Bid Cost Recovery Enhancements
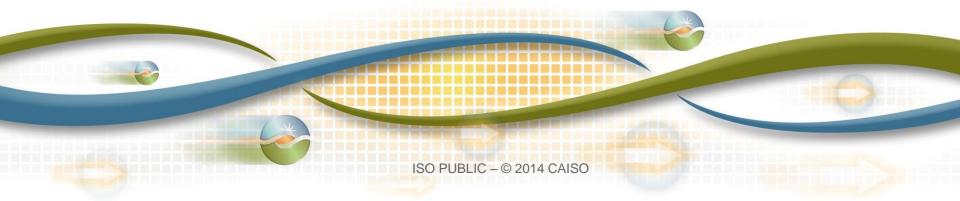
RIMPR, Phase 1 - Spring Release 2014

RI-MPR Phase 1

BCR netting, BCR mitigation measures, & mandatory MSG

RI-MPR Changes

- Lower the energy bid floor
    - Currently -$30/MWh
    - Spring release -$150/MWh
    - Manage over-generation more efficiently

RI-MPR Changes

- Bid cost recovery (BCR)

  - Currently BCR netted over the entire day, all markets

  - Spring release - day-ahead BCR amounts netted separately from RUC/real-time BCR amounts

  - Spring release - new mitigation measures to address potential adverse behavior due to new netting methodology

CMRI - 5 new or enhanced reports related to RI-MPR changes

Quick recap of BCR

- Financial mechanism to ensure market participants are able to recover eligible bid costs
- Three part energy bid:
  - start-up cost (fixed cost)
  - minimum load costs (fixed cost)
  - transition costs (fixed cost)
  - energy
- BCR uplift when eligible bid costs exceed eligible revenues

BCR changes due to RI-MPR

- IFM BCR no longer netted with RUC/RTM BCR
  - Separate BCR uplift settlement for IFM (CC 6630) and combined RUC/RTM (CC 6620)
- RT BCR payments no longer reduced by IFM revenues above bid costs
  - Incentive for economic bids into RTM
  - Netting separation may cause potential adverse market behavior
- BCR Mitigation Measures
  - Address IFM/RTM-RUC market separation, and current adverse market behavior
- RTM energy for BCR includes both FMM &RTD energy as part of FERC Order 764 enhancement
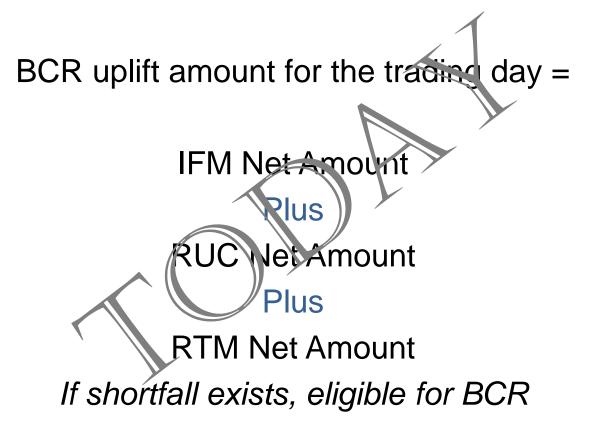
BCR mitigation measures – netting methodology

Bid costs	-	Market revenues
•Start-up •Minimum load •Transition •Energy bid: awarded energy * energy bid price •Ancillary Services: awarded AS * AS bid price		•Minimum load: minimum load energy * LMP •Energy: awarded energy * LMP •Ancillary Services: awarded AS * ASMP

Bid costs - Market revenues = Net market amount

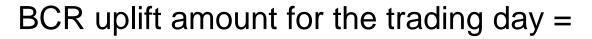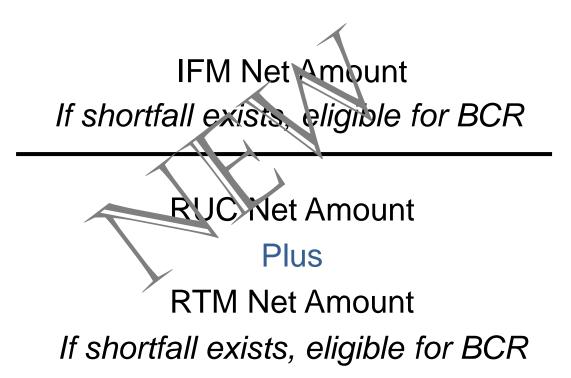BCR uplift will occur when eligible bid costs exceed eligible revenues

Bid cost recovery settlement methodology

BCR uplift amount for the trading day =

IFM Net Amount

Plus

RUC Net Amount

Plus

RTM Net Amount

If shortfall exists, eligible for BCR

Bid cost recovery settlement methodology

BCR uplift amount for the trading day =

IFM Net Amount
If shortfall exists, eligible for BCR

RUC Net Amount

Plus

RTM Net Amount
If shortfall exists, eligible for BCR

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BCR mitigation measures – no netting methodology

Stays the same	What's new
Determining eligibility	Modified day-ahead MEAF calculation
Evaluate performance	Performance metric in real-time
Net bid costs and market revenues per market	RUC calculated in real-time
	Persistent deviation metric

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BCR persistent deviation metric – highlights

- Used to mitigate energy cost basis in BCR as a consequence of persistent deviation

- Targets deviations that can be used to inflate BCR without changing the existing bid cost recovery design when dispatch is not followed
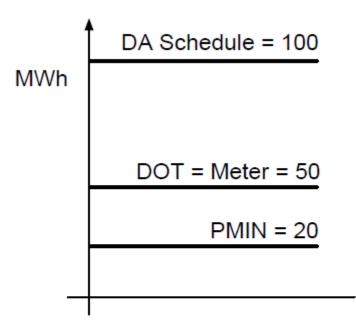
BCR mitigation measures

- Modified DA Metered Energy Adjustment Factor (DA MEAF)

- Real-time Performance Metric (RT PM)

- Persistent Deviation Metric (PDM)

- BCR qualification for start-up, shutdown and MSG transition

Modified day-ahead MEAF

Figure 5-2: Simplified example of current day ahead MEAF and proposed modified day ahead MEAF in the case of a decremental real-time dispatch

MWh

DA Schedule = 100

DOT = Meter = 50

PMIN = 20

Current DA MEAF =
$(50 - 20) / (100 - 20) = 0.375$

Modified DA MEAF =
$\min [1, abs((50-20) / (\min(50, 100) - 20))] = 1$

Modified day-ahead MEAF

- $\text{DA MEAF} = \min\left\{1, \left|\dfrac{\text{Meter}-\text{DA MLE}-\text{Reg}}{\min\{\text{TEE,DASE}\}-\text{DA MLE}}\right|\right\}$
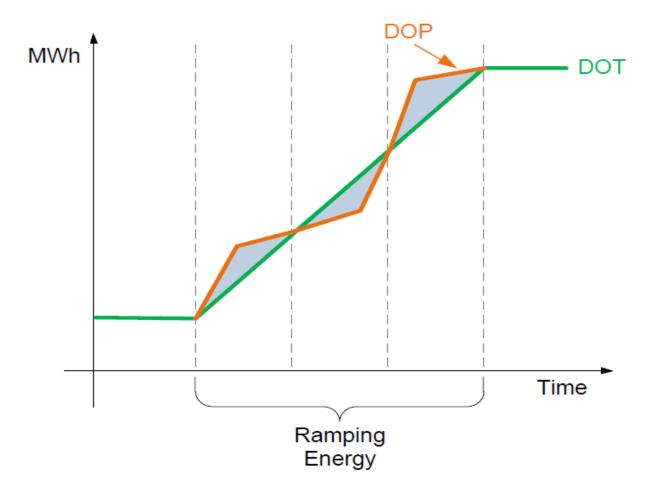
  Apply if
  |Meter – Reg – min(DASE, TEE)| <= PM tol band

- PM tol band =
  $\max\left\{\dfrac{5\text{MWh}}{12}, \dfrac{0.03*\text{Pmax}}{12}\right\} + \text{Ramping Tolerance}$

Ramping tolerance

Ramping Tolerance = | TEE based on DOP – TEE based on DOT |

Real-time performance metric

Figure 6-1: Incremental and decremental under delivery

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Real-time performance metric

- Performance Metric (PM) $= \min\left\{1, \left|\dfrac{\text{Meter}-\text{DA Energy}-\text{Regulation}}{\text{TEE}-\text{DA Energy}}\right|\right\}$

    - Apply PM to BCR Cost and Revenue if $|\text{Meter} - \text{Reg} - \text{TEE}| <= \text{PM tol band}$

- Replaces current real-time MEAF

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- # DA MEAF
  - DA Energy above Pmin

- # RT PM
  - RUC / RTM ML cost and revenue
  - Optimal energy
  - DA ML cost and revenue applied in lieu of DA MEAF
    - for non-MSG, ISO-committed in DA, de-committed in RTM
    - for MSG, ISO-committed in DA at higher, in RTM at lower configuration

Application of DA MEAF & RT PM, cont.

Costs	Revenues	Apply DA MEAF or PM to…
+	+	costs
+	–	costs & revenues
–	+	n/a
–	–	revenues

- **In short, apply to positive costs and negative revenues**

  - DA MEAF or RT PM should not increase costs or decrease revenues (i.e., there is no increase in BCR uplift amount)

Persistent deviation (PDM)

$$\frac{\text{Meter}(i-1) - \text{Meter}(i)}{\text{Meter}(i-1) - \text{TEE}(i) - \text{Regulation}(i)}$$
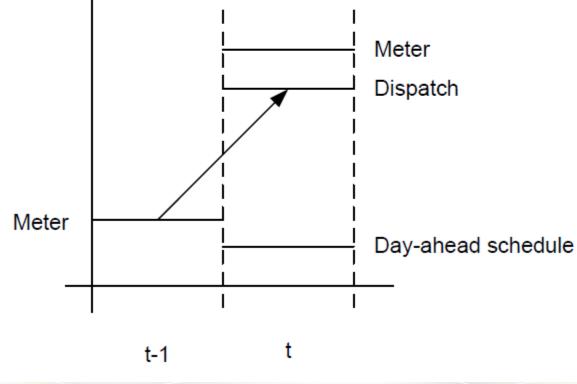
- Test PDM per each 5-min from 3-hour perspective for Trading Hour
  - Flag as pass or fail, per 5-min, and count number of fails
  - Split 3-hour period as:
    - Window 1: Prior and Current Trading Hours
    - Window 2: Current and Next Trading Hours
  - If fail count > 6 for either window, then
    - Mitigate RT OE **and** RIE bid prices for Current Trading Hour
      - Min(Final Bid Price, DEB Price, RT LMP) for "inc" energy
      - Max(Final Bid Price, DEB Price, RT LMP) for "dec" energy

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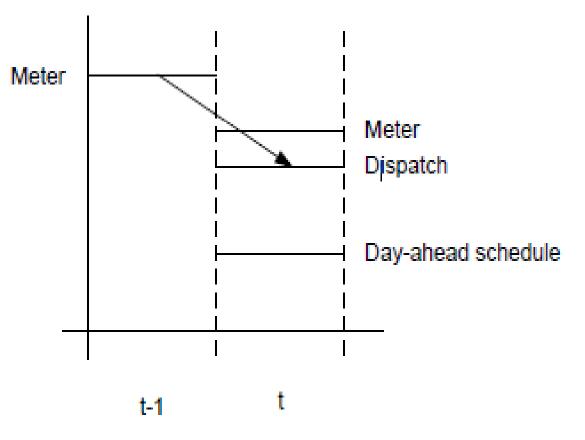
PDM threshold test cases

Case 1 – The resource is dispatched up in real time and is operating above its day-ahead schedule. In this case, interval t is flagged if the deviation is greater than 10% of the resource's 10-minute ramp capability and the persistent deviation metric is calculated to be greater than 110%.
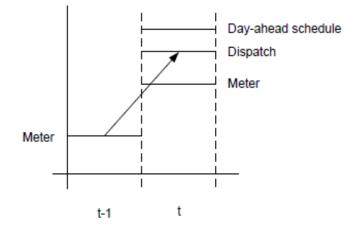
PDM threshold test cases

Case 2 – The resource is dispatched down in real time and is operating above its day-ahead schedule. In this case, interval t is flagged if the deviation is greater than 10% of the resource's 10-minute ramp capability and the persistent deviation metric is calculated to be less than 90%.
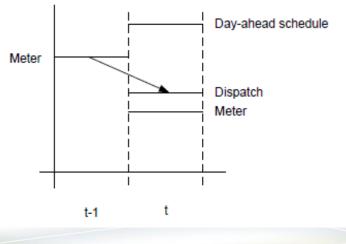
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PDM threshold test cases

Case 3 – The resource is dispatched up in real time and is operating below its day-ahead schedule. In this case, interval t is flagged if the deviation is greater than 10% of the resource's 10-minute ramp capability and the persistent deviation metric is calculated to be less than 90%.

Case 4 – The resource is dispatched down in real time and is operating below its day-ahead schedule. In this case, interval t is flagged if the deviation is greater than 10% of the resource's 10-minute ramp capability and the persistent deviation metric is calculated to be greater than 110%.

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BCR for start-up costs (SUC)

- To receive BCR on start-up costs, resource must be OFF before becoming ON.

- Short-start resource committed by ISO in IFM but re-committed in RTM, creating overlaps, RTM SUC costs are allocated as:
  - IFM costs over the IFM commitment period, for 1st RTM start-up;
  - RTM costs over the RTM commitment period, for subsequent RTM start-ups over the same IFM commitment period

BCR minimum load, shutdown

- Disqualify MLC when ISO is not be able to issue binding shutdown following shutdown advisory
  - due to resource's persistent deviation
  - State Variable stores cumulative deviation

BCR MSG transition

- Transition cost paid if based on metered energy, resource is:
  - in its FROM configuration prior to transition period
  - and then in its TO configuration

"Mandatory MSG" implementation

- Incorporates enhancement to multi-stage generator (MSG) modeling
  - Replaces current interim MSG model

- Uses RT performance metric to determine eligible MSG configuration MLC BCR
  - Pro-rates cost and revenue based on metered energy relative to expected energy
  - Replaces MLC payment based on metered configuration

Charge Code Impact

- One (1) new CC under Cost Recovery Parent Group
    - CC 6630 – IFM Bid Cost Recovery Settlement

- Configuration Updates to Nine (9) CCs
    - CC 6620 – RUC and RTM Bid Cost Recovery Settlement
    - CC 6460 – FMM Instructed Imbalance Energy Settlement
    - CC 6470 – RT Instructed Imbalance Energy Settlement
    - PC BCR Sequential Netting
    - PC SUC and MLC
    - PC MEAF
    - PC IFM Net Amount
    - PC RUC Net Amount
    - PC RTM Net Amount

Charge Code Impact, cont.

CC 6630 (IFM BCR Settlement) , per resource per TD

- uplift amount from total negative daily **IFM** net amounts
- net amounts = Bid Cost –Market Revenue per 5-minutes

CC 6620 (RUC and RTM BCR Settlement), per resource per TD

- uplift amount from total negative daily **RUC plus RTM** net amounts
- net amounts = Bid Cost – Market Revenue per 5-minutes

Charge Code Impact, cont.

BCR Sequential Netting (ISO-level)

- As before, uplift only positive values, scaled by positive uplift ratio; but separate IFM uplift ratio from RUC and RTM uplift ratio
  - Per 5-min,
    - For IFM uplift, net only IFM shortfalls with IFM surpluses
    - For RUC and RTM uplifts
      1. Identify if RUC shortfall or RUC surplus
      2. Identify if RTM shortfall or RTM surplus
      3. If RUC shortfall in step 1, Net RUC shortfall with any RTM surplus
      4. If RTM shortfall in step 2, Net RTM shortfall with any RUC surplus
  - Uplift ratio = Total relevant market uplift per TD / Total relevant market positive uplift per TD

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Bid cost recovery examples

- Please turn to
  - "Spring 2014 Release – Non MSG Resource with BCR Settlement Example"; and
  - "Spring 2014 Release - Non-Overlapping MSG Resource with BCR Settlements Example"

IFM BCR change summary

- IFM Net Amount computed as IFM Bid Cost minus IFM Market Revenue

- IFM Energy Bid Cost and Market Revenue
  - Subject to DA MEAF

- IFM MLC and MLE qualifiers;

  a. No RTM De-commitment , use Meter >= PMIN – Tolband.

  b. If RTM De-commitment, use RT PM with IFM MLC and MLE

- New CC 6630 IFM BCR Settlement

RTM BCR change summary

- RTM Net Amount computed as RT Bid Cost minus RT Market Revenue

- RT Energy Bid Cost and Market Revenue
    - RT PM applied to
        - RUC MLC and RTM MLC, Energy Bid Cost, MLE
    - MLC payment calculation for MSG simplified
        - No more intermediate MSG Configuration cost payment for ISO-committed MSG Configuration transitions
        - Negative RTM MLC – When IFM committed configuration is higher than RTM Committed configuration.

- RUC Net Amount still computed as RUC Bid Cost minus RUC Market Revenue

- CC 6620 for RUC/RTM BCR Settlement