BOEHM, KURTZ & LOWRY
ATTORNEYS AT LAW
36 EAST SEVENTH STREET
SUITE 2110
CINCINNATI, OHIO 45202
TELEPHONE (513) 421-2255
TELECOPIER (513) 421-2764

Via Overnight Mail

February 7, 2007

Beth A. O'Donnell, Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40602

Re: Case No. 2006-00509

Dear Ms. O'Donnell:

Please find enclosed the original and twelve (12) copies of the First Set of Data Requests of Kentucky Industrial Utility Customers, Inc. to Kentucky Utilities Company to be filed in the above-referenced matter. By copy of this letter, all parties listed on the Certificate of Service have been served.

Please place this document of file.

Very Truly Yours,

Michael L. Kurtz, Esq.
Kurt J. Boehm, Esq.
BOEHM, KURTZ & LOWRY

MLKkew
Attachment
cc: Certificate of Service

CERTIFICATE OF SERVICE

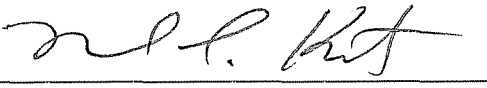
I hereby certify that a copy of the foregoing was served by mailing a true and correct copy, by first-class postage prepaid mail, (unless otherwise noted) to all parties on the 7th day of February, 2007.

Mr. Kent Blake, Director - Rates & Regulatory
Kentucky Utilities Company
c/o Louisville Gas & Electric Co.
P. O. Box 32010
Louisville, KY 40232-2010

Honorable Elizabeth E. Blackford
Assistant Attorney General
Office of the Attorney General
Utility & Rate Intervention Division
1024 Capital Center Drive, Suite 200
Frankfort, KY 40601-8204
betsy.blackford@law.state.ky.us

Honorable Elizabeth L. Cocanougher
Senior Corporate Attorney
Kentucky Utilities Company
c/o Louisville Gas & Electric Co.
P. O. Box 32010
Louisville, KY 40232-2010

Honorable Kendrick R. Riggs
Ogden, Newell & Welch, PLLC
1700 PNC Plaza, 500 West Jefferson Street
Louisville, KY 40202-2874
kriggs@ogdenlaw.com



Michael L. Kurtz, Esq.
Kurt J. Boehm, Esq.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In The Matter Of:	:	Case No. 2006-00509
	:	
An Examination Of The Application Of The	:	
Fuel Adjustment Clause Of Kentucky Utilities	:	
Company From November 1, 2004 Through	:	
October 31, 2006		

FIRST SET OF DATA REQUESTS OF KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC. TO KENTUCKY UTILITIES COMPANY

Dated: February 7, 2007

DEFINITIONS

1. "Document" means the original and all copies (regardless of origin and whether or not including additional writing thereon or attached thereto) of memoranda, reports, books, manuals, instructions, directives, records, forms, notes, letters, notices, confirmations, telegrams, pamphlets, notations of any sort concerning conversations, telephone calls, meetings or other communications, bulletins, transcripts, diaries, analyses, summaries, correspondence investigations, questionnaires, surveys, worksheets, and all drafts, preliminary versions, alterations, modifications, revisions, changes, amendments and written comments concerning the foregoing, in whatever form, stored or contained in or on whatever medium, including computerized memory or magnetic media.

2. "Study" means any written, recorded, transcribed, taped, filmed, or graphic matter, however produced or reproduced, either formally or informally, a particular issue or situation, in whatever detail, whether or not the consideration of the issue or situation is in a preliminary stage, and whether or not the consideration was discontinued prior to completion.

3. "Person" means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.

4. A request to identify a natural person means to state his or her full name and residence address, his or her present last known position and business affiliation at the time in question.

5. A request to identify a document means to state the date or dates, author or originator, subject matter, all addressees and recipients, type of document (e.g., letter, memorandum, telegram, chart, etc.), number of code number thereof or other means of identifying it, and its present location and custodian. If any such document was, but is no longer in the Company's possession or subject to its control, state what disposition was made of it.

6. A request to identify a person other than a natural person means to state its full name, the address of its principal office, and the type of entity.

7. "And" and "or" should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.

8. "Each" and "any" should be considered to be both singular and plural, unless specifically stated otherwise.

9. Words in the past tense should be considered to include the present, and words in the present tense include the past, unless specifically stated otherwise.

10. "You" or "your" means the person whose filed testimony is the subject of these interrogatories and, to the extent relevant and necessary to provide full and complete answers to any request, "you" or "your" may be deemed to include any person with information relevant to any interrogatory who is or was employed by or otherwise associated with the witness or who assisted, in any way, in the preparation of the witness' testimony.

11. "LG&E" means Louisville Gas & Electric Company and/or any of their officers, directors, employees, or agents who may have knowledge of the particular matter addressed.

12. "KU" means Kentucky Utilities Company, and/or any of their officers, directors, employees or agents who may have knowledge of the particular matter addressed.

13. "Make Whole Payment" includes, but is not limited to: 1) Real-Time RSG Make Whole Payment Amount; 2) Real-time RSG First Pass Distribution Amount; and 3) Real-Time RSG Make Whole Payments Second Pass Distribution Uplift. For purposes of these questions, MISO Make Whole Payments are the same as those described in the attached MISO handout titled "Frequently Asked Questions – Real Time Revenue Sufficiency Guarantee."

INSTRUCTIONS

1. If any matter is evidenced by, referenced to, reflected by, represented by, or recorded in any document, please identify and produce for discovery and inspection each such document.

2. These interrogatories are continuing in nature, and information which the responding party later becomes aware of, or has access to, and which is responsive to any request is to be made available to Kentucky Industrial Utility Customers. Any studies, documents, or other subject matter not yet completed that will be relied upon during the course of this case should be so identified and provided as soon as they are completed. The Respondent is obliged to change, supplement and correct all answers to interrogatories to conform to available information, including such information as it first becomes available to the Respondent after the answers hereto are served.

3. Unless otherwise expressly provided, each interrogatory should be construed independently and not with reference to any other interrogatory herein for purpose of limitation.

4. The answers provided should first restate the question asked and also identify the person(s) supplying the information.

5. Please answer each designated part of each information request separately. If you do not have complete information with respect to any interrogatory, so state and give as much information as you do have with respect to the matter inquired about, and identify each person whom you believe may have additional information with respect thereto.

6. In the case of multiple witnesses, each interrogatory should be considered to apply to each witness who will testify to the information requested. Where copies of testimony, transcripts or depositions are requested, each witness should respond individually to the information request.

7. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

8. Responses to requests for revenue, expense and rate base data should provide data on the basis of Total company as well as Intrastate data, unless otherwise requested.

KIUC's FIRST SET OF DATA REQUESTS TO KU
PSC CASE NO. 2006-00509

Data Requests to KU Regarding "Make Whole Revenues"

Q1 Please provide a detailed explanation of the Company's fuel adjustment clause treatment of MISO make whole revenues and the incremental fuel expenses associated with generation that is required to be run out of economic dispatch order by Company at the request of MISO.

Q2 For each of the months during the two-year review period, please identify each instance (by month) in which MISO requested one of the Company's generators to be run out of economic order. For each such occurrence, provide the following:

a. mWh output of the unit
b. the cost of fuel associated with the "out of merit order" generation
c. the cost of fuel associated with generation that was not run because of the must run order from MISO.
d. the amount of any "make whole" payment made to the Company by MISO pursuant to the order to run a unit out of economic order (include a copy of any calculations, invoices or other documents provided by MISO associated with the make whole payment).

Q3 For each of the occurrences identified above, in which the Company was required to run a unit out of economic order and for which the Company received a make whole payment, please provide the following by month:

a. the amount of fuel expense associated with the out of economic order dispatch that was included in the Company's per books fuel expense for the month.
b. the amount of fuel expense associated with the out of economic order dispatch that was included in the Company's fuel adjustment clause for the month.
c. the amount of fuel expense excluded or credited to the per books fuel expense in the Company's fuel adjustment clause for the month, if any, and the computational support used to quantify the adjustment.
d. the amount of make whole revenues credited to the Company's fuel adjustment clause for the month, if any.

Q4 If the response to question (3) above is that the Company did not include the cost of such generation (ordered by MISO to be run out of economic dispatch order) in the fuel adjustment clause calculation, please explain why such costs were not included and show a calculation performed by the Company for each month during the two year review period demonstrating the such costs were removed from the fuel clause calculation for the month.

Q5 If the response to question (3) above is that the Company did not include make whole revenues as a credit to fuel cost in the calculation of the fuel adjustment clause, please provide a detailed explanation for not including these revenues.

Q6 Please provide an explanation of the methodology used by MISO during the Day 2 period to calculate "make whole" revenues.

Q7 If the Company has excluded both the incremental cost associated with a MISO order of dispatch of generation that is out of economic order and the related make whole revenues paid to the Company by MISO, please identify each and every occurrence in which the make whole revenues exceeded the amount of fuel cost excluded by the Company in the calculation of the

fuel adjustment clause during the two-year review period. Show the amount of the fuel cost excluded from the fuel adjustment clause, the amount of the make whole revenues and the difference, each month.

Q8 Pursuant to the previous question, in the event that the make whole revenues exceed the excluded fuel cost during a month, please explain why the Company has not credited ratepayers with the excess revenues.

Q9 Please provide copies of the complete Fuel Adjustment Clause filing for each month during the period November 2004 through October 2006 for each Company.

Q10 For each month during the two-year review period, please provide copies of the MISO invoice to KU.

Q11 During the period when the Company was in MISO, please provide the Transmission Provider Region for each Company. Please also provide the names of each additional transmission provider in the Transmission Provider Region in which each Company was located.

Q12 For each month during the two-year review period, please provide the amount of any charge from MISO for KU's share of allocations of the cost of Price Volatility Make Whole Payments ("PV MWP"), pursuant to Section 40.3.5.9 of the MISO tariff.

Q13 With regard to any charges from MISO pursuant to the Company's share of PV MWP pursuant to Section 40.3.5.9 of the MISO tariff, please state whether the cost of any such payments was included in the calculation of the FAC. If any such amounts were included in one or more monthly FAC calculations, please provide a schedule showing the amount that was included each month.

Q14 At a January 11, 2007 Informal Conference in Case No. 2006-00172, Duke Kentucky presented the attached document outlining its proposal to deal with MISO make whole payments.

a. Duke Kentucky's Alternative 1 was:

> *"If MISO dispatches a unit that would not otherwise dispatch on an economic basis, any resulting generation from this unit will be stacked in order of economic merit without adjustment. Neither the associated fuel costs nor the MISO make-whole revenue will be included in the FAC."*

Please indicate whether KU would be wiling to accept Duke Kentucky Alternative 1. Please explain.

b. Duke Kentucky's Alternative 2 was:

> *"Alternatively, out-of-merit generation dispatched on by MISO will be deemed to be dispatched for reliability purposes, and will be forced to the bottom of the economic dispatch order. Any make-whole revenue will be used to offset the fuel costs associated with the forced generation."*

Please indicate whether KU would be wiling to accept Duke Kentucky Alternative 2. Please explain.

Data Requests to KU Regarding Losses

Q15 With regard to the Company's response to Question No. 12, page 6 of 24, of the Commission's data request, please confirm that the kWh sales shown in the response for each sale made during the Month Ending April 30, 2005 were measured at the Company's generator bus. For each of the sales shown for the Month Ending April 30, 2005, please provide documentation showing the amount of the kWh purchased by the buyer shown in the schedule (page 6 of 24).

Q16 With regard to the Company's response to Question No. 12, page 18 of 24, of the Commission's data request, please confirm that the kWh sales shown in the response for each sale made during the Month Ending April 30, 2006 were measured at the Company's generator bus. For each of the sales shown for the Month Ending April 30, 2006, please provide documentation showing the amount of the kWh purchase by the buyer shown in the schedule (page 18 of 24).

Frequently Asked Questions – Real-Time Revenue Sufficiency Guarantee

What is Revenue Sufficiency Guarantee (RSG)?

Midwest ISO has the responsibility to ensure that adequate capacity is available and committed to meet demand and reserve obligations within the Market Footprint. RSG is a mechanism that ensures Generation Resources that are committed by the Midwest ISO are guaranteed cost recovery of their three-part offer described as start-up costs, no load costs, and incremental energy offer, collectively referred to as production costs, when appropriate. These payments are reflected as part of the Day-Ahead and Real-Time RSG Make Whole Payment Amounts and funded through the Day-Ahead and Real-Time RSG Distribution Amounts.

The following charge calculations below are described separately in this document:

1) Real-Time RSG Make Whole Payment Amount (RT_RSG_MWP)
2) Real-Time RSG First Pass Distribution Amount (RT_RSG_DIST1)
3) Real-Time RSG Make Whole Payments Second Pass Distribution Uplift (Component of RT_RNU)

References: BPM for Coordinated Reliability Dispatch and Control, Section 2. BPM for Market Settlements, Section B.10, D.12, D.13

Real-Time RSG Make Whole Payment Amount (RT_RSG_MWP)

Generation Resources that are eligible and committed by the Midwest ISO and scheduled for commitment in the Real-Time Energy Market, beyond cleared Day-Ahead Market commitments, shall be guaranteed cost recovery of their production costs, when appropriate.

The three-part costs (a.k.a. Production Costs) are defined as follows:

1) **Start-up** – Costs that are incurred per start-up over the run-time of the unit.
2) **No Load** – Costs for operating a Generation Resource at zero MWs.
3) **Energy Offer** – Area under the price curve at which a Resource has agreed to sell the next increment of Energy.

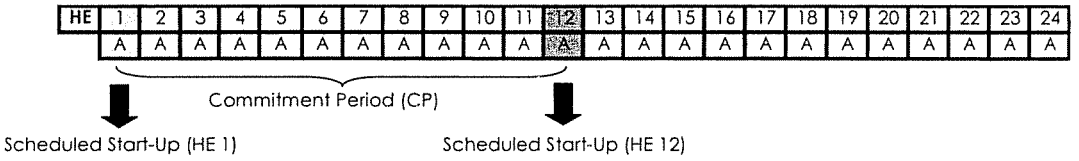
The Midwest ISO performs the RAC process and may commit additional Resources beyond those cleared in the Day-Ahead Energy Market to meet the forecasted needs within the Midwest ISO. A generation resource is **NOT** eligible for the Real-Time RSG Make Whole Payment in hours the unit cleared in the Day-Ahead Market.

The Real-Time RSG Make Whole Payment Amount revolves around the concept of a Commitment Period (CP) for a Resource. In the Real-Time Market, a CP is a period of continuous MISO instructed commitment bounded by a MISO instructed start-up and MISO instructed shut-down. Eligibility during a CP is governed by two key indicators:

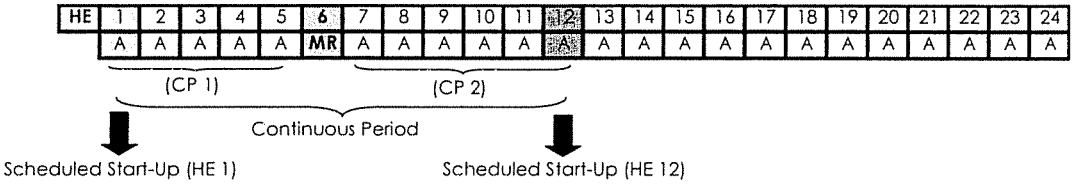
1) If any hours in the CP have a Must-Run commit status, then the generation resource is not eligible for start-up cost recovery in the CP.
2) Any hours in the CP that have a Must-Run commit status will not be eligible for recovery of no load costs and incremental energy costs.

The Real-Time related RAC process may commit a generation Resource multiple times in a single Operating Day. As noted, the contiguous hours that a generation Resource is committed is referred to as a Commitment Period. Each Commitment Period must be separated by at least one Hour where the asset was scheduled to be off-line by MISO to receive a Revenue Sufficiency Make Whole Payment. Production Costs are guaranteed by Commitment Period.

Example of a Commitment Period (CP):

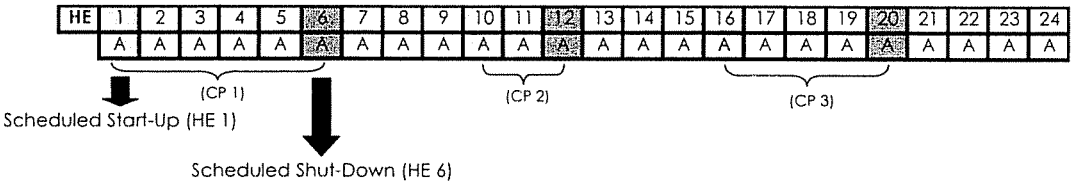


Example of a Continuous Period (CP) where HE 6 has a commit status of Must-Run:



In the above example, HE 6 has a commit status of Must-Run. If any hour within a CP contains a commit status of Must-Run, this asset is not eligible to recover start-up costs in this CP. Additionally, the Market Participant is not eligible to recover No Load costs and incremental energy costs for HE 6.

Can there be more than one (1) CP over the course of an Operating Day?
Yes, there can be more than one CP over the course of an Operating Day. When this occurs Real-Time RSG Make Whole Payments are evaluated for each CP independently. Below is an example of an Operating Day with multiple CPs:



Who is eligible for Real-Time RSG Make Whole Payment?
Generating Resources that are committed by the Midwest ISO and meet the Real-Time Make Whole Payment Eligibility Criteria are eligible for Real-Time RSG Make Whole Payments. Real-Time RSG Make Whole Payment Eligibility Scenarios include some of the following:

NOTE: Day-Ahead and Real-time RSG Eligibility Guide can be found by going to www.midwestmarket.org /documents/ Market Settlement Helpful document and files

Midwest ISO
We manage power.

#	Scenarios	Illustration / Resolution	Day-Ahead Eligibility			Real-Time Eligibility		
			Start-Up	No-Load	Incremental Costs	Start-Up	No-Load	Incremental Costs
1	Generating Unit was committed in the Real-Time Market by the Midwest ISO.	Real-Time: MISO Commit — HE 1-10	Not Eligible	Not Eligible	Not Eligible	√	√ HE 1-10	√ HE 1-10
2	Market Participant specified a Real-Time Must-Run prior to the Generating Unit being committed in the Day-Ahead Market by the Midwest ISO.	Real-Time: MP specifies MR — HE 1-10; Day-Ahead: MISO Commit — HE 11-24	√ HE 11-24	√ HE 11-24	√ HE 11-24	Not Eligible	Not Eligible	Not Eligible
3	Market Participant specified a Real-Time Must-Run after the Generating Unit was committed in the Day-Ahead Market by the Midwest ISO.	Day-Ahead: MISO Commit — HE 1-10; Real-Time: MP specifies MR — HE 11-24	√ HE 1-10	√ HE 1-10	√ HE 1-10	Not Eligible	Not Eligible	Not Eligible
4a	Midwest ISO committed the Generating Unit in Real-Time prior to the Market Participant specified Real-Time Market Must-Run period.	Real-Time: MISO Commit — HE 1-10; Real-Time: MP specifies MR — HE 11-24	Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 1-10	√ HE 1-10
4b	Midwest ISO committed the Generating Unit in Real-Time prior to the Market Participant specified Day-Ahead Market on-line period.	Real-Time: MISO Commit — HE 1-10; Day-Ahead: MP / MISO Commit — HE 11-24	√ HE 11-24 (ONLY if MISO Commit)	√ HE 11-24 (ONLY if MISO Commit)	√ HE 11-24 (ONLY if MISO Commit)	Not Eligible	√ HE 1-10	√ HE 1-10
5a	Midwest ISO committed the Generating Unit in Real-Time after the Market Participant specified Real-Time Market Must-Run period.	Real-Time: MP specifies MR — HE 1-10; Real-Time: MISO Commit — HE 11-24	Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 11-24	√ HE 11-24
5b	Midwest ISO committed the Generating Unit in Real-Time after the Market Participant specified Day-Ahead Market on-line period.	Day-Ahead: MP / MISO Commit — HE 1-10; Real-Time: MISO Commit — HE 11-24	√ HE 1-10 (Only if MISO Commit)	√ HE 1-10 (Only if MISO Commit)	√ HE 1-10 (Only if MISO Commit)	Not Eligible	√ HE 11-24	√ HE 11-24
6a	Midwest ISO committed the Generating Unit in Real-Time through a Market Participant specified Real-Time Market Must-Run period.	Real-Time: MISO Commit — HE 1-8; MR — HE 9; HE 10-24	Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 1-8, 10-24	√ HE 1-8, 10-24
6b	Midwest ISO committed the Generating Unit in Real-Time through a Market Participant specified Day-Ahead Market on-line period.	Real-Time MISO Commit — HE 1-6; Day-Ahead MP / MISO Commit — HE 7-9; Real-Time MISO Commit — HE 10-24	√ HE 7-9 (Only if MISO Commit)	√ HE 7-9 (Only if MISO Commit)	√ HE 7-9 (Only if MISO Commit)	Not Eligible	√ HE 1-6, 10-24	√ HE 1-6, 10-24
7	Midwest ISO committed Resources that are not following dispatch instructions in the Real-Time Market. "Following Dispatch" is defined the same as for Uninstructed Deviation Penalties.	Real-Time: MISO Commit — HE 1-10. Market Participants not following dispatch will be subject to Uninstructed Deviation Amount.	Not Eligible	Not Eligible	Not Eligible	√*	(Not eligible for the hours not following dispatch)	(Not eligible for the hours not following dispatch)
8	Revenue Sufficiency Guarantee for a JOU will be allocated based on the commitment for the Commercial Unit of each of the Asset Owners.	Day-Ahead or Real-Time: JOU - MISO Commit — HE 1-10; Asset Owner 1 - 50% | Asset Owner 2 - 50%	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties
9	Midwest ISO commits a Generating Unit in Real-Time and then cancels the Start-up prior to the unit Start-up time beginning.	Real-Time: MP (4-Hour) Start-Up | MISO Commit; MISO Cancels start prior to unit Start-up | HE 11-24	Not Eligible	Not Eligible	Not Eligible	Case by Case Basis	Not Eligible	Not Eligible
10	Midwest ISO commits a Generating Unit and then cancels the Start-up after the unit begins Start-up.	Real-Time: MP (4-Hour) Start-Up | MISO Commit; MISO Cancels start (HE 8) after the unit begins Start-up | HE 11-24	Not Eligible	Not Eligible	Not Eligible	Prorated	Not Eligible	Not Eligible
11	Midwest ISO commits a Generating Unit and then cancels the Start after the unit comes online**	Real-Time: MISO Commit — HE 11-24; MISO Cancels Start HE 14	Not Eligible	Not Eligible	Not Eligible	√	√ HE 11-14 (Per Hour Online**)	√ HE 11-14 (Per Hour Online**)
12	Midwest ISO commits a Generating Unit and then Market Participant cancels the Start-up.	Real-Time: MP Start-Up | MISO Commit; MP Cancels Start HE 8 | HE 11-24	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible
13	Market Participant cancels a Must Run commitment.	Real-Time: MP specifies Must-Run — HE 1-10; MISO Commit — HE 11-24; MP Cancels Must-Run — HE 1-10	Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 11-24 (RT if MISO Commit)	√ HE 11-24 (RT if MISO Commit)
14	Midwest ISO commits a Generating Unit but the Generating Unit comes online** prior to the Midwest ISO scheduled commit time minus Cold Startup Time minus 1 hour.	Real-Time: MP Start-Up | MISO Commit; MP comes online HE 02 | HE 11-24. Example Cold Start = 6 Hours	Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 11-24 (Only if MISO Commit)	√ HE 11-24 (Only if MISO Commit)

* All Real-Time Start-up Eligibility assumes that the unit is online and available.
** Online is defined as SE (State Estimator) MW is greater than 0.

How can a Market Participant determine whether or not they are eligible to receive Real-Time RSG Make Whole Payment?

On an hourly basis, the Day-Ahead Real-Time System (DART) determines whether a generation Resource that was committed by MISO during the Real-Time related RAC process has met the eligibility requirements. If the generation Resource is eligible for Real-Time RSG Make Whole Payment, the eligibility is represented on the Settlement Statement as the Real-Time Revenue Sufficiency Guarantee Eligibility flag (*RT_RSG_ELIGIBILITY).

Does the Midwest ISO calculate Production Cost based on data submitted by the Market Participant for the Generator Resource or some other source?

Once a start notification is issued for a resource to operate in the Real-Time, the Day-Ahead Real-Time system (DART) takes a snapshot of the startup costs, hourly no load cost, and energy offer for the committed hours. The Day-Ahead Real-Time System (DART) calculates a generator's hourly production costs based on its start-up cost uniformly distributed over the eligible portion of the Commitment Period, its no load cost for each eligible hour of the Commitment and its incremental energy cost based on an hourly average of 5-minute snapshots of its incremental energy offer cost for the Real-Time State Estimated MW value for each hour of the Commitment Period. The calculation is performed for both the resource's as-committed snapshot offer costs and for the as-dispatch offer costs. DART provides Market Settlement with the minimum of the eligible as-committed costs and eligible as-dispatch costs over the operating day as hourly production cost values for each generator.

Separately, the Independent Market Monitor (IMM) may perform an Impact Test if they believe that Conduct occurred that caused substantial change in the LMPs or unjustifiably increased the value of ORSGPs (Offer RSG Payments). Mitigated Production Costs are calculated based on Reference Levels. Reference Levels are intended to reflect a Generation Resource's marginal costs, including legitimate risk and opportunity costs or justifiable technical characteristics for physical offer parameters. In addition to the production cost value based on Market Participant submitted offer costs, Market Settlements is provided with the total mitigated hourly eligible production cost value for each generator identified by the IMM for potential mitigation.

If Production Costs have not been received from the IMM, only the values calculated from Market Participant are used to assess the Real-Time RSG Make Whole Payment.

Reference: BPM for Market Monitoring and Mitigation R2 Section 12

How does one calculate the amount an asset is expected to receive for the Real-Time RSG Make Whole Payment?

On an hourly basis, DART calculates and passes to Market Settlements a generator's production cost. Assuming it is not mitigated, the Midwest ISO allocates this Production Cost over the CP. It then compares the Production Cost to the Real-Time Market Energy Amount (RT_RSG_EN_VAL_CP) or the "Market Value" of the cleared schedule over the Commitment Period. The Real-Time Market Energy Amount or "Market Value" is the defined as the Real-Time Actual Meter Data (*RT_ACT_MTR) or Real-Time Alternate Meter Data (*RT_ALT_MTR) (when Actual Meter Data is not available) multiplied by the Real-Time LMP (*RT_LMP_EN). If the "Market Value" of the schedule is less than the Production

Cost, the difference is the amount that is credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

Example: Generator Unit On for a CP of 4 Hours

Real-Time Market

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
1	135	$50.65	$6,837.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
2	135	$60.25	$8,133.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
3	135	$63.44	$8,564.40	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
4	135	$58.21	$7,858.35	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
	Totals:		**$31,394.25**	**$2,425.80**	**$400.00**	**$38,167.20**	**$40,993.00**	**-$9,598.75**	

The above example shows that in addition to the $31,394.25 in Revenue the generation resource receives based on its Real-Time Actual Meter Value multiplied by the Real-Time LMP for each hour, the generation resources make whole payment of $9,598.75 makes it whole on the additional production costs incurred during the 4-hour period.

How does the Midwest ISO calculate the Real-Time RSG Make Whole Payment if there are hours within a CP that has a status of Must-Run?

Example of a Continuous Period (CP) where HE 18 has a commit status of Must-Run:

HE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	MR	A	A	A	A	A	A

(CP 1) (CP 2)

Continuous Period (CP) #2

Scheduled Start-Up (HE 13) Scheduled Shut-Down (HE 24)

Real-Time Market (Real-Time RSG Make Whole Payment for CP #1)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
13	176	$91.17	$16,045.92	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
14	176	$91.82	$16,160.32	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
15	176	$90.21	$15,876.96	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
16	176	$89.04	$15,671.04	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
17	176	$96.30	$16,948.80	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
	Totals:		**$80,703.04**	**$0.00**	**$500.00**	**$63,962.25**	**$64,462.25**	**$16,240.79**	

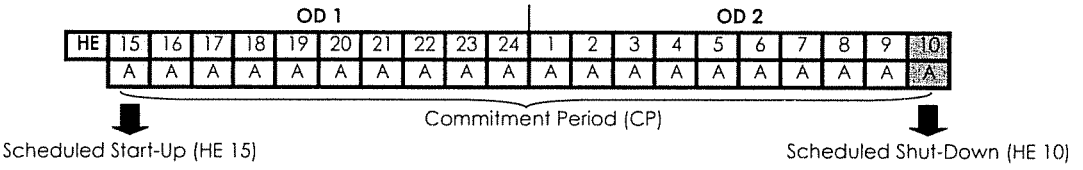
Real-Time Market (Real-Time RSG Make Whole Payment for CP #2)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
19	176	$90.98	$16,012.48	$0.00	$100.00	$12,792.45	$12,892.45		-$2,695.24
20	143	$72.47	$10,363.21	$0.00	$100.00	$10,708.28	$10,808.28		-$2,695.24
21	135	$48.49	$6,546.15	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
22	135	$41.02	$5,537.70	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
23	135	$28.93	$3,905.55	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
24	135	$27.64	$3,731.40	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
	Totals:		**$46,096.49**	**$0.00**	**$600.00**	**$61,667.93**	**$62,267.93**	**-$16,171.44**	

As shown in the above example, if any hour within a CP contains a commit status of Must-Run, this asset is **NOT** eligible to recover start-up costs during this CP. Additionally; the Market Participant is **NOT** eligible to recover No Load costs and incremental energy costs for HE 18. When this situation occurs, Real-Time RSG Make Whole Payments are evaluated for each CP independently. In this example, the Market Participant is in essence "Made Whole" through the "Market Value" for CP 1 (HE 13 – HE 17), so will not receive any additional Real-Time RSG Make Whole Payment for that CP. However, during CP 2 (HE 19- HE 24), the "Market Value" is less than the Production Cost, therefore the difference is the amount that will be credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

How does the Midwest ISO calculate the Real-Time RSG Make Whole Payment if the Commitment Period of a unit crosses over two days?

Example of a 20-Hour Commitment Period (CP) that crosses over two days:



Real-Time Market - OD 1

	"Market Value"			Cost					
HE	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total	Net	Make Whole Payment
15	176	$90.21	$15,876.96	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
16	176	$89.04	$15,671.04	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
17	176	$96.30	$16,948.80	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
18	176	$95.28	$16,769.28	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
19	176	$90.98	$16,012.48	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
20	143	$72.47	$10,363.21	$242.58	$100.00	$10,708.28	$11,050.86		-$490.10
21	135	$48.49	$6,546.15	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
22	135	$41.02	$5,537.70	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
23	135	$28.93	$3,905.55	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
24	135	$27.64	$3,731.40	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
	Totals:		$111,362.57	$2,425.80	$1,000.00	$112,837.73	$116,263.53	-$4,900.96	

Real-Time Market - OD 2

	"Market Value"			Cost					
HE	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total	Net	Make Whole Payment
1	135	$50.65	$6,837.75	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
2	135	$60.25	$8,133.75	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
3	135	$63.44	$8,564.40	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
4	135	$58.21	$7,858.35	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
5	135	$48.54	$6,552.90	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
6	135	$43.02	$5,807.70	$0.00	$100.00	$10,708.28	$10,248.25		-$3,290.08
7	135	$44.54	$6,012.90	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
8	135	$47.55	$6,419.25	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
9	135	$48.92	$6,604.20	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
10	135	$50.30	$6,790.50	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
	Totals:		$69,581.70	$0.00	$1,000.00	$112,837.73	$102,482.50	-$32,900.80	

If the CP of a unit crosses two Operating Days, Start-Up Costs are prorated over the hours in the first Operating Day.

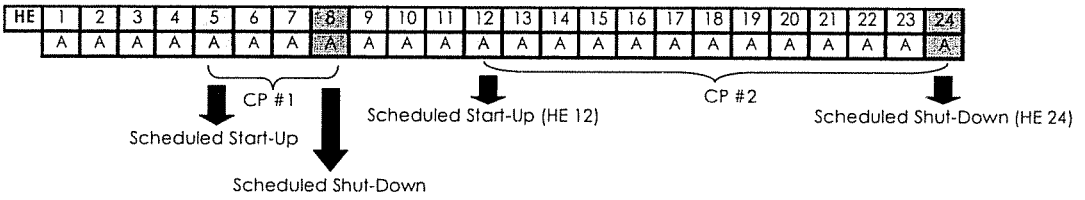
How does the Midwest ISO distribute the Real-Time RSG Make Whole Payment, in one lump sum or over the Commitment Period (CP)?

Make Whole Payment credits that are due to the generator are broken out by commitment period and by hour.

How does the Midwest ISO calculate the Real-Time RSG Make Whole Payment when there are multiple Commitment Periods (CP)?

When a resource has multiple CPs in an Operating Day, each CP is evaluated separately. The following example describes the situation where a generation resource had two separate and distinct CPs in an Operating Day separated by hours where the generation resource was not committed and not on-line.

Example of an Operating Day with multiple CPs:



Real-Time Market (Real-Time RSG Make Whole Payment for CP #1)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
5	135	$50.65	$6,837.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
6	135	$60.25	$8,133.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
7	135	$63.44	$8,564.40	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
8	135	$58.21	$7,858.35	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
Totals:			**$31,394.25**	**$2,425.80**	**$400.00**	**$38,167.20**	**$40,993.00**	**-$9,598.75**	

Real-Time Market (Real-Time RSG Make Whole Payment for CP #2)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
12	151	$85.00	$12,835.00	$186.60	$100.00	$11,335.48	$11,622.08		$0.00
13	151	$91.17	$13,766.67	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
14	176	$91.82	$16,160.32	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
15	176	$90.21	$15,876.96	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
16	176	$89.04	$15,671.04	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
17	176	$96.30	$16,948.80	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
18	176	$95.28	$16,769.28	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
19	176	$90.98	$16,012.48	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
20	143	$72.47	$10,363.21	$186.60	$100.00	$10,708.28	$10,994.88		$0.00
21	135	$48.49	$6,546.15	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
22	135	$41.02	$5,537.70	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
23	135	$28.93	$3,905.55	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
24	135	$27.64	$3,731.40	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
Totals:			**$154,124.56**	**$2,425.80**	**$1,300.00**	**$149,758.11**	**$153,483.91**	**$640.65**	

If there are multiple CPs in a given Operating Day, the Real-Time settlement compares whether the generating asset's value for a CP exceeds the guaranteed productions costs for those hours. If the total energy value ("Market Value") is less than the guaranteed production cost amount, the difference is credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

In the above example, CP #1 for HE 5-8, since the "Market Value" is less than the Production Cost, the Asset Owner receives the difference as a Real-Time RSG Make Whole Payment Amount. As noted above, this amount is allocated evenly across all committed hours in the CP. For CP #2 for HE 12-24, since the "Market Value" was greater than the Production Cost, the Asset Owner was essentially "Made Whole" and does not receive additional credits from the Midwest ISO.

If a Generating Unit was committed in the Day-Ahead Market for HE 1-10 and was further committed for HE 11-24 during the RAC Process, what would the Asset Owner be eligible for with respect to Real-Time RSG Make Whole Payment?

Generation Resources that are eligible and committed by the Midwest ISO and scheduled in the Day-Ahead Energy Market are guaranteed cost recovery of their production costs. All Resource Offers **except** for Must-Run that have been committed by the Midwest ISO are eligible for Day-Ahead RSG Make Whole Payment.

NOTE: Day-Ahead and Real-Time RSG Eligibility Guide can be found by going to www.midwestmarket.org /documents/ Market Settlement Helpful document and files

Day-Ahead	Real-Time
MISO Commit	MISO Commit
HE 1-10	HE 11-24

Hours in the same CP that were not committed in the Day-Ahead Market, but committed for the Real-Time Market and meet the Real-Time RSG Eligibility Criteria, are eligible for Real-Time Make Whole Payment. Since Start-up costs for the CP were guaranteed in the Day-Ahead Market, the generating unit is only eligible for No Load and Incremental Energy Costs in Real-Time for the hours that were committed for the Real-Time Market by the Midwest ISO provided that the generating unit met all Real-Time RSG Eligibility Criteria during these hours.

Day-Ahead Market

	"Market Value"			Cost					
HE	MW	LMP	Net Market Revenue	Startup	No Load	Incremental	Net Production Cost	Net RSG Make Whole Payment	Make Whole Payment
1	30	$18.99	$569.70	$45.76	$4.00	$667.14	$716.90		-$164.36
2	30	$17.90	$537.00	$45.76	$4.00	$667.14	$716.90		-$164.36
3	30	$17.33	$519.90	$45.76	$4.00	$667.14	$716.90		-$164.36
4	30	$17.23	$516.90	$45.76	$4.00	$667.14	$716.90		-$164.36
5	30	$17.32	$519.60	$45.76	$4.00	$667.14	$716.90		-$164.36
6	30	$17.63	$528.90	$45.76	$4.00	$667.14	$716.90		-$164.36
7	30	$18.19	$545.70	$45.76	$4.00	$667.14	$716.90		-$164.36
8	30	$19.28	$578.40	$45.76	$4.00	$667.14	$716.90		-$164.36
9	30	$19.86	$595.80	$45.76	$4.00	$667.14	$716.90		-$164.36
10	30	$20.45	$613.50	$45.76	$4.00	$667.14	$716.90		-$164.36
Totals:			$5,525.40	$457.60	$40.00	$6,671.35	$7,168.95	-$1,643.55	

Midwest ISO
We manage power.

Real-Time Market

HE	"Market Value"			Cost				Net RSG Make Whole Payment	Make Whole Payment
	Billable Meter	LMP	Net Market Revenue	Startup	No Load	Incremental	Net Production Cost		
11	151	$52.33	$7,901.83	$0.00	$100.00	$11,335.48	$11,435.48		$0.00
12	151	$76.00	$11,476.00	$0.00	$100.00	$11,335.48	$11,435.48		$0.00
13	176	$91.17	$16,045.92	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
14	176	$91.82	$16,160.32	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
15	176	$90.21	$15,876.96	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
16	176	$89.04	$15,671.04	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
17	176	$96.30	$16,948.80	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
18	176	$95.28	$16,769.28	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
19	176	$90.98	$16,012.48	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
20	143	$72.47	$10,363.21	$0.00	$100.00	$10,708.28	$10,808.28		$0.00
21	135	$48.49	$6,546.15	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
22	135	$41.02	$5,537.70	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
23	135	$28.93	$3,905.55	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
24	135	$27.64	$3,731.40	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
Totals:			$143,568.81	$0.00	$1,200.00	$138,422.63	$139,622.63	$3,946.18	

How is the Incremental Cost calculated?

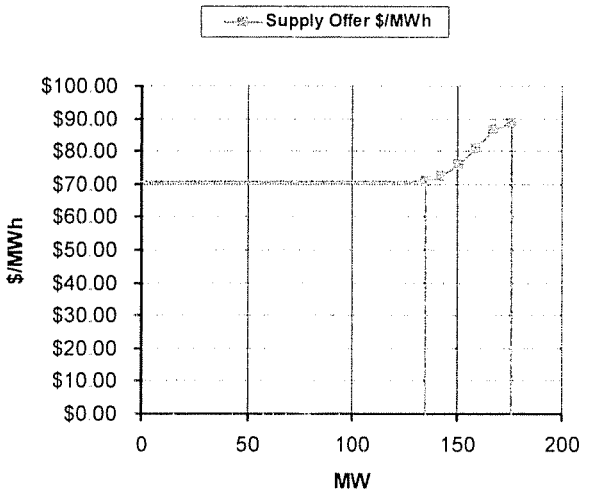
Incremental Cost, also known as the "Area under the Curve" is used in determining the revenue guaranteed to Midwest ISO committed units. In Real-Time, the incremental cost is based on the offer curve up to the State Estimated Hourly Output.

Incremental Cost is calculated with the following:

1) Resource Supply Offer Curve – Submitted and/or updated by the Market Participant. In this example, the curve uses the sloped offer curve option.

Resource Supply Offer		
Segment	MW	$/MWh
1	135	$70.68
2	143	$72.47
3	151	$76.00
4	159	$80.80
5	167	$86.50
6	176	$88.56

2) Resource Supply Offer Curve – Plotted



3) Calculate the "Area under the Curve" at 176 MWs

Start Point MW	Start Point $/MWh	End Point MW	End Point $/MWh	Average of Increment $/MWh	Cost/h (Average * Total MW)
0	$70.68	135	$70.68	$70.68	$9,541.80
135	$70.68	143	$72.47	$71.58	$572.60
143	$72.47	151	$76.00	$74.24	$593.88
151	$76.00	159	$80.80	$78.40	$627.20
159	$80.80	167	$86.50	$83.65	$669.20
167	$86.50	176	$88.56	$87.53	$787.77
				Total:	$12,792.45

- **Average $ for each Increment** = [(Start Point $/MWh + End Point $/MWh)/2]
- **Cost / HR** = [Average $ for each Increment * (End Point MW – Start Point MW)]

4) In Real-Time, the Incremental Cost is based on the offer curve at the State Estimated Hourly Output.

EXAMPLE: SE Observed MW = Actual Meter

Real-Time Market

	"Market Value"			Cost						
HE	Actual Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	Make Whole Payment
1	135	$50.65	$6,837.75	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
2	135	$60.25	$8,133.75	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
3	135	$63.44	$8,564.40	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
4	135	$58.21	$7,858.35	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
Totals:			$31,394.25		$2,425.80	$400.00	$38,167.20	$40,993.00	-$9,598.75	

Midwest ISO
We manage power.

EXAMPLE: SE Observed MW ≠ Actual Meter

Real-Time Market

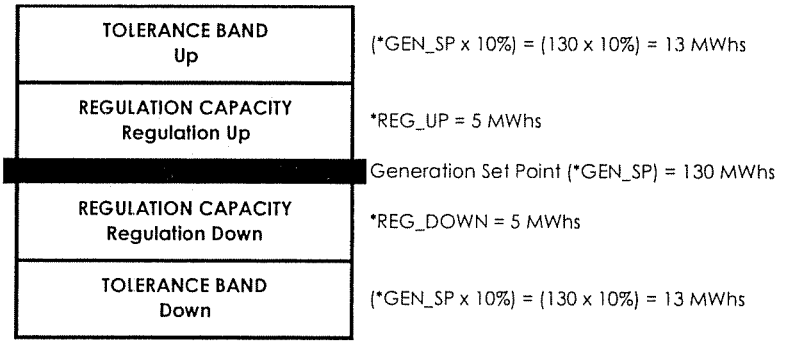
HE	"Market Value"			Cost						Make Whole Payment
	Actual Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	
1	135	$50.65	$6,837.75	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
2	144	$60.25	$8,676.00	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
3	144	$63.44	$9,135.36	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
4	144	$58.21	$8,382.24	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
Totals:			$33,031.35		$2,425.80	$400.00	$38,167.20	$40,993.00	-$7,961.65	

Is No Load prorated if a generating unit's start and stop time occur at a partial hour?
Yes. No Load is prorated if Start and Stop Times occur at a partial hour. For example, if a unit follows the MISO instruction to start at 01:30 and the No Load for that unit is $100.00, No Load for HE 2 is $50.00 ($100 * 30/60).

Does a generating unit receive Real-Time RSG Make Whole Payment when the unit is not following dispatch?
No. No Load and Incremental Costs are not eligible for Real-Time RSG Make Whole Payment for the hours that the generating unit is not following dispatch. The generation resource is eligible for recovery of Start-Up Costs through the Real-Time RSG Make Whole Payment provided that the unit is online and available.

Real-Time RSG Eligibility for generating units not following dispatch is determined as follows:

1) Determine Tolerance Band – Defined the same as for the Real-Time Uninstructed Deviation Amount (*RT_UD).



***UD_TOL_UP** = (*GEN_SP+*REG_UP+ Up Tolerance Band (UP))
= (130 + 5 + 13)
= 148 MWhs

***UD_TOL_DN** = (*GEN_SP -*REG_DN - Up Tolerance Band (DN))
= (130 - 5 - 13)
= 112 MWhs

NOTE: Tolerance Band Up / Down volume is equal to 10% of the Generation Set Point Volume bounded by an up / down maximum volume limit of 25 MWs and up / down minimum volume limit of 5 MWs.

2) Real-Time RSG Eligibility Flag is determined as follows:

If ***UD_TOL_UP ≤ State Estimator Observed MWs ≤ *UD_TOL_DN**, then the generating unit satisfies the following dispatch criterion to be eligible for Real-Time Make Whole Payment for that hour.

3) Example of Real-Time RSG Make Whole Payment

EXAMPLE: In HE 2 and HE 3, Generating Unit was NOT "Following Dispatch", therefore will NOT be eligible for Real-Time RSG Make Whole Payment during those hours that were not "Following Dispatch".

HE	Billable Meter	SE Observed MW	RT RSG Eligibility
1	135	135	Y
2	153	135	N
3	153	135	N
4	135	135	Y

Real-Time Market

	"Market Value"			Cost						
HE	Actual or Alternate Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	Make Whole Payment
1	135	$50.65	$6,837.75	135	$2,425.80	$100.00	$9,541.80	$12,067.60		-$5,229.85
Totals:			$6,837.75		$2,425.80	$100.00	$9,541.80	$12,067.60	-$5,229.85	

	"Market Value"			Cost						
HE	Actual or Alternate Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	Make Whole Payment
4	135	$58.21	$7,858.35	135	$0.00	$100.00	$9,541.80	$9,641.80		-$1,783.45
Totals:			$7,858.35		$0.00	$100.00	$9,541.80	$9,641.80	-$1,783.45	

In the above example, since HE 2 and HE 3 were not following dispatch, they will not be eligible for Real-Time RSG Make Whole Payment during these hours. When this situation occurs, it creates two commitment periods where Real-Time RSG Make Whole Payments will be evaluated for each of these CP's independently. In this example, the "Market Value" is less than the Production Cost for each of the two CP's (HE 1 and HE 4), therefore the difference is the amount that will be credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

Real-Time RSG First Pass Distribution Amount (RT_RSG_DIST1)

Real-Time RSG Make Whole Payment Amount credited to Asset Owners is funded hourly by the Midwest ISO primarily using the Real-Time RSG Guarantee First Pass Distribution Amount charge type.

Who is charged Real-Time RSG First Pass Distribution Amount?

The Real-Time RSG First Pass Distribution Amount is collected from Asset Owners that were contributors to causing additional load (or reduced capacity) to show up in the Real-Time Energy Market that was not present in the Day-Ahead Energy Market. The contributing volume of each Asset Owner is referred to as the Real-Time RSG First Pass Distribution Volume.

The Hourly Real-Time RSG First Pass Distribution amount is charged to each Asset Owner by calculating its Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL) and multiplying it by the Hourly MISO Real-Time RSG First Pass Distribution Rate (RT_RSG_DIST_RATE).

$$*RT\_RSG\_DIST1\_HR = *RT\_RSG\_DIST\_RATE \times *RT\_RSG\_DIST\_VOL$$

Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL) is the MW amount that caused additional load (or reduced capacity) to show up in the Real-Time Energy Market that were not present in the Day-Ahead Energy Market.

The Hourly MISO Real-Time RSG First Pass Distribution Rate (*RT_RSG_DIST_RATE) is the total of all Real-Time RSG Make Whole Payments (*MISO_RT_RSG_MWP) divided by the maximum of Hourly MISO Real-Time RSG First Pass Distribution Volume (MISO_RT_RSG_DIST_VOL) or Hourly MISO Real-Time RSG Committed MW (MISO_RT_COMMIT_MW). An Asset Owner's total exposure is limited when the contributing volume of all Asset Owners is less than the total Real-Time Reliability Assessment Commitment (RAC) committed generation Resource volume for the hour. When this type of limiting condition occurs for an hour, this charge type does not collect sufficient funds to cover the credits paid to Asset Owners for their Real-Time RSG Make Whole Payment Amounts and the additional funds are collected from the Revenue Neutrality Uplift Amount Charge Type.

$$*RT\_RSG\_DIST\_RATE = \frac{(-1) \times MISO\_RT\_RSG\_MWP}{MAX\ (\ MISO\_RT\_RSG\_DIST\_VOL,\ MISO\_RT\_COMMIT\_MW)}$$

The Real-Time RSG Distribution Volume *(RT_RSG_DIST_VOL) includes:

1) Hourly Real-Time Load Schedule Imbalance Volume (RT_LOAD_IMB)
2) Hourly Real-Time Physical Transaction Imbalance (PHYS_IMB_BAL)
3) Hourly Asset Owner Real-Time Under Generation (RT_UNDER_GEN)
4) Hourly Asset Owner Real-Time Over Generation (RT_OVER_GEN)
5) Hourly Asset Owner Real-Time Derate Volume Deviation (RT_DERATE_VOL)
6) Hourly Asset Owner Real-Time Must-Run Volume Deviation (RT_MR_VOL)

NOTE: Virtual Supply Offers that cleared in the Day-Ahead Market are not considered as part of the *RT_RSG_DIST_VOL.

Load Schedule Imbalance – Hourly Real-Time Load Schedule Imbalance represents the total Asset Owner Load Imbalance volume for all their Load and DRR Assets.

$$RT\_LOAD\_IMB = [\ \ ABS\ (\ *RT\_BLL\_MTR_{Load} - *RT\_ADJ\_MTR - *DA\_SCHD_{Load})\ \ ]$$

Physical Transaction Imbalance – Hourly Real-Time Physical Transaction Deviation is the sum of all Real-Time less Day-Ahead Physical Bilateral Transaction Volume imbalances, positive or negative. The following term mathematically excludes Physical Bilateral Transactions that wheel-through MISO and Physical Bilateral Transactions that are dispatchable.

$$PHYS\_IMB\_VOL = [\ \ ABS\ (\ *RT\_PHYS_{Buyer} - *RT\_PHYS_{Seller}\ ) - (*DA\_PHYS_{Buyer} - *DA\_PHYS_{Seller})\ \ ]$$

Real-Time Under Generation – Hourly Asset Owner Real-Time Under Generation is the generation performance below the combined dispatch set point less regulation down.

$$RT\_UNDER\_GEN = [\ MAX(\ 0, (*GEN\_SP - *REG\_DN - *GEN\_PERF))\ ]\ ]$$

Real-Time Over Generation – Hourly Asset Owner Real-Time Over Generation is the generation performance above the combined dispatch set point plus regulation up.

$$RT\_OVER\_GEN = [\ MAX(\ 0, (*GEN\_PERF - *GEN\_SP - *REG\_UP))\ ]$$

Real-Time Derate Volume – Hourly Asset Owner Real-Time Derate Volume represents the total generation volume that an Asset Owner could not provide from their generation assets that cleared in the Day-Ahead Energy Market.

EXAMPLE: RT_DERATE_VOL

Cleared DA_SCHD -80 MWs

*RT_MAX_DSP 70 MWs

*RT_MIN_DSP 10 MWs

NOTE: With RT_MAX_DSP less than the Cleared *DA_SCHD, MISO will not be able to Dispatch this Generating Asset according to the DA_SCHD.

Market Participants can calculate the Real-Time Derate Volume (RT_DERATE_VOL) by doing the following:

$$RT\_DERATE\_VOL = [\ ABS(\ MIN(\ 0, (\ *DA\_SCHD_{GEN} + *RT\_MAX\_DSP)))\ ]$$

Real-Time Must-Run Volume – Hourly Asset Owner Must-Run Volume Deviation represents the total generation volume that an Asset Owner had to provide from their generation assets above what was cleared in the Day-Ahead Energy Market.

EXAMPLE: RT_MR_VOL

*RT_MAX_DSP 90 MWs

*RT_MIN_DSP 85 MWs

NOTE: With RT_MIN_DSP greater than the Cleared *DA_SCHD, MISO will not be able to Dispatch this Generating Asset according to the DA_SCHD.

Cleared DA_SCHD -80 MWs

Market Participants can calculate the Real-Time Must-Run Volume (RT_MR_VOL) by doing the following:

$$RT\_MR\_VOL = [\ MAX(\ 0, (\ *DA\_SCHD_{GEN} + *RT\_MIN\_DSP))\ ]$$

References: BPM for Market Settlements, Section D.12

How do I calculate the Real-Time RSG First Pass Distribution Amount?
In order to calculate the Real-Time RSG First Pass Distribution Amount (*RT_RSG_DIST1), Market Participants must first determine their own Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL). This can be done by calculating and summing the following:

$$*RT\_RSG\_DIST\_VOL = [\ RT\_LOAD\_IMB + PHYS\_IMB\_VOL + RT\_UNDER\_GEN + RT\_OVER\_GEN + RT\_DERATE\_VOL + RT\_MR\_VOL\ ]$$

Once the Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL) has been calculated, Asset Owners can take that Volume and multiply it by the Hourly MISO Real-Time RSG First Pass Distribution Rate (*RT_RSG_DIST_RATE).

$$*RT\_RSG\_DIST1\_HR = *RT\_RSG\_DIST\_RATE \times *RT\_RSG\_DIST\_VOL$$

Reference: BPM for Market Settlements, Section D.12

What is the Real-Time RSG Make Whole Payments Second Pass Distribution Uplift?
The Real-Time RSG Make Whole Payments Second Pass Distribution Uplift is the secondary funding mechanism for the Real-Time RSG Make Whole Payment Amount. This uplift is only used when the total Real-Time generation resource committed volume (MISO_RT_COMMIT_MW) for the hour exceeds the Asset Owner's total Real-Time RSG First Pass Distribution Volume (MISO_RT_RSG_DIST_VOL).

An Asset Owner's total exposure in the Real-Time RSG First Pass Distribution Amount is limited to the situation when the contributing volume of all Asset Owners is less than the total Real-Time Reliability Assessment Commitment (RAC) committed generation Resource volume for the hour. When this situation occurs, it does not collect sufficient funds to cover the credits paid to Asset Owners for their Real-Time RSG Make Whole Payment Amounts. Therefore, the additional funds are be collected from the Real-Time RSG Make Whole Payments Second Pass Distribution Uplift, a component of the Revenue Neutrality Uplift Amount Charge Type allocated based on Load Ratio Share.

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

January 23, 2007

PARTIES OF RECORD:

RE: Case No. 2006-00172
AN ADJUSTMENT OF THE ELECTRIC RATES OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY, INC.

Enclosed please find a memorandum that has been filed in the record of the above-referenced case. Any comments regarding this memorandum's content should be submitted to the Commission within five days of receipt of this letter. Questions regarding this memorandum should be directed to Isaac Scott as (502) 564-3940, extension 444.

Sincerely,

Beth O'Donnell
Executive Director

Attachment

INTRA-AGENCY MEMORANDUM

KENTUCKY PUBLIC SERVICE COMMISSION

TO: Main Case File – Case No. 2006-00172

FROM: Isaac Scott, Team Leader

DATE: January 23, 2007

SUBJECT: January 11, 2007 Informal Conference

Pursuant to the January 9, 2007 Staff Notice, an informal conference was held on January 11, 2007. Attached to this memorandum as Attachment 1 is a list of the participants. The purpose of the conference was to discuss issues related to the Fuel Adjustment Clause ("FAC") filings by Duke Energy Kentucky ("Duke Kentucky").

Duke Kentucky provided an outline of the topics it wanted to discuss at the informal conference. A copy of that outline is attached to this memorandum as Attachment 2. Duke Kentucky will be making FAC filings in March 2007, and it wanted to discuss some of the components in the filings.

Duke Kentucky discussed how it believed its economic dispatch should be handled. This was important when determining the Midwest Independent System Operator ("MISO") Make-Whole Revenues sharing, which was a feature in the approved Settlement Agreement in this proceeding. Duke Kentucky asked about the use of estimated fuel information in its FAC when actual data is unavailable, with a true-up calculation in the following month. Lastly, Duke Kentucky discussed how the margins on off-system sales were to be determined and if reviews or audits would be necessary.

During the discussions, the Commission Staff noted that since Duke Kentucky was resuming its FAC filings, there could be some problems that would arise and those could be addressed at the time of the first review. Because of the timing of Duke Kentucky resuming its FAC, the first 6-month review will not cover 6 months of activity. Concerning the MISO-related discussion, Commission Staff suggested that the economic dispatch should be shown as it actually operated rather than being restated for MISO-required changes in the dispatch order. Commission Staff indicated that the use of estimated fuel data seemed to be acceptable, but suggested that Duke Kentucky state in the FAC filings when the data is estimated. Concerning the off-system sales, Commission Staff suggested that the parties discuss among themselves what reviews or audits might be needed and then file a request with the Commission concerning how to proceed.

Attachments

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY FOR AN ADJUSTMENT OF ELECTRIC RATES	))))	CASE NO. 2006-00172

==========

January 11, 2007 Informal Conference

==========

Please sign in:

NAME	REPRESENTING
Isaac S. Scott	PSC-Financial Analysis
Daryl Newby	" " "
Betsy Blackford	OAG
Larry Cook	OAG
John Finnigan	Duke Energy Kentucky
Don Wathen	Duke Energy Kentucky
Scott Nicholas	Duke Energy Kentucky
Lisa Steinkuhl	Duke Energy Kentucky
Peggy Laub	Duke Energy Kentucky

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY FOR AN ADJUSTMENT OF ELECTRIC RATES	))))	CASE NO. 2006-00172

==========

January 11, 2007 Informal Conference

==========

Please sign in:

NAME	**REPRESENTING**
Robert Cowan	PSC
Kurt Boehm	Kroger
Scott Brownell	Duke
Lisa Cullen	Duke
Mike Gribler	Duke

DISCUSSION TOPICS FOR INFORMAL CONFERENCE

1. Stacking methodology

   - Resources (own generation and purchased power) are stacked from lowest to highest cost except for reliability and other constraints.

   - Firm native load is served first in the stacking order.

   - To the extent required to meet reliability requirements, DE-Kentucky will treat all or part of any unit designated as "must run" and force this generation to the bottom of the economic dispatch order.

2. MISO Make-Whole Revenue

   - If MISO dispatches a unit that would not otherwise dispatch on an economic basis, any resulting generation from this unit will be stacked in order of economic merit without adjustment. Neither the associated fuel costs nor the MISO make-whole revenue will be included in the FAC.

   - Alternatively, out-of-merit generation dispatched on by MISO will be deemed to be dispatched for reliability purposes, and will be forced to the bottom of the economic dispatch order. Any make-whole revenue will be used to offset the fuel costs associated with the forced generation.

   - The former alternative would reduce the off-system sales but would give customers the least costly generation. The latter alternative would make more generation available for sale into the market, of which customers receive a 50% share.

3. Allowed to estimate fuel for month (-1) if actuals are unavailable with subsequent true-up

   - Kentucky Power includes an estimate of month (-1) for its FAC and corrects that number for actuals in the next filing.

4. Expenses allowed for cost of goods sold in off-system sales margin calculation.

- The Order in the Asset Transfer case prescribes the margin calculation to be revenue net of:

  a. Fuel
  b. Emission Allowances
  c. Other variable costs

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In The Matter Of:	:	Case No. 2006-00509
An Examination Of The Application Of The Fuel Adjustment Clause Of Kentucky Utilities Company From November 1, 2004 Through October 31, 2006	:	

FIRST SET OF DATA REQUESTS OF KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC. TO KENTUCKY UTILITIES COMPANY

Dated: February 7, 2007

DEFINITIONS

1. "Document" means the original and all copies (regardless of origin and whether or not including additional writing thereon or attached thereto) of memoranda, reports, books, manuals, instructions, directives, records, forms, notes, letters, notices, confirmations, telegrams, pamphlets, notations of any sort concerning conversations, telephone calls, meetings or other communications, bulletins, transcripts, diaries, analyses, summaries, correspondence investigations, questionnaires, surveys, worksheets, and all drafts, preliminary versions, alterations, modifications, revisions, changes, amendments and written comments concerning the foregoing, in whatever form, stored or contained in or on whatever medium, including computerized memory or magnetic media.

2. "Study" means any written, recorded, transcribed, taped, filmed, or graphic matter, however produced or reproduced, either formally or informally, a particular issue or situation, in whatever detail, whether or not the consideration of the issue or situation is in a preliminary stage, and whether or not the consideration was discontinued prior to completion.

3. "Person" means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.

4. A request to identify a natural person means to state his or her full name and residence address, his or her present last known position and business affiliation at the time in question.

5. A request to identify a document means to state the date or dates, author or originator, subject matter, all addressees and recipients, type of document (e.g., letter, memorandum, telegram, chart, etc.), number of code number thereof or other means of identifying it, and its present location and custodian. If any such document was, but is no longer in the Company's possession or subject to its control, state what disposition was made of it.

6. A request to identify a person other than a natural person means to state its full name, the address of its principal office, and the type of entity.

7. "And" and "or" should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.

8. "Each" and "any" should be considered to be both singular and plural, unless specifically stated otherwise.

9. Words in the past tense should be considered to include the present, and words in the present tense include the past, unless specifically stated otherwise.

10. "You" or "your" means the person whose filed testimony is the subject of these interrogatories and, to the extent relevant and necessary to provide full and complete answers to any request, "you" or "your" may be deemed to include any person with information relevant to any interrogatory who is or was employed by or otherwise associated with the witness or who assisted, in any way, in the preparation of the witness' testimony.

11. "LG&E" means Louisville Gas & Electric Company and/or any of their officers, directors, employees, or agents who may have knowledge of the particular matter addressed.

12. "KU" means Kentucky Utilities Company, and/or any of their officers, directors, employees or agents who may have knowledge of the particular matter addressed.

13. "Make Whole Payment" includes, but is not limited to: 1) Real-Time RSG Make Whole Payment Amount; 2) Real-time RSG First Pass Distribution Amount; and 3) Real-Time RSG Make Whole Payments Second Pass Distribution Uplift. For purposes of these questions, MISO Make Whole Payments are the same as those described in the attached MISO handout titled "Frequently Asked Questions – Real Time Revenue Sufficiency Guarantee."

INSTRUCTIONS

1. If any matter is evidenced by, referenced to, reflected by, represented by, or recorded in any document, please identify and produce for discovery and inspection each such document.

2. These interrogatories are continuing in nature, and information which the responding party later becomes aware of, or has access to, and which is responsive to any request is to be made available to Kentucky Industrial Utility Customers. Any studies, documents, or other subject matter not yet completed that will be relied upon during the course of this case should be so identified and provided as soon as they are completed. The Respondent is obliged to change, supplement and correct all answers to interrogatories to conform to available information, including such information as it first becomes available to the Respondent after the answers hereto are served.

3. Unless otherwise expressly provided, each interrogatory should be construed independently and not with reference to any other interrogatory herein for purpose of limitation.

4. The answers provided should first restate the question asked and also identify the person(s) supplying the information.

5. Please answer each designated part of each information request separately. If you do not have complete information with respect to any interrogatory, so state and give as much information as you do have with respect to the matter inquired about, and identify each person whom you believe may have additional information with respect thereto.

6. In the case of multiple witnesses, each interrogatory should be considered to apply to each witness who will testify to the information requested. Where copies of testimony, transcripts or depositions are requested, each witness should respond individually to the information request.

7. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

8. Responses to requests for revenue, expense and rate base data should provide data on the basis of Total company as well as Intrastate data, unless otherwise requested.

KIUC's FIRST SET OF DATA REQUESTS TO KU
PSC CASE NO. 2006-00509

Data Requests to KU Regarding "Make Whole Revenues"

Q1 Please provide a detailed explanation of the Company's fuel adjustment clause treatment of MISO make whole revenues and the incremental fuel expenses associated with generation that is required to be run out of economic dispatch order by Company at the request of MISO.

Q2 For each of the months during the two-year review period, please identify each instance (by month) in which MISO requested one of the Company's generators to be run out of economic order. For each such occurrence, provide the following:

a. mWh output of the unit
b. the cost of fuel associated with the "out of merit order" generation
c. the cost of fuel associated with generation that was not run because of the must run order from MISO.
d. the amount of any "make whole" payment made to the Company by MISO pursuant to the order to run a unit out of economic order (include a copy of any calculations, invoices or other documents provided by MISO associated with the make whole payment).

Q3 For each of the occurrences identified above, in which the Company was required to run a unit out of economic order and for which the Company received a make whole payment, please provide the following by month:

a. the amount of fuel expense associated with the out of economic order dispatch that was included in the Company's per books fuel expense for the month.
b. the amount of fuel expense associated with the out of economic order dispatch that was included in the Company's fuel adjustment clause for the month.
c. the amount of fuel expense excluded or credited to the per books fuel expense in the Company's fuel adjustment clause for the month, if any, and the computational support used to quantify the adjustment.
d. the amount of make whole revenues credited to the Company's fuel adjustment clause for the month, if any.

Q4 If the response to question (3) above is that the Company did not include the cost of such generation (ordered by MISO to be run out of economic dispatch order) in the fuel adjustment clause calculation, please explain why such costs were not included and show a calculation performed by the Company for each month during the two year review period demonstrating the such costs were removed from the fuel clause calculation for the month.

Q5 If the response to question (3) above is that the Company did not include make whole revenues as a credit to fuel cost in the calculation of the fuel adjustment clause, please provide a detailed explanation for not including these revenues.

Q6 Please provide an explanation of the methodology used by MISO during the Day 2 period to calculate "make whole" revenues.

Q7 If the Company has excluded both the incremental cost associated with a MISO order of dispatch of generation that is out of economic order and the related make whole revenues paid to the Company by MISO, please identify each and every occurrence in which the make whole revenues exceeded the amount of fuel cost excluded by the Company in the calculation of the

fuel adjustment clause during the two-year review period. Show the amount of the fuel cost excluded from the fuel adjustment clause, the amount of the make whole revenues and the difference, each month.

Q8 Pursuant to the previous question, in the event that the make whole revenues exceed the excluded fuel cost during a month, please explain why the Company has not credited ratepayers with the excess revenues.

Q9 Please provide copies of the complete Fuel Adjustment Clause filing for each month during the period November 2004 through October 2006 for each Company.

Q10 For each month during the two-year review period, please provide copies of the MISO invoice to KU.

Q11 During the period when the Company was in MISO, please provide the Transmission Provider Region for each Company. Please also provide the names of each additional transmission provider in the Transmission Provider Region in which each Company was located.

Q12 For each month during the two-year review period, please provide the amount of any charge from MISO for KU's share of allocations of the cost of Price Volatility Make Whole Payments ("PV MWP"), pursuant to Section 40.3.5.9 of the MISO tariff.

Q13 With regard to any charges from MISO pursuant to the Company's share of PV MWP pursuant to Section 40.3.5.9 of the MISO tariff, please state whether the cost of any such payments was included in the calculation of the FAC. If any such amounts were included in one or more monthly FAC calculations, please provide a schedule showing the amount that was included each month.

Q14 At a January 11, 2007 Informal Conference in Case No. 2006-00172, Duke Kentucky presented the attached document outlining its proposal to deal with MISO make whole payments.

a. Duke Kentucky's Alternative 1 was:

> *"If MISO dispatches a unit that would not otherwise dispatch on an economic basis, any resulting generation from this unit will be stacked in order of economic merit without adjustment. Neither the associated fuel costs nor the MISO make-whole revenue will be included in the FAC."*

Please indicate whether KU would be wiling to accept Duke Kentucky Alternative 1. Please explain.

b. Duke Kentucky's Alternative 2 was:

> *"Alternatively, out-of-merit generation dispatched on by MISO will be deemed to be dispatched for reliability purposes, and will be forced to the bottom of the economic dispatch order. Any make-whole revenue will be used to offset the fuel costs associated with the forced generation."*

Please indicate whether KU would be wiling to accept Duke Kentucky Alternative 2. Please explain.

Data Requests to KU Regarding Losses

Q15 With regard to the Company's response to Question No. 12, page 6 of 24, of the Commission's data request, please confirm that the kWh sales shown in the response for each sale made during the Month Ending April 30, 2005 were measured at the Company's generator bus. For each of the sales shown for the Month Ending April 30, 2005, please provide documentation showing the amount of the kWh purchased by the buyer shown in the schedule (page 6 of 24).

Q16 With regard to the Company's response to Question No. 12, page 18 of 24, of the Commission's data request, please confirm that the kWh sales shown in the response for each sale made during the Month Ending April 30, 2006 were measured at the Company's generator bus. For each of the sales shown for the Month Ending April 30, 2006, please provide documentation showing the amount of the kWh purchase by the buyer shown in the schedule (page 18 of 24).

Midwest ISO
We manage power.

Frequently Asked Questions – Real-Time Revenue Sufficiency Guarantee

What is Revenue Sufficiency Guarantee (RSG)?

Midwest ISO has the responsibility to ensure that adequate capacity is available and committed to meet demand and reserve obligations within the Market Footprint. RSG is a mechanism that ensures Generation Resources that are committed by the Midwest ISO are guaranteed cost recovery of their three-part offer described as start-up costs, no load costs, and incremental energy offer, collectively referred to as production costs, when appropriate. These payments are reflected as part of the Day-Ahead and Real-Time RSG Make Whole Payment Amounts and funded through the Day-Ahead and Real-Time RSG Distribution Amounts.

The following charge calculations below are described separately in this document:

1) Real-Time RSG Make Whole Payment Amount (RT_RSG_MWP)
2) Real-Time RSG First Pass Distribution Amount (RT_RSG_DIST1)
3) Real-Time RSG Make Whole Payments Second Pass Distribution Uplift (Component of RT_RNU)

Reference: BPM for Coordinated Reliability Dispatch and Control, section 2; BPM for Market Settlements, Section 8.10.D.12-13

Real-Time RSG Make Whole Payment Amount (RT_RSG_MWP)

Generation Resources that are eligible and committed by the Midwest ISO and scheduled for commitment in the Real-Time Energy Market, beyond cleared Day-Ahead Market commitments, shall be guaranteed cost recovery of their production costs, when appropriate.

The three-part costs (a.k.a. Production Costs) are defined as follows:

1) **Start-up** – Costs that are incurred per start-up over the run-time of the unit.
2) **No Load** – Costs for operating a Generation Resource at zero MWs.
3) **Energy Offer** – Area under the price curve at which a Resource has agreed to sell the next increment of Energy.

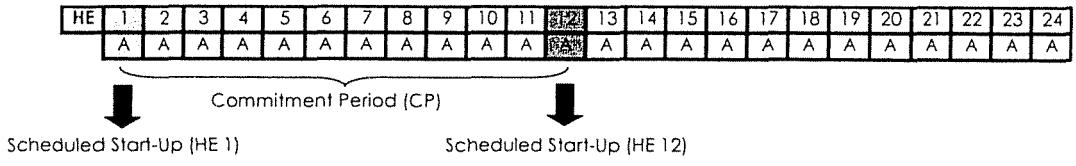
The Midwest ISO performs the RAC process and may commit additional Resources beyond those cleared in the Day-Ahead Energy Market to meet the forecasted needs within the Midwest ISO. A generation resource is **NOT** eligible for the Real-Time RSG Make Whole Payment in hours the unit cleared in the Day-Ahead Market.

The Real-Time RSG Make Whole Payment Amount revolves around the concept of a Commitment Period (CP) for a Resource. In the Real-Time Market, a CP is a period of continuous MISO instructed commitment bounded by a MISO instructed start-up and MISO instructed shut-down. Eligibility during a CP is governed by two key indicators:

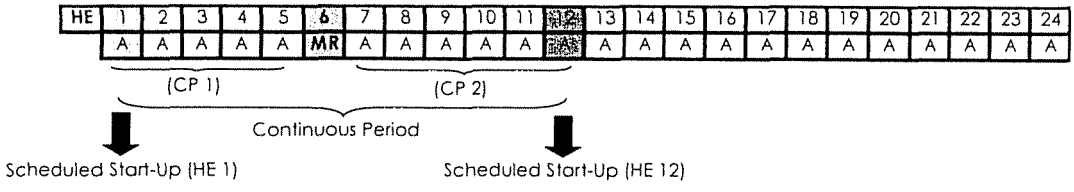
1) If any hours in the CP have a Must-Run commit status, then the generation resource is not eligible for start-up cost recovery in the CP.
2) Any hours in the CP that have a Must-Run commit status will not be eligible for recovery of no load costs and incremental energy costs.

The Real-Time related RAC process may commit a generation Resource multiple times in a single Operating Day. As noted, the contiguous hours that a generation Resource is committed is referred to as a Commitment Period. Each Commitment Period must be separated by at least one Hour where the asset was scheduled to be off-line by MISO to receive a Revenue Sufficiency Make Whole Payment. Production Costs are guaranteed by Commitment Period.

Example of a Commitment Period (CP):

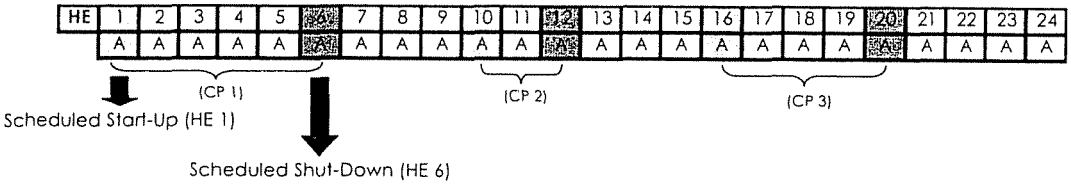


Example of a Continuous Period (CP) where HE 6 has a commit status of Must-Run:



In the above example, HE 6 has a commit status of Must-Run. If any hour within a CP contains a commit status of Must-Run, this asset is not eligible to recover start-up costs in this CP. Additionally, the Market Participant is not eligible to recover No Load costs and incremental energy costs for HE 6.

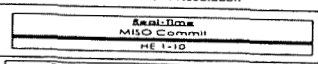
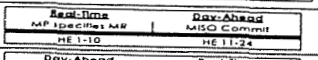
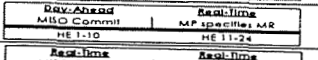
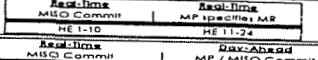
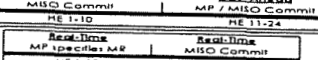
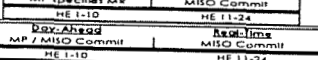
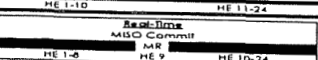
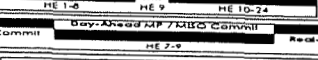
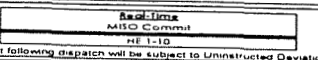
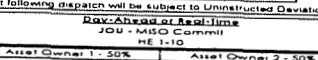
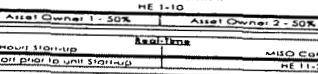
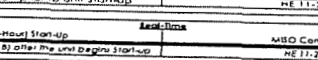
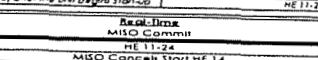
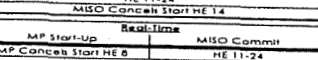
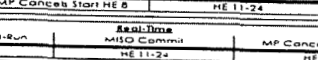
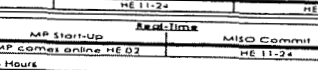
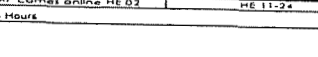
Can there be more than one (1) CP over the course of an Operating Day?
Yes, there can be more than one CP over the course of an Operating Day. When this occurs Real-Time RSG Make Whole Payments are evaluated for each CP independently. Below is an example of an Operating Day with multiple CPs:



Who is eligible for Real-Time RSG Make Whole Payment?
Generating Resources that are committed by the Midwest ISO and meet the Real-Time Make Whole Payment Eligibility Criteria are eligible for Real-Time RSG Make Whole Payments. Real-Time RSG Make Whole Payment Eligibility Scenarios include some of the following:

NOTE: Day-Ahead and Real-Time RSG Eligibility Guide can be found by going to www.midwestmarket.org 'documents/ Market Settlement related document and files

Midwest ISO
We manage power.

#	Scenarios	Illustration / Resolution	Day-Ahead Eligibility			Real-Time Eligibility		
			Start-Up	No-Load	Incremental Costs	Start-Up	No-Load	Incremental Costs
1	Generating Unit was committed in the Real-Time Market by the Midwest ISO		Not Eligible	Not Eligible	Not Eligible	√	√ HE 1-10	√ HE 1-10
2	Market Participant specified a Real-Time Must-Run prior to the Generating Unit being committed in the Day-Ahead Market by the Midwest ISO		√ HE 11-24	√ HE 11-24	√ HE 11-24	Not Eligible	Not Eligible	Not Eligible
3	Market Participant specified a Real-Time Must-Run after the Generating Unit was committed in the Day-Ahead Market by the Midwest ISO		√ HE 1-10	√ HE 1-10	√ HE 1-10	Not Eligible	Not Eligible	Not Eligible
4a	Midwest ISO committed the Generating Unit in Real-Time prior to the Market Participant specified Real-Time Market Must-Run period		Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 1-10	√ HE 1-10
4b	Midwest ISO committed the Generating Unit in Real-Time prior to the Market Participant specified Day-Ahead Market on-line period		√ HE 11-24 (ONLY if MISO Commit)	√ HE 11-24 (ONLY if MISO Commit)	√ HE 11-24 (ONLY if MISO Commit)	Not Eligible	√ HE 1-10	√ HE 1-10
5a	Midwest ISO committed the Generating Unit in Real-Time after the Market Participant specified Real-Time Market Must-Run period		Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 11-24	√ HE 11-24
5b	Midwest ISO committed the Generating Unit in Real-Time after the Market Participant specified Day-Ahead Market on-line period		√ HE 1-10 (Only if MISO Commit)	√ HE 1-10 (Only if MISO Commit)	√ HE 1-10 (Only if MISO Commit)	Not Eligible	√ HE 11-24	√ HE 11-24
6a	Midwest ISO committed the Generating Unit in Real-Time through a Market Participant specified Real-Time Market Must-Run period		Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 11-24	√ HE 11-24
6b	Midwest ISO committed the Generating Unit in Real-Time through a Market Participant specified Day-Ahead Market on-line period		√ HE 7-9 (Only if MISO Commit)	√ HE 7-9 (Only if MISO Commit)	√ HE 7-9 (Only if MISO Commit)	Not Eligible	√ HE 1-8 10-24	√ HE 1-8 10-24
7	Midwest ISO committed Resources that are not following dispatch instructions in the Real-Time Market. "Following Dispatch" is defined the same as for Uninstructed Deviation Penalties.		Not Eligible	Not Eligible	Not Eligible	√*	√ HE 1-6 10-24	√ HE 1-6 10-24
8	Revenue Sufficiency Guarantee for a JOU will be allocated based on the commitment for the Commercial Unit of each of the Asset Owners.	Market Participants not following dispatch will be subject to Uninstructed Deviation Amount. 	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	(Not eligible for the hours not following dispatch)	(Not eligible for the hours not following dispatch)
9	Midwest ISO commits a Generating Unit in Real-Time and then cancels the Start-up prior to the unit Start-up time beginning.		Not Eligible	Not Eligible	Not Eligible	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties	Subject to Day-Ahead and Real-Time eligibility rules for all parties
10	Midwest ISO commits a Generating Unit and then cancels the Start-up after the unit begins Start-up.		Not Eligible	Not Eligible	Not Eligible	Case by Case Basis	Not Eligible	Not Eligible
11	Midwest ISO commits a Generating Unit and then cancels the Start after the unit comes online**		Not Eligible	Not Eligible	Not Eligible	Prorated	Not Eligible	Not Eligible
12	Midwest ISO commits a Generating Unit and then Market Participant cancels the Start-up.		Not Eligible	Not Eligible	Not Eligible	√	√ HE 11-14 (Per Hour Online**)	√ HE 11-14 (Per Hour Online**)
13	Market Participant cancels a Must Run commitment.		Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible
14	Midwest ISO commits a Generating Unit but the Generating Unit comes online** prior to the Midwest ISO scheduled commit time minus Cold Startup Time minus 1 hour.	 Example: Cold Start = 6 Hours	Not Eligible	Not Eligible	Not Eligible	Not Eligible	√ HE 11-24 (RT if MISO Commit)	√ HE 11-24 (RT if MISO Commit)

* All Real-Time Start-up Eligibility assumes that the unit is online and available.
** Online is defined as SE (State Estimator) MW is greater than 0.

How can a Market Participant determine whether or not they are eligible to receive Real-Time RSG Make Whole Payment?

On an hourly basis, the Day-Ahead Real-Time System (DART) determines whether a generation Resource that was committed by MISO during the Real-Time related RAC process has met the eligibility requirements. If the generation Resource is eligible for Real-Time RSG Make Whole Payment, the eligibility is represented on the Settlement Statement as the Real-Time Revenue Sufficiency Guarantee Eligibility flag (*RT_RSG_ELIGIBILITY).

Does the Midwest ISO calculate Production Cost based on data submitted by the Market Participant for the Generator Resource or some other source?

Once a start notification is issued for a resource to operate in the Real-Time, the Day-Ahead Real-Time system (DART) takes a snapshot of the startup costs, hourly no load cost, and energy offer for the committed hours. The Day-Ahead Real-Time System (DART) calculates a generator's hourly production costs based on its start-up cost uniformly distributed over the eligible portion of the Commitment Period, its no load cost for each eligible hour of the Commitment and its incremental energy cost based on an hourly average of 5-minute snapshots of its incremental energy offer cost for the Real-Time State Estimated MW value for each hour of the Commitment Period. The calculation is performed for both the resource's as-committed snapshot offer costs and for the as-dispatch offer costs. DART provides Market Settlement with the minimum of the eligible as-committed costs and eligible as-dispatch costs over the operating day as hourly production cost values for each generator.

Separately, the Independent Market Monitor (IMM) may perform an Impact Test if they believe that Conduct occurred that caused substantial change in the LMPs or unjustifiably increased the value of ORSGPs (Offer RSG Payments). Mitigated Production Costs are calculated based on Reference Levels. Reference Levels are intended to reflect a Generation Resource's marginal costs, including legitimate risk and opportunity costs or justifiable technical characteristics for physical offer parameters. In addition to the production cost value based on Market Participant submitted offer costs, Market Settlements is provided with the total mitigated hourly eligible production cost value for each generator identified by the IMM for potential mitigation.

If Production Costs have not been received from the IMM, only the values calculated from Market Participant are used to assess the Real-Time RSG Make Whole Payment.

Reference BPM for Market Monitoring and Mitigation, pages 62 - Section 4.4

How does one calculate the amount an asset is expected to receive for the Real-Time RSG Make Whole Payment?

On an hourly basis, DART calculates and passes to Market Settlements a generator's production cost. Assuming it is not mitigated, the Midwest ISO allocates this Production Cost over the CP. It then compares the Production Cost to the Real-Time Market Energy Amount (RT_RSG_EN_VAL_CP) or the "Market Value" of the cleared schedule over the Commitment Period. The Real-Time Market Energy Amount or "Market Value" is the defined as the Real-Time Actual Meter Data (*RT_ACT_MTR) or Real-Time Alternate Meter Data (*RT_ALT_MTR) (when Actual Meter Data is not available) multiplied by the Real-Time LMP (*RT_LMP_EN). If the "Market Value" of the schedule is less than the Production

Cost, the difference is the amount that is credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

Example: Generator Unit On for a CP of 4 Hours

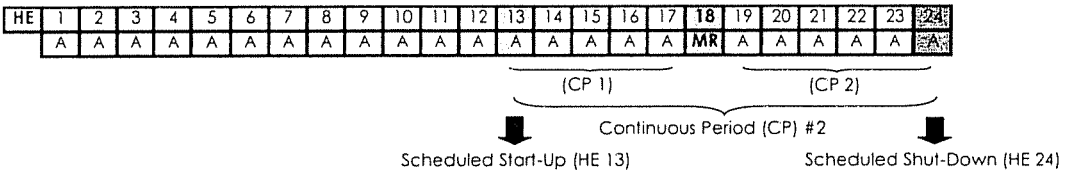
Real-Time Market

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
1	135	$50.65	$6,837.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
2	135	$60.25	$8,133.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
3	135	$63.44	$8,564.40	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
4	135	$58.21	$7,858.35	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
	Totals:		$31,394.25	$2,425.80	$400.00	$38,167.20	$40,993.00	-$9,598.75	

The above example shows that in addition to the $31,394.25 in Revenue the generation resource receives based on its Real-Time Actual Meter Value multiplied by the Real-Time LMP for each hour, the generation resources make whole payment of $9,598.75 makes it whole on the additional production costs incurred during the 4-hour period.

How does the Midwest ISO calculate the Real-Time RSG Make Whole Payment if there are hours within a CP that has a status of Must-Run?

Example of a Continuous Period (CP) where HE 18 has a commit status of Must-Run:



Real-Time Market (Real-Time RSG Make Whole Payment for CP #1)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
13	176	$91.17	$16,045.92	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
14	176	$91.82	$16,160.32	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
15	176	$90.21	$15,876.96	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
16	176	$89.04	$15,671.04	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
17	176	$96.30	$16,948.80	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
	Totals:		$80,703.04	$0.00	$500.00	$63,962.25	$64,462.25	$16,240.79	

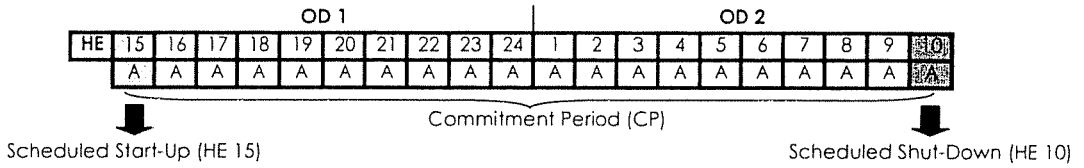
Real-Time Market (Real-Time RSG Make Whole Payment for CP #2)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
19	176	$90.98	$16,012.48	$0.00	$100.00	$12,792.45	$12,892.45		-$2,695.24
20	143	$72.47	$10,363.21	$0.00	$100.00	$10,708.28	$10,808.28		-$2,695.24
21	135	$48.49	$6,546.15	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
22	135	$41.02	$5,537.70	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
23	135	$28.93	$3,905.55	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
24	135	$27.64	$3,731.40	$0.00	$100.00	$9,541.80	$9,641.80		-$2,695.24
	Totals:		$46,096.49	$0.00	$600.00	$61,667.93	$62,267.93	-$16,171.44	

As shown in the above example, if any hour within a CP contains a commit status of Must-Run, this asset is **NOT** eligible to recover start-up costs during this CP. Additionally; the Market Participant is **NOT** eligible to recover No Load costs and incremental energy costs for HE 18. When this situation occurs, Real-Time RSG Make Whole Payments are evaluated for each CP independently. In this example, the Market Participant is in essence "Made Whole" through the "Market Value" for CP 1 (HE 13 – HE 17), so will not receive any additional Real-Time RSG Make Whole Payment for that CP. However, during CP 2 (HE 19- HE 24), the "Market Value" is less than the Production Cost, therefore the difference is the amount that will be credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

How does the Midwest ISO calculate the Real-Time RSG Make Whole Payment if the Commitment Period of a unit crosses over two days?

Example of a 20-Hour Commitment Period (CP) that crosses over two days:



Real-Time Market - OD 1

HE	"Market Value" Actual or Alternate Meter	LMP	Revenue	Cost Startup	No Load	Incremental	Total	Net	Make Whole Payment
15	176	$90.21	$15,876.96	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
16	176	$89.04	$15,671.04	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
17	176	$96.30	$16,948.80	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
18	176	$95.28	$16,769.28	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
19	176	$90.98	$16,012.48	$242.58	$100.00	$12,792.45	$13,135.03		-$490.10
20	143	$72.47	$10,363.21	$242.58	$100.00	$10,708.28	$11,050.86		-$490.10
21	135	$48.49	$6,546.15	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
22	135	$41.02	$5,537.70	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
23	135	$28.93	$3,905.55	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
24	135	$27.64	$3,731.40	$242.58	$100.00	$9,541.80	$9,884.38		-$490.10
Totals:			$111,362.57	$2,425.80	$1,000.00	$112,837.73	$116,263.53	-$4,900.96	

Real-Time Market - OD 2

HE	"Market Value" Actual or Alternate Meter	LMP	Revenue	Cost Startup	No Load	Incremental	Total	Net	Make Whole Payment
1	135	$50.65	$6,837.75	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
2	135	$60.25	$8,133.75	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
3	135	$63.44	$8,564.40	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
4	135	$58.21	$7,858.35	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
5	135	$48.54	$6,552.90	$0.00	$100.00	$12,792.45	$10,248.25		-$3,290.08
6	135	$43.02	$5,807.70	$0.00	$100.00	$10,708.28	$10,248.25		-$3,290.08
7	135	$44.54	$6,012.90	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
8	135	$47.55	$6,419.25	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
9	135	$48.92	$6,604.20	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
10	135	$50.30	$6,790.50	$0.00	$100.00	$9,541.80	$10,248.25		-$3,290.08
Totals:			$69,581.70	$0.00	$1,000.00	$112,837.73	$102,482.50	-$32,900.80	

If the CP of a unit crosses two Operating Days, Start-Up Costs are prorated over the hours in the first Operating Day.

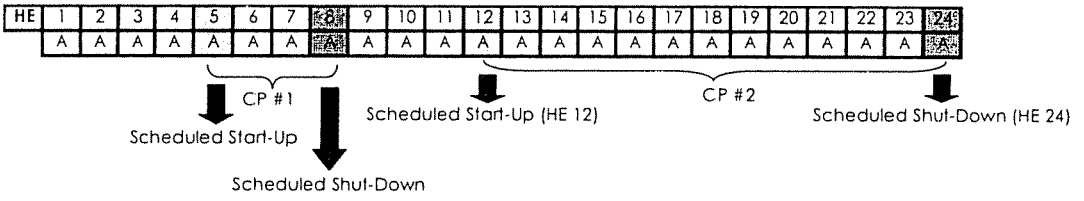
How does the Midwest ISO distribute the Real-Time RSG Make Whole Payment, in one lump sum or over the Commitment Period (CP)?

Make Whole Payment credits that are due to the generator are broken out by commitment period and by hour.

How does the Midwest ISO calculate the Real-Time RSG Make Whole Payment when there are multiple Commitment Periods (CP)?

When a resource has multiple CPs in an Operating Day, each CP is evaluated separately. The following example describes the situation where a generation resource had two separate and distinct CPs in an Operating Day separated by hours where the generation resource was not committed and not on-line.

Example of an Operating Day with multiple CPs:



Real-Time Market (Real-Time RSG Make Whole Payment for CP #1)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
5	135	$50.65	$6,837.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
6	135	$60.25	$8,133.75	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
7	135	$63.44	$8,564.40	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
8	135	$58.21	$7,858.35	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
Totals:			$31,394.25	$2,425.80	$400.00	$38,167.20	$40,993.00	-$9,598.75	

Real-Time Market (Real-Time RSG Make Whole Payment for CP #2)

HE	"Market Value"			Cost				Net	Make Whole Payment
	Actual or Alternate Meter	LMP	Revenue	Startup	No Load	Incremental	Total		
12	151	$85.00	$12,835.00	$186.60	$100.00	$11,335.48	$11,622.08		$0.00
13	151	$91.17	$13,766.67	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
14	176	$91.82	$16,160.32	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
15	176	$90.21	$15,876.96	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
16	176	$89.04	$15,671.04	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
17	176	$96.30	$16,948.80	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
18	176	$95.28	$16,769.28	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
19	176	$90.98	$16,012.48	$186.60	$100.00	$12,792.45	$13,079.05		$0.00
20	143	$72.47	$10,363.21	$186.60	$100.00	$10,708.28	$10,994.88		$0.00
21	135	$48.49	$6,546.15	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
22	135	$41.02	$5,537.70	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
23	135	$28.93	$3,905.55	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
24	135	$27.64	$3,731.40	$186.60	$100.00	$9,541.80	$9,828.40		$0.00
Totals:			$154,124.56	$2,425.80	$1,300.00	$149,758.11	$153,483.91	$640.65	

If there are multiple CPs in a given Operating Day, the Real-Time settlement compares whether the generating asset's value for a CP exceeds the guaranteed productions costs for those hours. If the total energy value ("Market Value") is less than the guaranteed production cost amount, the difference is credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

In the above example, CP #1 for HE 5-8, since the "Market Value" is less than the Production Cost, the Asset Owner receives the difference as a Real-Time RSG Make Whole Payment Amount. As noted above, this amount is allocated evenly across all committed hours in the CP. For CP #2 for HE 12-24, since the "Market Value" was greater than the Production Cost, the Asset Owner was essentially "Made Whole" and does not receive additional credits from the Midwest ISO.

If a Generating Unit was committed in the Day-Ahead Market for HE 1-10 and was further committed for HE 11-24 during the RAC Process, what would the Asset Owner be eligible for with respect to Real-Time RSG Make Whole Payment?

Generation Resources that are eligible and committed by the Midwest ISO and scheduled in the Day-Ahead Energy Market are guaranteed cost recovery of their production costs. All Resource Offers **except** for Must-Run that have been committed by the Midwest ISO are eligible for Day-Ahead RSG Make Whole Payment.

NOTE: Day Ahead and Real Time RSG Eligibility Guide can be found by going to www.midwestmarket.org /documents/ Market Settlement Helpful document and files

Day-Ahead	Real-Time
MISO Commit	MISO Commit
HE 1-10	HE 11-24

Hours in the same CP that were not committed in the Day-Ahead Market, but committed for the Real-Time Market and meet the Real-Time RSG Eligibility Criteria, are eligible for Real-Time Make Whole Payment. Since Start-up costs for the CP were guaranteed in the Day-Ahead Market, the generating unit is only eligible for No Load and Incremental Energy Costs in Real-Time for the hours that were committed for the Real-Time Market by the Midwest ISO provided that the generating unit met all Real-Time RSG Eligibility Criteria during these hours.

Day-Ahead Market

	"Market Value"			Cost					
HE	MW	LMP	Net Market Revenue	Startup	No Load	Incremental	Net Production Cost	Net RSG Make Whole Payment	Make Whole Payment
1	30	$18.99	$569.70	$45.76	$4.00	$667.14	$716.90		-$164.36
2	30	$17.90	$537.00	$45.76	$4.00	$667.14	$716.90		-$164.36
3	30	$17.33	$519.90	$45.76	$4.00	$667.14	$716.90		-$164.36
4	30	$17.23	$516.90	$45.76	$4.00	$667.14	$716.90		-$164.36
5	30	$17.32	$519.60	$45.76	$4.00	$667.14	$716.90		-$164.36
6	30	$17.63	$528.90	$45.76	$4.00	$667.14	$716.90		-$164.36
7	30	$18.19	$545.70	$45.76	$4.00	$667.14	$716.90		-$164.36
8	30	$19.28	$578.40	$45.76	$4.00	$667.14	$716.90		-$164.36
9	30	$19.86	$595.80	$45.76	$4.00	$667.14	$716.90		-$164.36
10	30	$20.45	$613.50	$45.76	$4.00	$667.14	$716.90		-$164.36
Totals:			$5,525.40	$457.60	$40.00	$6,671.35	$7,168.95	-$1,643.55	

Midwest ISO
We manage power.

Real-Time Market

HE	"Market Value" Billable Meter	LMP	Net Market Revenue	Cost Startup	No Load	Incremental	Net Production Cost	Net RSG Make Whole Payment	Make Whole Payment
11	151	$52.33	$7,901.83	$0.00	$100.00	$11,335.48	$11,435.48		$0.00
12	151	$76.00	$11,476.00	$0.00	$100.00	$11,335.48	$11,435.48		$0.00
13	176	$91.17	$16,045.92	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
14	176	$91.82	$16,160.32	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
15	176	$90.21	$15,876.96	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
16	176	$89.04	$15,671.04	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
17	176	$96.30	$16,948.80	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
18	176	$95.28	$16,769.28	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
19	176	$90.98	$16,012.48	$0.00	$100.00	$12,792.45	$12,892.45		$0.00
20	143	$72.47	$10,363.21	$0.00	$100.00	$10,708.28	$10,808.28		$0.00
21	135	$48.49	$6,546.15	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
22	135	$41.02	$5,537.70	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
23	135	$28.93	$3,905.55	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
24	135	$27.64	$3,731.40	$0.00	$100.00	$9,541.80	$9,641.80		$0.00
Totals:			$143,568.81	$0.00	$1,200.00	$138,422.63	$139,622.63	$3,946.18	

How is the Incremental Cost calculated?

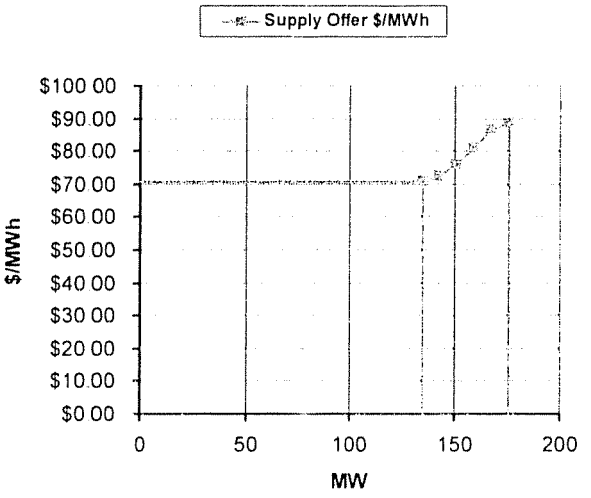
Incremental Cost, also known as the "Area under the Curve" is used in determining the revenue guaranteed to Midwest ISO committed units. In Real-Time, the incremental cost is based on the offer curve up to the State Estimated Hourly Output.

Incremental Cost is calculated with the following:

1) Resource Supply Offer Curve – Submitted and/or updated by the Market Participant. In this example, the curve uses the sloped offer curve option.

Resource Supply Offer		
Segment	**MW**	**$/MWh**
1	135	$70 68
2	143	$72 47
3	151	$76 00
4	159	$80 80
5	167	$86 50
6	176	$88 56

2) Resource Supply Offer Curve – Plotted



3) Calculate the "Area under the Curve" at 176 MWs

Start Point MW	Start Point $/MWh	End Point MW	End Point $/MWh	Average of Increment $/MWh	Cost/h (Average * Total MW)
0	$70.68	135	$70.68	$70.68	$9,541.80
135	$70.68	143	$72.47	$71.58	$572.60
143	$72.47	151	$76.00	$74.24	$593.88
151	$76.00	159	$80.80	$78.40	$627.20
159	$80.80	167	$86.50	$83.65	$669.20
167	$86.50	176	$88.56	$87.53	$787.77
				Total:	$12,792.45

- **Average $ for each Increment** = [(Start Point $/MWh + End Point $/MWh)/2]
- **Cost / HR** = [Average $ for each Increment * (End Point MW – Start Point MW)]

4) In Real-Time, the Incremental Cost is based on the offer curve at the State Estimated Hourly Output.

EXAMPLE: SE Observed MW = Actual Meter

Real-Time Market

	"Market Value"			Cost						
HE	Actual Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	Make Whole Payment
1	135	$50.65	$6,837.75	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
2	135	$60.25	$8,133.75	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
3	135	$63.44	$8,564.40	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
4	135	$58.21	$7,858.35	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
	Totals:		$31,394.25		$2,425.80	$400.00	$38,167.20	$40,993.00	-$9,598.75	

Midwest ISO
We manage power.

EXAMPLE: SE Observed MW ≠ Actual Meter

Real-Time Market

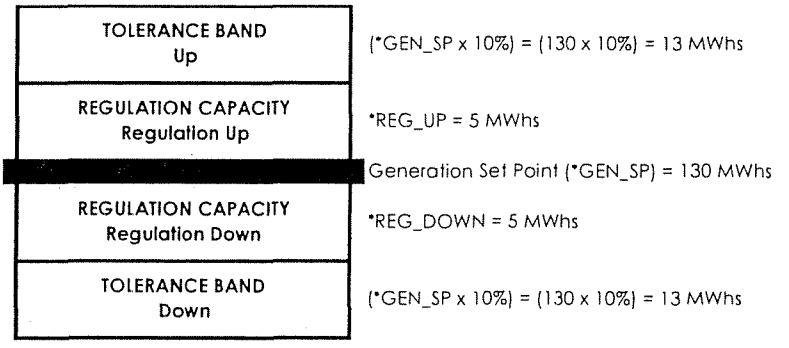
HE	"Market Value"			Cost				Total	Net	Make Whole Payment
	Actual Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental			
1	135	$50.65	$6,837.75	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
2	144	$60.25	$8,676.00	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
3	144	$63.44	$9,135.36	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
4	144	$58.21	$8,382.24	135	$606.45	$100.00	$9,541.80	$10,248.25		-$2,399.69
	Totals:		$33,031.35		$2,425.80	$400.00	$38,167.20	$40,993.00	-$7,961.65	

Is No Load prorated if a generating unit's start and stop time occur at a partial hour?
Yes. No Load is prorated if Start and Stop Times occur at a partial hour. For example, if a unit follows the MISO instruction to start at 01:30 and the No Load for that unit is $100.00, No Load for HE 2 is $50.00 ($100 * 30/60).

Does a generating unit receive Real-Time RSG Make Whole Payment when the unit is not following dispatch?
No. No Load and Incremental Costs are not eligible for Real-Time RSG Make Whole Payment for the hours that the generating unit is not following dispatch. The generation resource is eligible for recovery of Start-Up Costs through the Real-Time RSG Make Whole Payment provided that the unit is online and available.

Real-Time RSG Eligibility for generating units not following dispatch is determined as follows:

1) Determine Tolerance Band – Defined the same as for the Real-Time Uninstructed Deviation Amount (*RT_UD).



*UD_TOL_UP = (*GEN_SP+*REG_UP+ Up Tolerance Band (UP))
= (130 + 5 + 13)
= 148 MWhs

*UD_TOL_DN = (*GEN_SP -*REG_DN - Up Tolerance Band (DN))
= (130 - 5 - 13)
= 112 MWhs

NOTE: Tolerance Band Up / Down volume is equal to 10% of the Generation Set Point Volume bounded by an up / down maximum volume limit of 25 MWs and up / down minimum volume limit of 5 MWs.

2) Real-Time RSG Eligibility Flag is determined as follows:

   If ***UD_TOL_UP ≤ State Estimator Observed MWs ≤ *UD_TOL_DN**, then the generating unit satisfies the following dispatch criterion to be eligible for Real-Time Make Whole Payment for that hour.

3) Example of Real-Time RSG Make Whole Payment

EXAMPLE: In HE 2 and HE 3, Generating Unit was NOT "Following Dispatch", therefore will NOT be eligible for Real-Time RSG Make Whole Payment during those hours that were not "Following Dispatch".

HE	Billable Meter	SE Observed MW	RT RSG Eligibility
1	135	135	Y
2	153	135	N
3	153	135	N
4	135	135	Y

Real-Time Market

	"Market Value"			Cost						
HE	Actual or Alternate Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	Make Whole Payment
1	135	$50.65	$6,837.75	135	$2,425.80	$100.00	$9,541.80	$12,067.60		-$5,229.85
	Totals:		$6,837.75		$2,425.80	$100.00	$9,541.80	$12,067.60	-$5,229.85	

	"Market Value"			Cost						
HE	Actual or Alternate Meter	LMP	Revenue	SE Observed MW	Startup	No Load	Incremental	Total	Net	Make Whole Payment
4	135	$58.21	$7,858.35	135	$0.00	$100.00	$9,541.80	$9,641.80		-$1,783.45
	Totals:		$7,858.35		$0.00	$100.00	$9,541.80	$9,641.80	-$1,783.45	

In the above example, since HE 2 and HE 3 were not following dispatch, they will not be eligible for Real-Time RSG Make Whole Payment during these hours. When this situation occurs, it creates two commitment periods where Real-Time RSG Make Whole Payments will be evaluated for each of these CP's independently. In this example, the "Market Value" is less than the Production Cost for each of the two CP's (HE 1 and HE 4), therefore the difference is the amount that will be credited to the Asset Owner as a Real-Time RSG Make Whole Payment Amount.

Real-Time RSG First Pass Distribution Amount (RT_RSG_DIST1)

Real-Time RSG Make Whole Payment Amount credited to Asset Owners is funded hourly by the Midwest ISO primarily using the Real-Time RSG Guarantee First Pass Distribution Amount charge type.

Who is charged Real-Time RSG First Pass Distribution Amount?

The Real-Time RSG First Pass Distribution Amount is collected from Asset Owners that were contributors to causing additional load (or reduced capacity) to show up in the Real-Time Energy Market that was not present in the Day-Ahead Energy Market. The contributing volume of each Asset Owner is referred to as the Real-Time RSG First Pass Distribution Volume.

The Hourly Real-Time RSG First Pass Distribution amount is charged to each Asset Owner by calculating its Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL) and multiplying it by the Hourly MISO Real-Time RSG First Pass Distribution Rate (RT_RSG_DIST_RATE).

$$*RT\_RSG\_DIST1\_HR = *RT\_RSG\_DIST\_RATE \times *RT\_RSG\_DIST\_VOL$$

Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL) is the MW amount that caused additional load (or reduced capacity) to show up in the Real-Time Energy Market that were not present in the Day-Ahead Energy Market.

The Hourly MISO Real-Time RSG First Pass Distribution Rate (*RT_RSG_DIST_RATE) is the total of all Real-Time RSG Make Whole Payments (*MISO_RT_RSG_MWP) divided by the maximum of Hourly MISO Real-Time RSG First Pass Distribution Volume (MISO_RT_RSG_DIST_VOL) or Hourly MISO Real-Time RSG Committed MW (MISO_RT_COMMIT_MW). An Asset Owner's total exposure is limited when the contributing volume of all Asset Owners is less than the total Real-Time Reliability Assessment Commitment (RAC) committed generation Resource volume for the hour. When this type of limiting condition occurs for an hour, this charge type does not collect sufficient funds to cover the credits paid to Asset Owners for their Real-Time RSG Make Whole Payment Amounts and the additional funds are collected from the Revenue Neutrality Uplift Amount Charge Type.

$$*RT\_RSG\_DIST\_RATE = \frac{(-1) \times MISO\_RT\_RSG\_MWP}{MAX\ (\ MISO\_RT\_RSG\_DIST\_VOL,\ MISO\_RT\_COMMIT\_MW)}$$

The Real-Time RSG Distribution Volume *(RT_RSG_DIST_VOL) includes:

1) Hourly Real-Time Load Schedule Imbalance Volume (RT_LOAD_IMB)
2) Hourly Real-Time Physical Transaction Imbalance (PHYS_IMB_BAL)
3) Hourly Asset Owner Real-Time Under Generation (RT_UNDER_GEN)
4) Hourly Asset Owner Real-Time Over Generation (RT_OVER_GEN)
5) Hourly Asset Owner Real-Time Derate Volume Deviation (RT_DERATE_VOL)
6) Hourly Asset Owner Real-Time Must-Run Volume Deviation (RT_MR_VOL)

NOTE: Virtual Supply Offers that cleared in the Day-Ahead Market are not considered as part of the *RT_RSG_DIST_VOL.

Load Schedule Imbalance – Hourly Real-Time Load Schedule Imbalance represents the total Asset Owner Load Imbalance volume for all their Load and DRR Assets.

$$RT\_LOAD\_IMB = [\ ABS\ (*RT\_BLL\_MTR_{Load} - *RT\_ADJ\_MTR - *DA\_SCHD_{Load})\ ]$$

Physical Transaction Imbalance – Hourly Real-Time Physical Transaction Deviation is the sum of all Real-Time less Day-Ahead Physical Bilateral Transaction Volume imbalances, positive or negative. The following term mathematically excludes Physical Bilateral Transactions that wheel-through MISO and Physical Bilateral Transactions that are dispatchable.

$$PHYS\_IMB\_VOL = [\ ABS\ (*RT\_PHYS_{Buyer} - *RT\_PHYS_{Seller}) - (*DA\_PHYS_{Buyer} - *DA\_PHYS_{Seller})\ ]$$

Real-Time Under Generation – Hourly Asset Owner Real-Time Under Generation is the generation performance below the combined dispatch set point less regulation down.

$$RT\_UNDER\_GEN = [\ MAX\ (\ 0, (*GEN\_SP - *REG\_DN - *GEN\_PERF))\ ]\ ]$$

Real-Time Over Generation – Hourly Asset Owner Real-Time Over Generation is the generation performance above the combined dispatch set point plus regulation up.

$$RT\_OVER\_GEN = [\ MAX\ (\ 0, (*GEN\_PERF - *GEN\_SP - *REG\_UP))\ ]$$

Real-Time Derate Volume – Hourly Asset Owner Real-Time Derate Volume represents the total generation volume that an Asset Owner could not provide from their generation assets that cleared in the Day-Ahead Energy Market.

EXAMPLE: RT_DERATE_VOL

Cleared DA_SCHD -80 MWs

*RT_MAX_DSP 70 MWs

*RT_MIN_DSP 10 MWs

NOTE: With RT_MAX_DSP less than the Cleared *DA_SCHD, MISO will not be able to Dispatch this Generating Asset according to the DA_SCHD.

Market Participants can calculate the Real-Time Derate Volume (RT_DERATE_VOL) by doing the following:

$$RT\_DERATE\_VOL = [\ ABS\ (\ MIN\ (\ 0, (\ *DA\_SCHD_{GEN} + *RT\_MAX\_DSP\ )\ )\ )\ \ ]$$

Real-Time Must-Run Volume – Hourly Asset Owner Must-Run Volume Deviation represents the total generation volume that an Asset Owner had to provide from their generation assets above what was cleared in the Day-Ahead Energy Market.

EXAMPLE: RT_MR_VOL

*RT_MAX_DSP 90 MWs

*RT_MIN_DSP 85 MWs

NOTE: With RT_MIN_DSP greater than the Cleared *DA_SCHD, MISO will not be able to Dispatch this Generating Asset according to the DA_SCHD.

Cleared DA_SCHD -80 MWs

Market Participants can calculate the Real-Time Must-Run Volume (RT_MR_VOL) by doing the following:

$$RT\_MR\_VOL = [\ MAX\ (\ 0, (\ *DA\_SCHD_{GEN} + *RT\_MIN\_DSP\ )\ )\ ]$$

Reference BPM for Market Settlements, Section D.12

How do I calculate the Real-Time RSG First Pass Distribution Amount?
In order to calculate the Real-Time RSG First Pass Distribution Amount (*RT_RSG_DIST1), Market Participants must first determine their own Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL). This can be done by calculating and summing the following:

$$*RT\_RSG\_DIST\_VOL = [\ RT\_LOAD\_IMB + PHYS\_IMB\_VOL + RT\_UNDER\_GEN + RT\_OVER\_GEN + RT\_DERATE\_VOL + RT\_MR\_VOL\ ]$$

Once the Hourly Real-Time RSG First Pass Distribution Volume (*RT_RSG_DIST_VOL) has been calculated, Asset Owners can take that Volume and multiply it by the Hourly MISO Real-Time RSG First Pass Distribution Rate (*RT_RSG_DIST_RATE).

$$*RT\_RSG\_DIST1\_HR = *RT\_RSG\_DIST\_RATE \times *RT\_RSG\_DIST\_VOL$$

Reference: BPM for Market Settlements, Section 13.12

What is the Real-Time RSG Make Whole Payments Second Pass Distribution Uplift?
The Real-Time RSG Make Whole Payments Second Pass Distribution Uplift is the secondary funding mechanism for the Real-Time RSG Make Whole Payment Amount. This uplift is only used when the total Real-Time generation resource committed volume (MISO_RT_COMMIT_MW) for the hour exceeds the Asset Owner's total Real-Time RSG First Pass Distribution Volume (MISO_RT_RSG_DIST_VOL).

An Asset Owner's total exposure in the Real-Time RSG First Pass Distribution Amount is limited to the situation when the contributing volume of all Asset Owners is less than the total Real-Time Reliability Assessment Commitment (RAC) committed generation Resource volume for the hour. When this situation occurs, it does not collect sufficient funds to cover the credits paid to Asset Owners for their Real-Time RSG Make Whole Payment Amounts. Therefore, the additional funds are be collected from the Real-Time RSG Make Whole Payments Second Pass Distribution Uplift, a component of the Revenue Neutrality Uplift Amount Charge Type allocated based on Load Ratio Share.

Ernie Fletcher
Governor

Teresa J. Hill, Secretary
Environmental and Public
Protection Cabinet

Timothy J. LeDonne
Commissioner
Department of Public Protection

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

Mark David Goss
Chairman

John W. Clay
Commissioner

January 23, 2007

PARTIES OF RECORD:

RE: Case No. 2006-00172
AN ADJUSTMENT OF THE ELECTRIC RATES OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY, INC.

Enclosed please find a memorandum that has been filed in the record of the above-referenced case. Any comments regarding this memorandum's content should be submitted to the Commission within five days of receipt of this letter. Questions regarding this memorandum should be directed to Isaac Scott as (502) 564-3940, extension 444.

Sincerely,

Beth O'Donnell
Executive Director

Attachment

INTRA-AGENCY MEMORANDUM

KENTUCKY PUBLIC SERVICE COMMISSION

TO: Main Case File – Case No. 2006-00172

FROM: Isaac Scott, Team Leader

DATE: January 23, 2007

SUBJECT: January 11, 2007 Informal Conference

Pursuant to the January 9, 2007 Staff Notice, an informal conference was held on January 11, 2007. Attached to this memorandum as Attachment 1 is a list of the participants. The purpose of the conference was to discuss issues related to the Fuel Adjustment Clause ("FAC") filings by Duke Energy Kentucky ("Duke Kentucky").

Duke Kentucky provided an outline of the topics it wanted to discuss at the informal conference. A copy of that outline is attached to this memorandum as Attachment 2. Duke Kentucky will be making FAC filings in March 2007, and it wanted to discuss some of the components in the filings.

Duke Kentucky discussed how it believed its economic dispatch should be handled. This was important when determining the Midwest Independent System Operator ("MISO") Make-Whole Revenues sharing, which was a feature in the approved Settlement Agreement in this proceeding. Duke Kentucky asked about the use of estimated fuel information in its FAC when actual data is unavailable, with a true-up calculation in the following month. Lastly, Duke Kentucky discussed how the margins on off-system sales were to be determined and if reviews or audits would be necessary.

During the discussions, the Commission Staff noted that since Duke Kentucky was resuming its FAC filings, there could be some problems that would arise and those could be addressed at the time of the first review. Because of the timing of Duke Kentucky resuming its FAC, the first 6-month review will not cover 6 months of activity. Concerning the MISO-related discussion, Commission Staff suggested that the economic dispatch should be shown as it actually operated rather than being restated for MISO-required changes in the dispatch order. Commission Staff indicated that the use of estimated fuel data seemed to be acceptable, but suggested that Duke Kentucky state in the FAC filings when the data is estimated. Concerning the off-system sales, Commission Staff suggested that the parties discuss among themselves what reviews or audits might be needed and then file a request with the Commission concerning how to proceed.

Attachments

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY FOR AN ADJUSTMENT OF ELECTRIC RATES	))))	CASE NO. 2006-00172

==========

January 11, 2007 Informal Conference

==========

Please sign in:

NAME	REPRESENTING
Isaac D. Scott	PSC-Financial Analysis
Daryl Newby	" " "
Betsy BLACKFORD	OAG
Larry Cook	OAG
John Finnigan	Duke Energy Kentucky
Dan Wathen	Duke Energy Kentucky
Scott Nicholson	Duke Energy Kentucky
Lisa Steinkuhl	Duke Energy Kentucky
Peggy Laub	Duke Energy Kentucky

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY FOR AN ADJUSTMENT OF ELECTRIC RATES	))))	CASE NO. 2006-00172

==========

January 11, 2007 Informal Conference

==========

Please sign in:

NAME	**REPRESENTING**
Robert Cowan	PSC
Kurt Boehm	Kroger
Scott Brownell	Duke
Lisa Cullen	Duke
Mike Gribler	Duke

DISCUSSION TOPICS FOR INFORMAL CONFERENCE

1. Stacking methodology

   - Resources (own generation and purchased power) are stacked from lowest to highest cost except for reliability and other constraints.

   - Firm native load is served first in the stacking order.

   - To the extent required to meet reliability requirements, DE-Kentucky will treat all or part of any unit designated as "must run" and force this generation to the bottom of the economic dispatch order.

2. MISO Make-Whole Revenue

   - If MISO dispatches a unit that would not otherwise dispatch on an economic basis, any resulting generation from this unit will be stacked in order of economic merit without adjustment. Neither the associated fuel costs nor the MISO make-whole revenue will be included in the FAC.

   - Alternatively, out-of-merit generation dispatched on by MISO will be deemed to be dispatched for reliability purposes, and will be forced to the bottom of the economic dispatch order. Any make-whole revenue will be used to offset the fuel costs associated with the forced generation.

   - The former alternative would reduce the off-system sales but would give customers the least costly generation. The latter alternative would make more generation available for sale into the market, of which customers receive a 50% share.

3. Allowed to estimate fuel for month (-1) if actuals are unavailable with subsequent true-up

   - Kentucky Power includes an estimate of month (-1) for its FAC and corrects that number for actuals in the next filing.

4. Expenses allowed for cost of goods sold in off-system sales margin calculation.

- The Order in the Asset Transfer case prescribes the margin calculation to be revenue net of:

  a. Fuel
  b. Emission Allowances
  c. Other variable costs