MMS BME Steps (Aug 2022)

# Step 0 – Validations and Checks

//List of validations and checks before excution of BME Process

## A. Party Registration Data Validations

1. Power Pool MP is not Defined

2. KE MP is not Defined

3. Enrolled person relation with Trader/CS

4. DSP relation with SOLR

## B. CDP Data Validations

1. CDPs without Connected-To And/ Or Connected-From mapping

2. CDPs without Effective-From Date

3. CDP Zones not defined for each Generation-Unit

## C. Allocation Factor Data Validations

1. Distribution Loss without Effective From date.

2. Allocation factor of SOLR is missing.

## D. Distribution Loss Data Validations

1. Distribution Loss factor for any DSP is not defined

2. Distribution Loss without Effective From date

3. Distribution Loss factor for DSP’s Line Voltage is not defined

## E. Bilateral Contract Data Validations

1. Invalid or Missing Seller Id in Contract sheet.

2. Invalid or Missing Buyer Id in Contract sheet.

3. Invalid or Missing CDP Id in Contract sheet.

4. Invalid or Missing Seller Category in Contract sheet.

5. Invalid or Missing Buyer Category in Contract sheet.

6. Fixed Quantity Contract” without Contracted Quantity

7. Percentage value missing for Generation Following Contract

8. Invalid value in Percentage column of the generation following Contract

9. Percentage value missing for Load Following Contract

11. Invalid value in Percentage column of the load following Contract

12. Contract type other than standard contract types

13. Within contract mismatch

## F. Marginal Price Data Validations

1. Duplicate hour in Marginal Price Data

2. Hour is missing in Marginal Price Data

## G. Generation Availability Data Validations

1. Available Capacity for these Generation Unit is missing for particular hour.

2. Duplicate hour in Availability Data for these Generation Units.

3. Available Capacity data for these Generation Units is missing.

## H. Generator Data Validations

1. MP Generator defined without Generation-Unit

2. Generation Unit without CDP mapping

3. Fuel Technology is not defined for all Generation-Units

# Step 1 – Fetch Data

## Fetch CDP Data

1. Fetch CDP data against connected meter. Call it CDP\_Meter\_Owner

## 1.2 Fetch Contract Data

1. Fetch Contract Data from SO Sheet

## 1.3 Fetch Metering Data

1. Fetch Metering Data

# Step 2

## 2.1 Fetch Distribution Losses Data

1. Fetch Distribution Losses Data for each DSP

## 2.2 Calculation of Adjusted Energy

1. Calculation of Adj\_Import and Adj\_Export

Initiate Values

Adj\_Import = Inc\_Import

Adj\_Export = Inc\_Export

Case 1.

If (Connected\_From = TSP) OR (Connected\_To = TSP)

Adj\_Import = Inc\_Import

Adj\_Export = Inc\_Export

Case 2.

If (Connected\_From = DSP) and (Connected\_To <> TSP) and (BackFeed = 1)

Adj\_Export = Inc\_Export / (1 – DisLoss / 100)

Case 3.

If (Connected\_From = DSP) and (Connected\_To <> DSP and Connected\_To <> TSP)

Adj\_ Import = Import

Case 4.

IF (Connected\_To = DSP) AND (Connected\_From <> TSP) and (BackFeed = 1)

Adj\_ Import = Inc\_Export / (1 – DisLoss / 100)

Case 5.

If (Connected\_To = DSP) and (Connected\_From <> DSP) and (Connected\_From <> TSP)

Adj\_Export = Inc\_Export

# Step 2A – Calculation of Generation Unit wise Hourly Data

/\*

Calculation of Generation Unit wise Hourly Data for these variables

1. Gen\_Unit\_Energy
2. Unit\_Wise\_BackFeed
3. Gen\_Unit\_Energy\_Metered
4. Unit\_Wise\_BackFeed\_Metered \*/

## 2A.1 Before Calculation of Ratio

Case 1. *Need to add description*

If (Connected\_From Not In (TSP, DSP) AND

(Connected\_To) In (DSP, TSP) AND

(BackFeed = 1)

*Group By Generator, Generation\_Unit, DateTime*

Gen\_Unit\_Energy = Sum(Adj\_Export)

Unit\_Wise\_BackFeed = Sum(Adj\_Import)

Gen\_Unit\_Energy\_Metered = Sum(Inc\_Export)

Unit\_Wise\_BackFeed\_Metered = Sum(Inc\_Import)

Case 2. *Need to add description*

If (Connected\_From In (TSP, DSP) AND

(Connected\_To) Not In (DSP, TSP) AND

(BackFeed = 1)

*Group By Generator, Generation\_Unit, DateTime*

Gen\_Unit\_Energy = Sum(Adj\_Import)

Unit\_Wise\_BackFeed = Sum(Adj\_Export)

Gen\_Unit\_Energy\_Metered = Sum(Inc\_Import)

Unit\_Wise\_BackFeed\_Metered = Sum(Inc\_Export)

Case 3. *Need to add description*

If (Connected\_From Not In (TSP, DSP) AND

(Connected\_To) In (DSP, TSP) AND

(BackFeed = 0)

*Group By CDP, Generator, Generation\_Unit, DateTime*

Gen\_Unit\_Energy = if (Adj\_Export – Adj\_Import) < 0 Then 0 Else Adj\_Export – Adj\_Import

Unit\_Wise\_BackFeed = if (Adj\_Export – Adj\_Import) > 0 Then 0 Else Adj\_Export – Adj\_Import

Gen\_Unit\_Energy\_Metered = if (Inc\_Export – Inc\_Import) < 0 Then 0 Else Inc\_Export – Inc\_Import

Unit\_Wise\_BackFeed\_Metered = if (Inc\_Export – Inc\_Import) > 0 Then 0 Else Inc\_Export – Inc\_Import

Case 4. *Need to add description*

If (Connected\_From In (TSP, DSP) AND

(Connected\_To) Not In (DSP, TSP) AND

(BackFeed = 0)

*Group By CDP, Generator, Generation\_Unit, DateTime*

Gen\_Unit\_Energy = if (Adj\_Import – Adj\_Export) < 0 Then 0 Else Adj\_Import – Adj\_Export

Unit\_Wise\_BackFeed = if (Adj\_Import – Adj\_Export) > 0 Then 0 Else Adj\_Import – Adj\_Export

Gen\_Unit\_Energy\_Metered = if (Inc\_Import – Inc\_Export) < 0 Then 0 Else Inc\_Import – Inc\_Export

Unit\_Wise\_BackFeed\_Metered = if (Inc\_Import – Inc\_Export) > 0 Then 0 Else Inc\_Import – Inc\_Export

## 2A.2 Calculation of Ratio

1. Fetch SO Availability with Generation unit Hourly *Need to add description*

2. Calculation of Availability Capacity (unit hourly wise) *Need to add description*

If TechnologyType\_Code <> ARE then CalculateAvailabilityCapacity = SO\_AvailabilityCapacity

If TechnologyType\_Code == ARE then CalculateAvailabilityCapacity = InstalledCapacity

3. Calculation of Capacity\_Sum (Generator hourly) *Need to add description*

*Group By DateTime, Gen, CDP*

Capacity\_Sum = Sum(CalculateAvailabilityCapacity)

InstalledCapacity\_Sum = Sum(Installaed\_Capacity)

4. Calculation of Generation Ratio (generation unit wise hourly) *Need to add description*

Generation\_Ratio = CalculateAvailabilityCapacity / Capacity Sum

UnitBackFeed\_Ratio = InstalledCapacity / InstalledCapacity\_Sum

5. Calculate Unit Generation *Need to add description*

if (Capacity\_Sum > 0) *Need to add description*

Gen\_Unit\_Energy = Generation\_Ratio \* Gen\_Unit\_Energy

Gen\_Unit\_Energy\_Metered = Genertion\_Ratio \* Gen\_Unit\_Energy\_Metered

Else *Need to add description*

Gen\_Unit\_Energy = 0

Gen\_Unit\_Energy\_Metered = 0

If (InstalledCapacity\_Sum > 0) *Need to add description*

Unit\_Wise\_BackFeed = (InstalledCapacity / InstalledCapacity\_Sum) \* Unit\_Wise\_BackFeed

Unit\_Wise\_BackFeed\_Metered = (InstalledCapacity / InstalledCapacity\_Sum) \* Unit\_Wise\_BackFeed\_Metered

Else *Need to add description*

Unit\_Wise\_BackFeed = 0

Unit\_Wise\_BackFeed\_Metered = 0

# Step 3 Transmission Losses

//Summation (Σ) of All CDPs of a Transmission Network

//Repeat Calculation taking all TSP one by One

if (ConnectedTo == TSP)

TransLoss = Adj\_E\_Export - Adj\_E\_Import

+

(ConnectedFrom == TSP)

TransLoss = Adj\_E\_Import - Adj\_E\_Export"

Calcualte TSP-wise

Sum of transmission network wise hourly transmission loss

# Step 4 – Calcualtion of Total Demand and Uplift Cofficient

// Generation hourly group by all generations

Total demand hourly = Generation\_Hourly – TransLoss\_Hourly

// Calcuate Monthly-Hour-wise

Uplift\_Trans\_Loss =(Σ)\_Hourly Transmission Loss\_ALL\_TSP / (Σ) OF Hourly Total Demand\_ALL\_TSP

# Step 5A – Actual Energy (Act\_E) MP Wise

## Case 1. MP <> Power Pool

*Need to add description*

If (Connected\_To = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy1 = Adj\_Energy\_Import

Actual\_Energy\_Metered1 = Inc\_Energy\_Import

}

If (Connected\_From = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy2 = Adj\_Energy\_Export

Actual\_Energy\_Metered2 = Inc\_Energy\_Export

}

*Need to add description*

If (Connected\_From = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy3 = Adj\_Energy\_Import - Adj\_Energy\_Export

Actual\_Energy\_Metered3 = Inc\_Energy\_Import – Inc\_Energy\_Export

}

If (Connected\_To = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy4 = Adj\_Energy\_Export - Adj\_Energy\_Import

Actual\_Energy\_Metered4 = Inc\_Energy\_Export – Inc\_Energy\_Import

}

Actual\_Energy = Actual\_Energy1 + Actual\_Energy2 + Actual\_Energy3 + Actual\_Energy4

Actual\_Energy\_Metered = Actual\_Energy\_Metered1 + Actual\_Energy\_Metered2 + Actual\_Energy\_Metered3 + Actual\_Energy\_Metered4

## Case 2. MP = Power Pool AND BackFeed = 1

*Need to add description*

If (Connected\_To = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy1 = Adj\_Energy\_Import

Actual\_Energy\_Metered1 = Inc\_Energy\_Import

}

If (Connected\_From = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy2 = Adj\_Energy\_Export

Actual\_Energy\_Metered2 = Inc\_Energy\_Export

}

*Need to add description*

If (Connected\_From = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy3 = Adj\_Energy\_Import - Adj\_Energy\_Export

Actual\_Energy\_Metered3 = Inc\_Energy\_Import – Inc\_Energy\_Export

}

If (Connected\_To = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy4 = Adj\_Energy\_Export - Adj\_Energy\_Import

Actual\_Energy\_Metered4 = Inc\_Energy\_Export – Inc\_Energy\_Import

}

Actual\_Energy = Actual\_Energy1 + Actual\_Energy2 + Actual\_Energy3 + Actual\_Energy4

Actual\_Energy\_Metered = Actual\_Energy\_Metered1 + Actual\_Energy\_Metered2 + Actual\_Energy\_Metered3 + Actual\_Energy\_Metered4

## Case 3 BackFeed = 0

*Need to add description*

If (Connected\_To = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

//Adjusted

If Sum (Adj\_Energy\_Export - Adj\_Energy\_Import) > 0

Actual\_Energy1 = 0

Else

Actual\_Energy1 = ABS (Sum (Adj\_Energy\_Export - Adj\_Energy\_Import)

//Metered

If Sum (Inc\_Energy\_Export - Inc\_Energy\_Import) > 0

Actual\_Energy\_Metered1 = 0

Else

Actual\_Energy\_Metered1 = ABS (Sum (Inc\_Energy\_Export - Inc\_Energy\_Import)

}

If (Connected\_From = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

//Adjusted

If Sum (Adj\_Energy\_Import - Adj\_Energy\_Export) > 0

Actual\_Energy2 = 0

Else

Actual\_Energy2 = ABS (Sum (Adj\_Energy\_Import - Adj\_Energy\_Export)

//Metered

If Sum (Inc\_Energy\_Import - Inc\_Energy\_Export) > 0

Actual\_EnergyMetered2 = 0

Else

Actual\_EnergyMetered2 = ABS (Sum (Inc\_Energy\_Import - Inc\_Energy\_Export)

}

*Need to add description*

Actual\_Energy = Actual\_Energy1 + Actual\_Energy2

Actual\_Energy\_Metered = Actual\_Energy\_Metered1 + Actual\_Energy\_Metered2

# Step 5B – Actual Energy (Act\_E) MP Category Wise

## Case 1. MP <> Power Pool

*Need to add description*

If (Connected\_To = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy1 = Adj\_Energy\_Import

Actual\_Energy\_Metered1 = Inc\_Energy\_Import

}

If (Connected\_From = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy2 = Adj\_Energy\_Export

Actual\_Energy\_Metered2 = Inc\_Energy\_Export

}

*Need to add description*

If (Connected\_From = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy3 = Adj\_Energy\_Import - Adj\_Energy\_Export

Actual\_Energy\_Metered3 = Inc\_Energy\_Import – Inc\_Energy\_Export

}

If (Connected\_To = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy4 = Adj\_Energy\_Export - Adj\_Energy\_Import

Actual\_Energy\_Metered4 = Inc\_Energy\_Export – Inc\_Energy\_Import

}

*Need to add description*

Actual\_Energy = Actual\_Energy1 + Actual\_Energy2 + Actual\_Energy3 + Actual\_Energy4

Actual\_Energy\_Metered = Actual\_Energy\_Metered1 + Actual\_Energy\_Metered2 + Actual\_Energy\_Metered3 + Actual\_Energy\_Metered4

## Case 2. MP = Power Pool AND BackFeed = 1

*Need to add description*

If (Connected\_To = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy1 = Adj\_Energy\_Import

Actual\_Energy\_Metered1 = Inc\_Energy\_Import

}

If (Connected\_From = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

Actual\_Energy2 = Adj\_Energy\_Export

Actual\_Energy\_Metered2 = Inc\_Energy\_Export

}

*Need to add description*

If (Connected\_From = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy3 = Adj\_Energy\_Import - Adj\_Energy\_Export

Actual\_Energy\_Metered3 = Inc\_Energy\_Import – Inc\_Energy\_Export

}

If (Connected\_To = SP AND

From\_Party\_Category = DSP AND

CDP Owner Category = BSUP)

{

Actual\_Energy4 = Adj\_Energy\_Export - Adj\_Energy\_Import

Actual\_Energy\_Metered4 = Inc\_Energy\_Export – Inc\_Energy\_Import

}

*Need to add description*

Actual\_Energy = Actual\_Energy1 + Actual\_Energy2 + Actual\_Energy3 + Actual\_Energy4

Actual\_Energy\_Metered = Actual\_Energy\_Metered1 + Actual\_Energy\_Metered2 + Actual\_Energy\_Metered3 + Actual\_Energy\_Metered4

## Case 3 BackFeed = 0

*Need to add description*

If (Connected\_To = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

//Adjusted

If Sum (Adj\_Energy\_Export - Adj\_Energy\_Import) > 0

Actual\_Energy1 = 0

Else

Actual\_Energy1 = ABS (Sum (Adj\_Energy\_Export - Adj\_Energy\_Import)

//Metered

If Sum (Inc\_Energy\_Export - Inc\_Energy\_Import) > 0

Actual\_Energy\_Metered1 = 0

Else

Actual\_Energy\_Metered1 = ABS (Sum (Inc\_Energy\_Export - Inc\_Energy\_Import)

}

If (Connected\_From = SP AND

CDP Owner Category = BPC, PAKT, INTT, CSUP, GEN, CGEN, EGEN, EBPC)

{

//Adjusted

If Sum (Adj\_Energy\_Import - Adj\_Energy\_Export) > 0

Actual\_Energy2 = 0

Else

Actual\_Energy2 = ABS (Sum (Adj\_Energy\_Import - Adj\_Energy\_Export)

//Metered

If Sum (Inc\_Energy\_Import - Inc\_Energy\_Export) > 0

Actual\_EnergyMetered2 = 0

Else

Actual\_EnergyMetered2 = ABS (Sum (Inc\_Energy\_Import - Inc\_Energy\_Export)

}

*Need to add description*

Actual\_Energy = Actual\_Energy1 + Actual\_Energy2

Actual\_Energy\_Metered = Actual\_Energy\_Metered1 + Actual\_Energy\_Metered2

# Case 6

## 6.1 Caculate MP Hour Wise

*Need to add description*

ES\_A = Act\_E \* (1 + Uplift\_Trans\_Loss\_coefficient)

## 6.2 Energy Injected into the grid by MPs (within Pakistan)

//Generation Units Where Energy Import <> 1

//Group by MP

ES\_G = Sum(Gen\_Unit\_Energy)

//Group by MP Category Wise

ES\_GMP\_Cat = Sum(Gen\_Unit\_Energy)

## 6.3 Energy Import (like from NJ)

//Generation Units Where Energy Import = 1

//Group by MP

ES\_I = Sum(Gen\_Unit\_Energy)

//Group by MP Category Wise

ES\_I = Sum(Gen\_Unit\_Energy)

## 6.4 Calculating Uplift coefficient again?

*Need to add description*

Uplift\_Trans\_Loss =(Σ)\_Hourly Transmission Loss\_ALL\_TSP / (Σ) OF Hourly Total Demand\_ALL\_TSP

# 7. Contract

*Need to add description*

ActualCapacity = Sum (SO.ActualCapacity) (WHERE IsARE <> 1)

## 7.1 Calculation of Energy Supplied Legacy (Renewables)

*Need to add description*

**Case 1:** Where (IsARE = 1) AND (Is\_Legacy = 1) AND (BackFeed = 1)

If (ConnectedTo = MP)

EnergySuppliedGeneratedLegacy = Adj\_Energy\_Import

Else

EnergySuppliedGeneratedLegacy = Adj\_Energy\_Export

*Need to add description*

**Case 2:** Where (IsARE = 1) AND (Is\_Legacy = 1) AND (BackFeed = 0) AND (ConnectedFrom = MP)

If (Adj\_Energy\_Export - Adj\_Energy\_Import) < 0

EnergySuppliedGeneratedLegacy = 0

Else

EnergySuppliedGeneratedLegacy = Adj\_Energy\_Export - Adj\_Energy\_Import

*Need to add description*

**Case 3:** Where (IsARE = 1) AND (Is\_Legacy = 1) AND (BackFeed = 0) AND (ConnectedTo = MP)

If (Adj\_Energy\_Import - Adj\_Energy\_Export) < 0

EnergySuppliedGeneratedLegacy = 0

Else

EnergySuppliedGeneratedLegacy = Adj\_Energy\_Import - Adj\_Energy\_Export

## 7.2 Calculation of Energy Supplied Imported Legacy (Renewables)

Where (Is\_Import = 1) AND (IsARE = 1) AND (IsLegacy = 1)

*Need to add description*

If (ConnectedTo = MP)

EnergySuppliedImportedLegacy = Adj\_Energy\_Import

Else

EnergySuppliedImportedLegacy = Adj\_Energy\_Export

## 7.3 Cap-Lagacy (hourly wise)

*Need to add description*

Cap-Lagacy = EnergySuppliedGeneratedLegacy + EnergySuppliedImportedLegacy + ActualCapacity

*Need to add description*

Cap-Lagacy\_KE = if (CapQuantity > ES\_A)

ESA

Else

CapQuantity) // Where ContractId = 1111 and PartyId = 12

*Need to add description*

Cap-Lagacy = Cap-Lagacy – Cap-Lagacy\_KE

## 7.4 Cap-Lagacy (MP hourly wise)

// For MP other than KE

Cap\_Legacy = Cap-Lagacy \* AllocationFactor \* 0.01

// For MP = KE (ContractId =1111 and PartyId=12)

Cap\_Legacy = CapQuantity

## 7.5 Calculation of ET\_S and ET\_B (Energy Traded Bought and Sold)

### 7.5.1 Generation Following

// Where ContractType = 1 // Generation Following

If (Connected\_To = MP)

ET\_S = Adj\_Energy\_Import

Else if (connected\_From = MP)

ET\_S = Adj\_Energy\_Export

### 7.5.2 LoadFollowing

// Where ContractType = 2.1 // Generation Following

*Need to add description*

Case\_A

if (Connected\_To = SP) AND (Buyer\_Category in (BPC, PT, INTT, CSUP, GEN, CGEN))

ET\_S\_A = Adj\_Energy\_Import

*Need to add description*

Case\_B

if (Connected\_From = SP) AND (Buyer\_Category in (BPC, PT, INTT, CSUP, GEN, CGEN))

ET\_S\_B = Adj\_Energy\_Export

*Need to add description*

Case\_C

if (Connected\_From = SP) AND (From\_Category = DSP) AND (BuyerPartyID = BSUP)

ET\_S\_C = Adj\_Energy\_Import - Adj\_Energy\_Export

*Need to add description*

Case\_D

if (Connected\_To = SP) AND (From\_Category = DSP) AND (BuyerPartyID = BSUP)

ET\_S\_C = Adj\_Energy\_Export - Adj\_Energy\_Import

*Need to add description*

ET\_S = ET\_S\_A + ET\_S\_B + ET\_S\_C + ET\_S\_D

### 7.5.3 Fixed Contracted

// Where ContractType = 3 // Fixed Contracted

ET\_S = Sum (Contracted\_Quantity)

ET\_B = ET\_S

### 7.5.4 Customized - Load

// Where ContractType = 4.1 // Customized Load

*Need to add description*

Case\_A

if (Connected\_To = SP) AND (Buyer\_Category in (BPC, PT, INTT, CSUP, GEN, CGEN))

ET\_S\_A = Adj\_Energy\_Import

*Need to add description*

Case\_B

if (Connected\_From = SP) AND (Buyer\_Category in (BPC, PT, INTT, CSUP, GEN, CGEN))

ET\_S\_B = Adj\_Energy\_Export

*Need to add description*

Case\_C

if (Connected\_From = SP) AND (From\_Category = DSP)

ET\_S\_C = Adj\_Energy\_Import - Adj\_Energy\_Export

*Need to add description*

Case\_D

if (Connected\_To = SP) AND (To\_Category = DSP)

ET\_S\_D = Adj\_Energy\_Export - Adj\_Energy\_Import

*Need to add description*

ET\_S = ET\_S\_A + ET\_S\_B + ET\_S\_C + ET\_S\_D

*Need to add description*

if (Cap\_Quantity > 0)

{

if (CapQuantity > ES\_A)

ET\_S = ES\_A

Else

ET\_S = Cap\_Quantity

}

Else

{

If (Cap\_Legacy > ES\_A)

ET\_S = ES\_A

Else

ET\_S = Cap\_Legacy

}

### 7.5.5 Customized – Load Metered

// Where ContractType = 4.2 // Customized Load Metered

*Need to add description*

if (Buyer\_Party = From) then

ET\_S = Inc\_Energy\_Import – Inc\_Energy\_Export

Else

ET\_S = Inc\_Energy\_Export – Inc\_Energy\_Import

*Need to add description*

If (Cap\_Quantity > 0) Then

{

If (CapQuantity > ES\_A) then

ET\_S = ES\_A

Else

ET\_S = Cap\_Quantity

}

Else

{

If (CapLegacy > ET\_S) then

ET\_S = ET\_S

Else

ET\_S = Cap\_Legacy

}

### 7.5.6 Load Following Metered

// Where ContractType = 2.2 // Load Following Metered

ET\_S = Sum (Inc\_Energy\_Import)

### 7.5.7 Load Following Adjusted

// Where ContractType = 2.3 // Load Following Adjusted

ET\_S = Sum (Adj\_Energy\_Import)

ET\_B = ET\_S

# Step 7A

//Calcualtion of MP Wise hourl Energy Traded

*Need to add description*

ET = ET\_B – ET\_S

# Step 8 – Calculation of Imbalances

## Step 8.1 Imbalance Calculation MP\_Hourly Calculate MP wise hourly imbalance

*Need to add description*

Gen = ES\_G

Imp = ES\_I

ET = ET

ES = ES\_A

Imbalance = Gen + Imp + ET - ES

## Step 8.2 Fetch Marginal Price Hourly

// Fetch Marginal Price Hourly from SO Data

## Step 8.3 Calculate Imbalance Charges hourly

*Need to add description*

Imbalance\_ChargeH = Marginal\_Pirce \* Imbalance

## Step08.4 Imbalance Charge Monthly

// Group by MP Month

Imbalance\_ChargeM //Monthly

# Step 9 – Calculation of SLR wise Legacy Settlement

## Step 9.1

// Calcualte SLR wise ratio as per contract with Power Pool

// ET\_B for all Buyers where Seller = Power Poll

*Need to add description*

MP\_SLR = (ET\_SLR / Total\_ET\_All\_SLRs) \* Imbalance\_ChargesPowerPool

## Step 9.2 Calculate SLR (MP) wise monthly legacy settlement

// Group by Month for each MP other than Power Pool

*Need to add description*

Settlement\_of\_LegacyM = Sum(MP\_SLR)

# Step 10 Calculate Montly MP Wise Amount Payable or Receivable

// Group by Month for each MP other than Power Pool

Amount\_Payable\_Receivable = Imbalance\_Charge + Settlement\_of\_Legacy