

ATTACHMENT K

SABP, APPENDIX H

RELIABILITY MUST-RUN PAYMENTS AND CHARGES COMPUTATION

H 2.1 Reliability Must-Run Payments.

Invoices submitted by Reliability Must-Run Owners to the ISO must be calculated as follows:

(a) Agreement A:

The Reliability Must-Run Payment under Agreement A for each month for each Owner shall be the total of the payments for that month for each Reliability Must-Run Unit owned by the Owner to which the Conditions of Must-Run Agreement A apply calculated in accordance with those Conditions. The Agreement A payment for Reliability Must-Run Owner o for Reliability Must-Run Unit u for month m shall be calculated as follows:

$$\begin{aligned} RMRPayA_{uom} = & \sum_m [(E_{uot} * RPR_{uot}) + (EM_{uot} * EMR_{uot}) + (E_{uot} * HVO\&M_{uot}) + (SCAC_{uot})] \\ & + HOF_{uom} + SUFC_{uom} + SUPC_{uom} + OSUC_{uom} \\ & + \sum_m [AGC_{uot} + SR_{uot} + NSR_{uot} + RR_{uot} + VS_{uot} + ASPDP_{uot}] \\ & - \sum_m [EA_{uot} * SCP_{uot}] - \sum_m [SCASCP_{uot}] - \sum_m [SCASEP_{uot}] - \sum_m [ER_{uot} * P_{xuot}] \\ & + \sum_m [(ER_{uot} - E_{uot}) * P_{xuot}] \end{aligned}$$

The total payment to each Owner for Reliability Must-Run services under Agreement A for a given month shall be calculated by summing all the payments for the month for the Reliability Must-Run Units owned by the Owner to which Agreement A applies. The payment for Owner o for month m shall be calculated as follows:

$$RMR PayTotal A_{om} = \sum_u RMRPayA_{uom} + OPA_{om} + IAA_{om} + IDA_{om}$$

(b) Agreement B

The Reliability Must-Run Payment under Agreement B for each month for each Owner shall be the total of the payments for that month for each Reliability Must-Run Unit

owned by the Owner to which the Conditions of Must-Run Agreement B apply calculated in accordance with those Conditions. The Agreement B payment for Reliability Must-Run Owner o for Reliability Must-Run Unit u for month m shall be calculated as follows:

$$\begin{aligned}
 RMR\ Pay\ B_{uom} = & \sum_m [AP_{uot} + (EM_{uot} * EMR_{uot}) + (E_{uot} * HVO \& M_{uot}) + (SCAC_{uot})] \\
 & + HOF_{uom} + SUFC_{uom} + SUPC_{uom} + OSUC_{uom} + \\
 & \sum_m [ASPDP_{uot} + VS_{uot}] \\
 & - 0.9 * \sum_m [EMT_{uot} * PXM_t] - \sum_m [EA_{uot} * SCP_{uot}] \\
 & - \sum_m [SCASCP_{uot}] - \sum_m [SCASEP_{uot}] - \sum_m [ER_{uot} * P_{xuot}] \\
 & + \sum_m [(ER_{uot} - E_{uot}) * P_{xuot}]
 \end{aligned}$$

The total payment to each Owner for Reliability Must-Run services under Agreement B for a given month shall be calculated by summing all the payments for the month for the Reliability Must-Run Units owned by the Owner to which Agreement B applies. The payment for Owner o for month m shall be calculated as follows:

$$RMR\ Pay\ Total\ B_{om} = \sum_u RMR\ Pay\ B_{uom} + OPB_{om} + IAB_{om} + IDB_{om}$$

(c) Agreement C

The Reliability Must-Run Payment under Agreement C for each month for each Owner shall be the total of the payments for that month for each Reliability Must-Run Unit owned by the Owner to which the Conditions of Must-Run Agreement C apply calculated in accordance with those Conditions. The Agreement C payment for Reliability Must-Run Owner o for Reliability Must-Run Unit u for month m shall be calculated as follows:

$$\begin{aligned}
 RMR\ Pay\ C_{uom} = & \sum_m [AP_{uot} + (EM_{uot} * EMR_{uot}) + (E_{uot} * HVO \& M_{uot}) + (SCAC_{uot})] \\
 & + HOF_{uom} + SUFC_{uom} + SUPC_{uom} + OSUC_{uom} \\
 & + \sum_m [VS_{uot}] - \sum_m [EA_{uot} * SCP_{uot}] \\
 & - \sum_m [SCASCP_{uot}] - \sum_m [SCASEP_{uot}] - \sum_m [ER_{uot} * P_{xuot}] \\
 & + \sum_m [(ER_{uot} - E_{uot}) * P_{xuot}]
 \end{aligned}$$

The total payment to each Owner for Reliability Must-Run services under Agreement C for a given month shall be calculated by summing all the payments for the month for the Reliability Must-Run Units owned by the Owner to which Agreement C applies. The payment for Owner o for month m shall be calculated as follows:

$$RMR\ Pay\ Total\ C_{om} = \sum_u RMRPayC_{uom} + OPC_{om} + IAC_{om} + IDC_{om}$$

(d) Total Payment

The total amount payable to each Owner for each month for Reliability Must-Run services shall be the total of the amounts due to the Owner under Agreements A, B and C for that month. The total payment for Reliability Must-Run Owner o for month m shall be calculated as follows:

$$RMR\ Total\ Pay_{om} = \sum_u RMRTotalPayA_{om} + RMRTotalPayB_{om} + RMRTotalPayC_{om}$$

H 3.5

EMR_{uot} (\$/lb.)

The emissions rate for Reliability Must-Run Unit u owned by Reliability Must-Run Owner o under the Conditions of Reliability Must-Run Agreement applicable to Reliability Must-Run Unit u. Note: only applicable where Owner is required to pay volumetric fee for emissions.

H 4 Data Input/Output

Term	Units	Variable Name	Input or Output	Detail Required
RMRPayA _{uom}	\$	RMR Unit Payment under A	Output	By Unit
RPR _{uot}	\$/MWh	Reliability Payment Rate	Input	By Unit By Settlement Period
E _{uot}	MWh	Non-Market Transaction Energy Delivered	Input	By Unit By Settlement Period
EM _{uot}	lb.	Emissions Produced	Input	By Unit By Settlement Period

Term	Units	Variable Name	Input or Output	Detail Required
EMR _{uot}	\$/lb.	Emissions rate	Input	By Unit By Settlement Period
HVO&M _{uot}	\$/MWh	Variable O&M Rate	Input	By Unit By Settlement Period
SCAC _{uot}	\$	SC Admin. Charge	Input	By Unit
HOF _{uom}	\$	Hourly Operating Fuel Costs	Input	By Unit
SUFC _{uom}	\$	Startup Fuel Costs	Input	By Unit
SUPC _{uom}	\$	Startup and Shutdown Power Costs	Input	By Unit
OSUC _{uom}	\$	Shutdown Power Costs	Input	By Unit
AGC _{uot}	\$	Regulation Payment due	Input	By Unit By Settlement Period
SR _{uot}	\$	Spinning Reserve Payment due	Input	By Unit By Settlement Period
NSR _{uot}	\$	Non-Spinning Reserve Payment due	Input	By Unit By Settlement Period
RR _{uot}	\$	Replacement Reserve Payment due	Input	By Unit By Settlement Period
VS _{uot}	\$	Voltage Support Payment due	Input	By Unit By Settlement Period
ASPDP	\$/MWh	Ancillary Service Pre-empted Dispatch Payment	Input	By Unit By Settlement Period
EA _{uot}	MWh	Energy Requested DA and HA	Input	By Unit By Settlement Period
SCP _{uot}	\$	Scheduling Coordinator's Energy Price	Input	By Unit By Settlement Period
SCASCP	\$/MW	Scheduling Coordinator's Ancillary Service Capacity Price	Input	By Unit By Settlement Period

Term	Units	Variable Name	Input or Output	Detail Required
SCASEP	\$/MWh	Scheduling Coordinator's Ancillary Service Energy Price	Input	By Unit By Settlement Period
ER _{uot}	MWh	Energy Requested in Real Time	Input	By Unit By Settlement Period
P _{xuot}	\$/MWh	Zonal Hourly Ex Post Price for Uninstructed Imbalance Energy	Input	By Unit By Settlement Period
RMRPayTotalA _{om}	\$	Total RMR Payment under A	Output	
OPA _{om}	\$	Other A Payment	Input	
IAA	\$	Interest on adjustments	Input	
IDA	\$	Interest on unpaid and disputed amounts	Input	
RMRPayB _{uom}	\$	RMR Unit Payment under B	Output	By Unit
AP _{uot}	MWh	Availability Payment	Input	By Unit By Settlement Period
PXM _i	\$/MWh	PX Market Clearing Price	Input	
EMT _{uot}	MWh	Market Transaction Energy	Input	By Unit By Settlement Period
RMRPayTotalB _{om}	\$	Total RMR Payment under B	Output	
OPB _{om}	\$	Other B Payment	Input	
IAB	\$	Interest on adjustments	Input	
IDB	\$	Interest on unpaid and disputed amounts	Input	
RMRPayC _{uom}	\$	RMR Unit Payment under C	Output	By Unit
RMRPayTotalC _{om}	\$	Total RMR Payment under C	Output	
OPC _{om}	\$	Other C Payment	Input	

Term	Units	Variable Name	Input or Output	Detail Required
IAC	\$	Interest on adjustments	Input	
IDC	\$	Interest on unpaid or disputed amounts	Input	
RMRC _{nm}	\$	RMR Charge per Unit	Output	By Unit
RMRPay _{nm}	\$	RMR Unit Payments	Input	By Unit
Total RMRC _{nm}	\$	Total RMR Charge	Output	