained

- Each Corporate Affiliate (CA) is modeled as an LSE and will represent a single site's generator portfolio.
- All generators associated with a single LSE are considered CA's and this relationship will be used to distinguish self-supply, remote self-supply and third-party supplied station power.
- The load represented at each individual GenLSE (Station Power Load Bus) is the station power consumed by the generator.
- Station Power Load will be billed and settled at generator bus LBMP, not Zonal LBMP.
- The Billing Org – LSE, LSE – Bus, and Bus – Gen Relationships are all effective dated.
- Tech Bulletins 117 & 119 further describe these relationships.

# Station Power Groups – Explained

- If a Station Power Load Bus is shared by more than one generator, a Station Power Group will be created as part of the registration process
- Station Power load will be reported at the Station Power Group level. The Station Power Load Bus will be related with the Station Power Group and not the individual generators that share the bus
- All Generators in a Station Power Group must belong to the same Billing Org
- Generation will be reported by the Generator buses associated with the individual generators belonging to a Station Power Group

# Station Power Types

## **Self Supply**

*The netting of generation versus load over a monthly period for the same unit or complex of units affiliated with the same GenLSE.*

## **Remote Self Supply**

*The netting of generation versus load over a monthly period for affiliate units owned by the the same Corporate Affiliate (and not units associated with the same Billing Organization but different Corporate Affiliates).*

## **3<sup>rd</sup> Party Supply**

*The net of load over generation remaining after SS and RSS.*

# Registering for Station Power

- MPs must register with NYISO Customer Relations to become eligible for Station Power Accounting. CRD will create the appropriate Org-LSE, LSE-Bus, Bus-Gen and Gen-Station Power Group relationships in NYISO MIS
- Generators and TO's must submit acceptable Station Power Metering configurations to NYISO to facilitate the registration process
- Generators have been able to bid Station Power Load since April 1, 2003
- Retroactive registration is not permitted
- This process is detailed in Tech Bulletin

# Bidding and Reporting Station Power

- Generators use the existing load bid web pages to submit bid and forecast values for Station Power load buses
- Generators should only bid Station Power load for hours they plan to be off-line
- MA will upload Station Power load bus meter readings via Web-Based Reconciliation (WBR). MA's and Generators can use WBR functionality to verify meter readings
- No meter readings will be available until after the first invoice is created



# Accounting and Billing Calculations

- Station Power load will settle energy payments like regular load with DAM and Balancing settlements.
- Station Power is settled at the generator LBMP, not zonal LBMP.
- Station Power Load is not assessed ancillary service charges on hourly and daily advisory billing statements. Any ancillary services payments or credits will appear on the Consolidated invoice
- End of month calculations are run to determine how much, if any, Station Power, what types of station power, and any subsequent charges or credits associated with the program

# Station Power Charges/Rebates

<b>SP Type</b>	<b>NYISO Energy Charges</b>	<b>3<sup>rd</sup> Party Rebate</b>	<b>3<sup>rd</sup> Party Charges</b>	<b>NTAC Paid By</b>	<b>Ancillary Services Paid By</b>
<b>Self Supply</b>	<b>Wholesale</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>None</b>
<b>Remote Self Supply</b>	<b>Wholesale</b>	<b>None</b>	<b>None</b>	<b>Generator</b>	<b>None</b>
<b>3<sup>rd</sup> Party</b>	<b>Wholesale</b>	<b>Generator</b>	<b>LSE</b>	<b>LSE</b>	<b>LSE</b>

# Unit Hourly Generation and Load Values

- Hourly Generation and Station Power Load values for all hours in the month will be calculated for each unit for each hour
  
- Hourly Station Power load values will be derived from:
  - *Station Power Load Bid Forecast values (version 1)*
  - *Station Power Load Bus Meter Readings (all other versions)*
  
- Hourly Generation values will be derived from:
  - *Generator Meter Readings*

# Monthly Calculations- Hourly Unit Net Gen

- Hourly Unit Net Generation will be calculated from Hourly Generation and Hourly Unit Station Power Load for each unit for each hour
- **Hourly Unit Net Gen = Hourly Gen (MW) - Hourly Unit Station Power (MW)**
- A Hourly Unit Net Gen value that is a negative number indicates the unit consumed more MW's in station power load than it produced as energy over the course of that hour
- Monthly Negative Net Generation is the sum of all hourly negative net generation values over the month

# Monthly Unit and CA Net Gen

- To determine what, if any, type of Station Power exists, the monthly net generation must be evaluated for each CA and each unit within the CA

Net Generation by Unit:															
HB	0	1	2	3	4	...	713	714	715	716	717	718	719	Net	Neg Net
Generator #															
1	10.00	8.00	-1.00	-2.00	0.00	...	0.00	-2.00	-2.00	-1.00	5.00	10.00	10.00	<b>35.00</b>	-8.00
2	4.00	2.00	-4.00	<b>-5.00</b>	0.00	...	0.00	-5.00	-4.00	-5.00	-4.00	-5.00	-4.00	<b>-30.00</b>	<b>-36.00</b>
3	-4.00	-4.00	-4.00	-4.00	0.00	...	0.00	-4.00	-4.00	-4.00	-4.00	2.00	4.00	<b>-26.00</b>	-32.00
4	-3.00	-3.00	-3.00	-3.00	0.00	...	0.00	-3.00	-3.00	-3.00	-3.00	4.00	8.00	<b>-12.00</b>	-24.00
<b>Owner Total:</b>													<b>-33.00</b>		

- The example above lists a Corporate Affiliate with 4 units
- For each unit, the hourly net generation values will be rolled up to produce a monthly unit net generation value
- Each unit's monthly net generation value will be rolled up to produce the CA's monthly net generation value

# Monthly Unit and CA Net Gen (Cont)

Net Generation by Unit:																
HB	0	1	2	3	4	...	713	714	715	716	717	718	719	Net	Neg Net	
Generator #																
1	10.00	8.00	-1.00	-2.00	0.00	...	0.00	-2.00	-2.00	-1.00	5.00	10.00	10.00	<b>35.00</b>	-8.00	
2	4.00	2.00	-4.00	<b>-5.00</b>	0.00	...	0.00	-5.00	-4.00	-5.00	-4.00	-5.00	-4.00	<b>-30.00</b>	<b>-36.00</b>	
3	-4.00	-4.00	-4.00	-4.00	0.00	...	0.00	-4.00	-4.00	-4.00	-4.00	2.00	4.00	<b>-26.00</b>	-32.00	
4	-3.00	-3.00	-3.00	-3.00	0.00	...	0.00	-3.00	-3.00	-3.00	-3.00	4.00	8.00	<b>-12.00</b>	-24.00	
														<b>Owner Total:</b>	<b>-33.00</b>	

- If an individual unit's monthly net generation is a negative number, that unit consumed more MWs in station power load than it produced as energy over the course of the month
- In the example above, units 2, 3, and 4 consumed more station power than the energy they generated according to data in the "Net" column

# Determining Remote Self Supply Station Power

HB	0	1	2	3	4	...	713	714	715	716	717	718	719	Net
Generator #														
1	10.00	8.00	-1.00	-2.00	0.00	...	0.00	-2.00	-2.00	-1.00	5.00	10.00	10.00	<b>35.00</b>
2	4.00	2.00	-4.00	<b>-5.00</b>	0.00	...	0.00	-5.00	-4.00	-5.00	-4.00	-5.00	-4.00	<b>-30.00</b>
3	-4.00	-4.00	-4.00	-4.00	0.00	...	0.00	-4.00	-4.00	-4.00	-4.00	29.00	4.00	<b>1.00</b>
4	-3.00	-3.00	-3.00	-3.00	0.00	...	0.00	-3.00	-3.00	-3.00	-3.00	24.00	8.00	<b>8.00</b>
														<b>Owner Total: 14.00</b>

- Remote Self Supply Station power exists if the CA's monthly net generation is positive number but at least one unit associated with the CA has a negative monthly net generation.
- The amount of Remote Self Supply Station Power will equal the unit's negative monthly net generation.
- In the example above, unit #2 has consumed 30 MW of Remote Self Supply Station Power.
- No 3<sup>rd</sup> Party Station Power exists in this scenario

# Determining 3<sup>rd</sup> Party Station Power

Net Generation by Unit:															
HB	0	1	2	3	4	...	713	714	715	716	717	718	719	Net	Neg Net
Generator #															
1	10.00	8.00	-1.00	-2.00	0.00	...	0.00	-2.00	-2.00	-1.00	5.00	10.00	10.00	<b>35.00</b>	-8.00
2	4.00	2.00	-4.00	<b>-5.00</b>	0.00	...	0.00	-5.00	-4.00	-5.00	-4.00	-5.00	-4.00	<b>-30.00</b>	<b>-36.00</b>
3	-4.00	-4.00	-4.00	-4.00	0.00	...	0.00	-4.00	-4.00	-4.00	-4.00	2.00	4.00	<b>-26.00</b>	-32.00
4	-3.00	-3.00	-3.00	-3.00	0.00	...	0.00	-3.00	-3.00	-3.00	-3.00	4.00	8.00	<b>-12.00</b>	-24.00
														<b>Owner Total:</b>	<b>-33.00</b>

- Third Party Station Power exists if a CA's monthly net generation is a negative number (as in the case in the example above: - 33 MW)
- For each unit that has a negative monthly net generation, MWs will need to be reallocated to determine 3<sup>rd</sup> Party consumption.
- Remote Self Supply may exist under this scenario as well.



# Monthly 3<sup>rd</sup> Party Station Power Allocation

- For each Corporate Affiliate (CA) that has a negative monthly net generation, a calculation must be run to allocate 3<sup>rd</sup> Party Station Power Load to units with the most negative monthly net generation values within that CA.
- This allocation will be distributed only to the units with a Negative Monthly Unit Net Generation, allocated first to the most negative unit and progressing until all 3<sup>rd</sup> Party Station Power MWs are distributed

## Monthly 3<sup>rd</sup> Party Station Power Allocation (Cont)

<u>Iteration</u>	<u>Description</u>	<u>Value</u>
1	CA monthly negative net generation	-33 MW
1	Most negative unit/MW	Unit 2/ -30 MW
1	Allocated 3 <sup>rd</sup> Party MWs	-30
2	Remaining CA MWs	-3
2	Most negative remaining unit/MW	Unit 3/ -26 MW
2	Allocated 3 <sup>rd</sup> Party MWs	-3 MW
END	Remaining CA MWs	0

Unit	1	2	3	4
Monthly Net Generation	35	-30	-26	-12
Allocated 3 <sup>rd</sup> Party MW	0	30	3	0

# Total Station Power Allocation

- Once all 3<sup>rd</sup> Party Station Power MWs are allocated, any remaining negative net generation attributed to a unit is considered to be Remote Self Supply

<b>Unit</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Monthly Net Generation</b>	<b>35</b>	<b>-30</b>	<b>-26</b>	<b>-12</b>
<b>Allocated 3<sup>rd</sup> Party MW</b>	<b>0</b>	<b>30</b>	<b>3</b>	<b>0</b>
<b>Remote Self Supply MW</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>12</b>

# Hourly 3<sup>rd</sup> Party Station Power Allocation

- Once monthly 3<sup>rd</sup> Party Station Power MWs are allocated, MW values must be allocated back to the hourly level (only for hours that had a negative hourly net generation value).
- Allocation Formula:  

$$\frac{\text{Unit Net Gen} * \text{Unit's Monthly 3rd Party Station Power Allocation}}{\sum (\text{Hourly Unit Net Gen} < 0)}$$
- $\sum (\text{Hourly Unit Net Gen} < 0)$  is listed in the “Neg Net” column in the table below

Net Generation by Unit:															
HB	0	1	2	3	4	...	713	714	715	716	717	718	719	Net	Neg Net
Generator #															
1	10.00	8.00	-1.00	-2.00	0.00	...	0.00	-2.00	-2.00	-1.00	5.00	10.00	10.00	<b>35.00</b>	-8.00
2	4.00	2.00	-4.00	<b>-5.00</b>	0.00	...	0.00	-5.00	-4.00	-5.00	-4.00	-5.00	-4.00	<b>-30.00</b>	<b>-36.00</b>
3	-4.00	-4.00	-4.00	-4.00	0.00	...	0.00	-4.00	-4.00	-4.00	-4.00	2.00	4.00	<b>-26.00</b>	-32.00
4	-3.00	-3.00	-3.00	-3.00	0.00	...	0.00	-3.00	-3.00	-3.00	-3.00	4.00	8.00	<b>-12.00</b>	-24.00
														<b>Owner Total:</b>	<b>-33.00</b>

## Hourly 3<sup>rd</sup> Party Station Power Allocation (cont)

➤ Allocation Formula:

$$\frac{(\text{Unit Net Gen} * \text{Unit's Monthly 3}^{\text{rd}} \text{ Party Station Power Allocation})}{\sum (\text{Hourly Unit Net Gen} < 0)}$$

Allocation of Retail Load to Units 2, 3 and 4 to Net Negative Hours During the Month:												
HB	0	1	2	3	...	714	715	716	717	718	719	Total
Generator#1												
2	-	-	3.333	<b>4.167</b>	#	4.167	3.333	4.167	3.333	4.167	3.333	<b>30.000</b>
3	0.375	0.375	0.375	0.375	#	0.375	0.375	0.375	0.375	-	-	<b>3.000</b>
4	-	-	-	-	#	-	-	-	-	-	-	<b>-</b>
												<b>33.000</b>

- For example, Unit 2 has a Net Gen of -5.00 for hour 3, a Monthly 3<sup>rd</sup> Party Station Power allocation of 30 MW and a negative generation sum of -36.00 MWHRs over the month
- Hourly Allocation of 3<sup>rd</sup> Party Station Power load for Negative Net Gen for hour 3 for unit 2 is:  $(-5.00 * 30.000) / -36.00 = 4.167$  MW

# Gen Bus LBMP

HB	0	1	2	3	...	714	715	716	717	718	719
Generator #											
1	\$ 33.62	\$ 28.46	\$ 21.72	\$ 22.54	...	\$ 42.86	\$ 42.58	\$ 51.36	\$ 45.63	\$ 40.47	\$ 30.12
2	\$ 33.62	\$ 28.46	\$ 21.72	<b>\$ 22.54</b>	...	\$ 42.86	\$ 42.58	\$ 51.36	\$ 45.63	\$ 40.47	\$ 30.12
3	\$ 33.62	\$ 28.46	\$ 21.72	\$ 22.54	...	\$ 42.86	\$ 42.58	\$ 51.36	\$ 45.63	\$ 40.47	\$ 30.12
4	\$ 33.62	\$ 28.46	\$ 21.72	\$ 22.54	...	\$ 42.86	\$ 42.58	\$ 51.36	\$ 45.63	\$ 40.47	\$ 30.12

# 3<sup>rd</sup> Party Station Power Charges

- Use 3<sup>rd</sup> Party Station Power Hourly MW Allocation and Gen Bus LBMP to determine the 3<sup>rd</sup> Party Station Power Charges:

Retail Load \$ Adjustment:												
HB	0	1	2	3	...	714	715	716	717	718	719	Total
Generator#1												
2	\$ -	\$ -	\$ 72.41	\$ <b>93.92</b>	...	\$ 178.58	\$ 141.93	\$ 214.00	\$ 152.10	\$ 168.63	\$ 100.40	<b>1,121.97</b>
3	\$ 12.61	\$ 10.67	\$ 8.15	\$ 8.45	...	\$ 16.07	\$ 15.97	\$ 19.26	\$ 17.11	\$ -	\$ -	<b>\$ 108.29</b>
4	\$ -	\$ -	\$ -	\$ -	...	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	<b>\$ -</b>
												<b>1,230.25</b>

- Unit 2 has a Hourly 3<sup>rd</sup> Party Station Power MW Allocation for hour 3 of 4.167 MW and a Gen Bus LBMP of \$22.54. The Hourly 3<sup>rd</sup> Party Station Power Charge is  $4.167 * \$22.54 = \$93.92$
- The Monthly 3<sup>rd</sup> Party Station Power charges =  $\sum$  Hourly 3<sup>rd</sup> Party Station Power charges.
- For the above example, Monthly 3<sup>rd</sup> Party Station Power charge for unit 2 is \$1,121.97

# Rebate/Charges – Breakdown

- Once 3rd Party Station Power charges are calculated, NYISO will rebate to the Gens the dollar amount associated with the consumed 3<sup>rd</sup> Party Station Power
- NYISO charges the LSE the exact amount the Generators collected as rebates.

Gen	NYISO Rebate to Gen	NYISO Charge to LSE	Energy MW LSE can charge to Gen
2	\$1,121.97	\$1,121.97	30
3	\$108.29	\$108.29	3



# Ancillary Services - Charges

Only paid by LSE when there is 3 <sup>rd</sup> Party Station Power		
Ancillary Service	Calculation Description	Load Ratio Share Components
Schedule 1	(LSE Station Power load * MST flat rate) + (LSE Station Power load * OATT flat rate)	N/A
	For each day 3 <sup>rd</sup> Party Station Power was consumed, take the daily average of Residual Ancillary Services charges, Min Gen Ancillary Service Charges and Demand Response Ancillary Services charges and multiple these values by that day's 3 <sup>rd</sup> Party Station Power consumption.	NYCA Load, Exports and Wheel-thru
Volt. Support	Hourly voltage support flat rate * LSE Station Power load	N/A
Regulation	For each day 3 <sup>rd</sup> Party Station Power was consumed, take the daily average of Regulation Ancillary Services charges and multiple by that day's 3 <sup>rd</sup> Party Station Power consumption.	NYCA Load
Reserves	For each day 3 <sup>rd</sup> Party Station Power was consumed, take the daily average of Reserves Ancillary Services charges and multiple by that day's 3 <sup>rd</sup> Party Station Power consumption.	NYCA Load and Exports
Black Start	For each day 3 <sup>rd</sup> Party Station Power was consumed, take the daily average of Black Start Ancillary Services charges and multiple by that day's 3 <sup>rd</sup> Party Station Power consumption.	NYCA Load

# Ancillary Services - Rebates

- Station Power Load buses are excluded from Load Ratio Share calculations. Therefore, the collection of Ancillary Services for 3<sup>rd</sup> Party Station Power will result in an overcollection for each Ancillary Service that is based on Load Ratio Share calculations (as Station Power Ancillary Service calculations occur at the end of the month while all other Ancillary Service calculations occur on a hourly basis).
- The amount of overcollected Ancillary Services will be rebated to LSEs.
- For each Ancillary Service that requires a rebate, the NYISO will divide the monthly total of the overcollection attributed to that Ancillary Service by each LSE's load ratio share. (Note that the Load Ratio Share components differ for each Ancillary Service).
- For each Ancillary Service that requires a rebate, new line items will be added to the invoice to show the rebate amount. Each new line item will appear directly below the corresponding line item in the Ancillary Service Charges and OATT Charges sections.
- No rebates will be allocated for Voltage Support or the Flat Rate component of Schedule 1 (because these Ancillary Services are not based on Load Ratio Share calculations).

# Invoice Changes – New Line Items

Billing Code	Description	Note
708	Station Service Energy Credit/Charge (MWh)	MW amount associated with 3 <sup>rd</sup> Party Station Power
709	Station Service Energy Credit/Charge (\$)	\$ amount associated with 3 <sup>rd</sup> Party Station Power
817	Station Service NYISO-wide Uplift Rebate	Ancillary Service Rebate
818	Station Service Local Reliability Related Uplift Rebate	Ancillary Service Rebate
819	Station Service Residual Adjustments Rebate	Ancillary Service Rebate
820	Station Service Demand Response Program Rebate	Ancillary Service Rebate
821	Station Service Regulation & Frequency Response Service Rebate	Ancillary Service Rebate
822	Station Service Operating Reserves Service Rebate	Ancillary Service Rebate
823	Station Service Black Start Rebate	Ancillary Service Rebate

## Other Invoice Issues

➤ **The following charges will be summed into existing line items**

1. *Wholesale energy charges*
2. *Ancillary Service Charges*
3. *NTAC*

# Monthly Report

- A monthly report details hourly Station Power usage. This report will be accessed by using a download template from the Web-Tech Bulletin 124
- MT = Month Total
- Only the Monthly total value will be reported for the Remote Self Supply MW and NTAC Charge (\$) columns. No hourly values will be reported for these 2 data points.
- Gens may view only their own reports
- TO's may view gens that they meter.

Hr	Gen PTID	Gen Name	SP Load Bid	SP Load Fore - cast	SP Load Meter Value	Net Gen	3 <sup>rd</sup> Party PTID	3 <sup>rd</sup> Party Name	3 <sup>rd</sup> Party MW (subject to ancillaries)	3 <sup>rd</sup> Party SP Credit/ Charge (\$)	Ancillary Service Charge (\$)	Remote Self Supply MW (subject to NTAC)	NTAC Charge (\$)
0													
---													
719													
MT													

# Tech Bulletins and Other Information

<b>117</b>	<b>Registration and Modeling</b>
<b>118</b>	<b>Bidding and Scheduling</b>
<b>119</b>	<b>Accounting/Settlements</b>
<b>120</b>	<b>SP and WBR</b>
<b>121</b>	<b>Ancillary Services</b>
<b>122</b>	<b>Invoice Changes</b>
<b>124</b>	<b>Download Templates</b>