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Kentucky Public Service Commission
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PUBLIC SERVICE COMMISSION

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May 3, 2007

RE: ***An Examination of the Application of the Fuel Adjustment Clause of Kentucky Utilities Company From November 1, 2004 to October 31, 2006*** **– Case No. 2006-00509**

An Examination of the Application of the Fuel Adjustment Clause of Louisville Gas and Electric Company From November 1, 2004 to October 31, 2006 **- Case No. 2006-00510**

Dear Ms. O'Donnell:

Enclosed please find an original and ten (10) copies of Louisville Gas and Electric Company's and Kentucky Utilities Company's Joint Rebuttal Testimony of Robert M. Conroy, in the above-referenced proceedings.

Please contact me if you have any questions concerning this filing.

Sincerely,

Robert M. Conroy

Enclosures

cc: Michael L. Kurtz, Esq.
Dennis Howard II, Esq.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN EXAMINATION OF THE APPLICATION OF THE FUEL ADJUSTMENT CLAUSE OF KENTUCKY UTILITIES COMPANY FROM NOVEMBER 1, 2004 THROUGH OCTOBER 31, 2006	)	CASE NO. 2006-00509
AN EXAMINATION OF THE APPLICATION OF THE FUEL ADJUSTMENT CLAUSE OF LOUISVILLE GAS AND ELECTRIC COMPANY FROM NOVEMBER 1, 2004 OCTOBER 31, 2006	)	CASE NO. 2006-00510

JOINT REBUTTAL TESTIMONY OF ROBERT M. CONROY MANAGER, RATES E.ON U.S. SERVICES, INC.

Filed: May 3, 2007

Q. Please state your name and business address.

A. My name is Robert M. Conroy. I am currently employed as Manager, Rates for E.ON U.S. Services, Inc., which provides services to Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") (collectively, the "Companies"). My business address is 220 West Main Street, Louisville, Kentucky 40202. A complete statement of my education and work experience is attached to this testimony as Appendix A.

Q. Have you previously testified before this Commission?

A. Yes. I have testified several times, including in the Companies' most recent environmental cost recovery compliance plan proceedings, Case Nos. 2006-00206 and 2006-00208.

Q. What is the purpose of these proceedings?

A. The purpose of these proceedings is to review and evaluate past operations of LG&E's and KU's fuel adjustment clauses, disallow improper expenses, and to the extent appropriate reestablish the fuel clause charges in accordance with the Commission's Uniform Fuel Adjustment Clause Regulation, 807 KAR 5:056.

The Companies' evidence shows that the fuel cost incurred during these two two-year periods of review was reasonable, that the fuel cost was prudently procured through proper fuel procurement practices, and that the base period component of the fuel adjustment clause ("FAC") formula (FB/SB) should be reset going forward.

Q. What is the purpose of your testimony in these proceedings?

A. The purpose of my testimony is to rebut the recommendation of Stephen J. Baron, witness for the Kentucky Industrial Utilities Customers, Inc., ("KIUC"), in his Direct

Testimony filed in these proceedings on March 22, 2007 to disallow $5,584,489 in fuel costs which KIUC contends were "excessive." In chief, I will discuss: (1) why the Revenue Sufficiency Guarantee ("RSG") make-whole payments that the Midwest Independent Transmission System Operator, Inc. ("MISO") made to the Companies are not related to fuel costs and did not cause the Companies to incur unreasonable fuel costs; (2) why KIUC's attempt to credit to customers a single MISO revenue stream (RSG make-whole payments) without also flowing through all MISO costs and revenues is not only outside the parameters of any fuel adjustment clause proceeding, but is also impermissible single-issue ratemaking; and (3) why KIUC's recommendation conflicts with the requirements of the fuel adjustment clause regulation. In doing so, I will rebut KIUC's claim that LG&E and KU charged their customers for "excessive expenses" and will show why the fuel expenses customers paid were reasonable and prudent expenses.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes, I am sponsoring the following Exhibits:

Exhibit RMC-1 – Day-Two Market Charge Types.

Exhibit RMC-2 – Attachment C Revenue Sufficiency Guarantee Eligibility Supplement.

Q. Does KIUC offer any valid reasons to support its recommendation to disallow $5.6 million in fuel costs?

A. No. Mr. Baron's testimony provides no original analysis and relies entirely upon the estimates provided by LG&E and KU.[1] Mr. Baron puts forth on page 14 of his testimony

[1] The estimates referenced by Mr. Barron were provided in the data responses of LG&E and KU to KIUC Data Request No. 2. In responding to these data requests, each company explicitly stated that the estimate was being provided "without waiver of or prejudice to its position in this case" and the provision did not "in any way imply or suggest a position by the Company that the Make Whole Payment Amounts should be reflected in the calculation of

two erroneous reasons to support KIUC's assertion that certain fuel expenses were "improper costs": (1) the cost of the Companies' generation exceeded market energy prices and (2) the Companies were reimbursed for these generating units by MISO in the form of RSG make-whole payments. As my testimony demonstrates, neither reason is accurate or reasonable.

Q. Do you agree with Mr. Baron's explanation of the "basis for the improper fuel expenses in this case" as indicated in pages 5 through 7 of his testimony?

A. No. To explain the basis of his recommendation, Mr. Baron's testimony selectively describes the operating conditions under which LG&E and KU provided service during the period in question. During these times, LG&E and KU were members of MISO and were compelled to participate in MISO's Real-Time and Day-Ahead ("Day-Two") energy markets. LG&E and KU objected to the implementation of the MISO Day-Two tariffs at the Federal Energy Regulatory Commission ("FERC"); however, FERC overruled the protests of the Companies; and the Day-Two markets began operations effective April 1, 2005. LG&E and KU gave MISO notice of their intention to withdraw from their membership in MISO in December 2004 (and prior to the operation of the Day-Two markets), and successfully completed their withdrawal on September 1, 2006.

As participants in the Day-Two markets, each month LG&E and KU paid and received credit for thirty-five different types of charges and credits associated with the operation of these energy markets. (Exhibit RMC-1 contains a portion of the Midwest ISO Business Practice Manual No. 005 for Market Settlements ("Business Practice

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the FAC," and that the "inclusion of th[e] amount was entirely inappropriate."

Manuel")[2] showing the thirty-five charge types for the Day-Two markets.) During this same period, however, the Companies continued to utilize their long-established After-the-Fact Billing ("AFB") system for FAC calculation purposes. The AFB system stacks resources (both Company-owned generation and market purchases) from least-cost to highest-cost. In so doing, the Companies allocated fuel costs associated with the highest-cost resources to off-system sales, thereby excluding these fuel costs from recovery through the FAC.

The fuel cost associated with the resources used to serve native load was recovered through the FAC; however, no MISO Day-Two charges or revenues were included in the calculation of the FAC except for economic energy purchases from MISO, which were included in the AFB process using the Locational Marginal Price ("LMP"). KIUC nonetheless contends erroneously, "[T]he fuel cost itself, in some cases was not reasonable ... because, in some cases, generation was dispatched and assigned to native load that exceeded the market price of energy." (KIUC Data Response No. 2).

Also, missing from this portion of Mr. Baron's testimony is the fact that Day-Ahead and Real-Time RSG Make-Whole Payments are funded through the Day-Ahead RSG Distribution Amount, the Real-Time RSG First Distribution Amount, and a component of the Revenue Neutrality Uplift charge, all of which the Companies *paid* to fund RSG Make-Whole Payments, including those received by the Companies. None of these charges were paid by customers through the FAC charges.

Q. Does Mr. Baron's testimony have other significant oversights?

A. Yes. He fails to note that at all times during the periods under review, MISO was the

[2] The Midwest ISO Business Practice Manual No. 005 for Market Settlements can be found on the Midwest ISO website at http://www.midwestiso.org/publish/Document/20f443_ffd16ced4b_-7e670a3207d2?rev=22.

Companies' Reliability Coordinator ("RC") and could, as the RC, require the Companies to dispatch their units strictly for reliability purposes.

He also fails to describe accurately RSG make-whole payments. In general, an RSG make-whole payment represents the difference between the Companies' offer amount (including start-up, no-load, and incremental energy costs) and the revenue collected in the energy market where the Companies' offer exceeds the Companies' revenues over the Commitment Period as defined in the Business Practice Manuel. If over the Commitment Period an RSG make-whole payment is determined by MISO to be necessary and the unit meets the eligibility rules defined by MISO, then the RSG make-whole payment is allocated evenly over all hours of the Commitment Period regardless of and unrelated to the unit's fuel cost in a given hour. There is no guarantee that, for a given hour, if LMP is less than a unit's fuel cost an RSG make-whole payment will be received for that hour. A detailed explanation of RSG, including the details on eligibility rules, is contained in the Business Practice Manuel in Attachment C Revenue Sufficiency Guarantee Eligibility Supplement (attached as Exhibit RMC-2).

In reciting the estimates provided by the Companies, he also neglects to disclose the fact that the Companies' provision of that information (i.e., the analysis performed by the Companies to match the MISO settlement amounts with the Companies' AFB system) was provided without wavier of prejudice to their position,[3] and specifically that the Companies disputed KIUC's assumptions supporting the data request (e.g., that the Make Whole Payments and Distributions have a direct relation to the Companies' fuel costs; that RSG payments and distributions are assessed on a hour-by-hour basis; that the

[3] Response of LG&E to KIUC Requests for Information Nos. 2 and 5; Response of KU to KIUC Requests for Information Nos. 2 and 5.

Companies' FAC recovery from the customers and net of the MISO RSG payments and distributions some how overlap and that receipt of the RSG payments caused certain fuel expenses to become excessive) when providing the information.[4] In contrast, KIUC does not offer any quantitative evidence to support its assertion that the Make Whole Payments and Distributions have a relation to the Companies' fuel costs. The Make Whole Payments and Distributions have a direct relation only to the Companies' offer amount and the revenue collected in the energy market where the Companies' offer exceeds the Companies' revenues over the Commitment Period. No portion of MISO's Make Whole Payments and Distributions are designated for or allocated to fuel costs. The Day-Two market participants, including LG&E and KU, did not submit their fuel costs or fuel invoices to MISO for reimbursement or for calculation of the Make Whole Payments and Distributions. Indeed, the Make Whole Payments and Distributions are calculated and assessed without regard to LG&E's and KU's invoiced fuel costs. Furthermore, receiving a Make Whole Payment is subject to meeting the complex eligibility rules established by MISO as outlined in Exhibit RMC-2.

He also fails to note what the Companies plainly stated in their February 23, 2007 data responses to KIUC's First Set of Data Requests: "The Company has prepared this estimate based upon available information from the two-year review period that is subject to the ongoing MISO settlement and resettlement process." On February 26, 2007, MISO advised LG&E and KU, and the other MISO members of the following:

> The R252 and R399 statements ended on February 22, 2007. The R546 statements are scheduled to end on March 9, 2007. There will not be any **resettlement** statements until approximately June 1, 2007. The resettlement statements will be necessary to resolve

[4] Responses of LG&E and KU to KIUC Requests for Information No. 5 (respectively).

> the FERC order regarding RSG. The resettlement at that time will go back to the start of the Market, April 1, 2005.[5]

In other words, beginning June 1, 2007, MISO will begin to resettle the amounts it has invoiced LG&E and KU back to April 1, 2005, subject to oversight of FERC and the ongoing claims of various MISO members on specific settlement issues and statements pending before FERC. Though the impact of MISO resettlement process is unknown at this time, it is certain that the process has and will continue to affect the amounts of the RSG make-whole payments and distributions, and perhaps other MISO-related costs and revenues, for an indefinite period. MISO takes the position that there is no limit to its authority to continue with the resettlement processes on an indefinite basis. This is an extremely complicated process involving a number of issues associated with the calculation and assessment of both RSG payments and distributions and the interpretations of at least four orders by the FERC and appeals of those orders.

In its responses to the Commission's Data Request Nos. 4(a) and 5, KIUC admits that Mr. Baron does not know to what extent and how often MISO will resettle RSG-related costs and revenues in the future, yet, nevertheless recommends that the Commission disallow the Companies $5.6 million in FAC recovery due to RSG make-whole payments. The fact that RSG-related costs and revenues are still in such a state of flux strongly indicates that such costs and revenues are base rate components, which often change and serve to offset one another.

Moreover, the fact that these costs and revenues remain in flux is yet further evidence that they are not fuel-related. Fuel costs are relatively simple and straightforward items, easy to invoice and pay. In fact, the fuel costs associated with the

[5] http://www.midwestmarket.org/page/Market+Settlements (emphasis added)

Companies' generation at issue in these review proceedings has been settled and known for quite some time.

Q. Do you agree with Mr. Baron's assertion that the Companies sustained "improper fuel expense" because "generation costs were included in the FAC charges of each Company that were in excess of market energy prices." (Baron, p. 15)?

A. No. The fact that, at times, generation costs were in excess of the market energy prices during the Day-Two MISO market does not demonstrate that the fuel costs collected through the FAC were unreasonable or improper under the FAC regulation. During the two-year review period, the Companies' units were dispatched by and because of MISO's FERC-approved tariff, which mandated security-constrained economic dispatch and Reliability Assessment Commitment ("RAC") of generating units in and for the MISO footprint. LG&E and KU had no choice but to comply with MISO's tariffs and directives. Mr. Baron's analysis, however, while conceding this point, is self-contradictory because it implicitly assumes that LG&E and KU could have made a choice to disobey MISO's orders, not run the units, and instead purchase from the "market".

Q. Do RSG make-whole payments bear any direct relationship to the Companies' fuel costs charged to customers?

A. No. The RSG make-whole payments the Companies received are not related to or refunds of the Companies' fuel costs. As explained in the Business Practice ManuelAttachment C (contained in Exhibit RMC-2), each component of the generating unit's offer (start-up, no-load and incremental energy costs) are subject to specific eligibility rules in order to receive a make whole payment for the Commitment Period of the unit. The RSG make whole payment is determined based on the total offer compared

to the energy market revenue over the Commitment Period. MISO did not and does not allocate different portions of RSG make-whole payments to different components of the generating units' offer prices. When MISO economically dispatched a RAC committed generating unit, if the energy market revenue (based on the LMP for the unit) for the Commitment Period was less than the unit's offer for the Commitment Period, the unit could receive an RSG make-whole payment, subject to the eligibility rules. The RSG make-whole payment, if it was received, was then allocated evenly over all hours of the Commitment Period regardless of and unrelated to the unit's fuel cost in a given hour. This RSG make-whole payment was received to make up the difference between the energy market revenue and the unit's offer price, regardless of the unit's fuel cost for a given hour during the Commitment Period. Even if a generating unit's fuel cost in a given hour is greater than the LMP, an RSG make-whole payment may not be received. Likewise, a RAC-committed generating unit could receive an RSG make-whole payment even if it had zero fuel cost. Though most generating units have a fuel cost of operation, RSG make-whole payments bear no relation to fuel cost; rather, make-whole payments are intended to reimburse the Companies for making on-line generation capacity available to MISO. And their receipt by the Companies as part of the ongoing 35 different charges and credits on the monthly MISO statements to LG&E and KU did not cause the Companies' fuel expenses to become "excessive."

Q. Do you agree with Mr. Barron's criticism that the out of economic order dispatch of generating units by MISO for reliability purposes causes the fuel cost associated with that generation to be "excessive"?

A. No, running the Companies' MISO-dispatched generating units to ensure reliability, even

when LMPs were below the units' fuel costs, did not cause the fuel cost associated with this generation to become "excessive." In his testimony, Mr. Baron states, "MISO conducted a security constrained economic dispatch and a Reliability Assessment Commitment ('RAC') process to insure that all loads are met with sufficient resources in a reliable manner."[6] He further states that the Companies were "required [by MISO]. . . to operate" the very units the fuel costs of which he asserts the Companies improperly recovered through their FACs.[7] Yet, without any suggestion of imprudent actions by LG&E and KU, *or even MISO*, KIUC claims it was improper for the Companies to recover through their FACs fuel costs for generating units MISO *required* the Companies to dispatch to ensure reliable grid operations. A utility's fuel costs associated with the dispatch of certain units as requested by its NERC[8]-certified reliability coordinator (in the Companies' case at the relevant times, MISO) for reliability reasons are reasonable and prudent expenses.

Moreover, as Mr. Baron acknowledges, the Companies properly "stacked" their generating units' costs through their AFB process, allocating their highest-cost units to off-system sales and leaving only the lowest-cost units' fuel costs for the Companies to recover through their FACs. The fact that the Companies continued to follow their AFB process serves only to show the propriety of the Companies' fuel cost recovery, not any *im*propriety.

It is incorrect to assert that the Companies ran their own units when market priced energy would have been cheaper. For the periods under review, the Companies were MISO members and thus were required to participate in MISO's Day-Two markets.

[6] *Id.* at 6.
[7] *Id.*
[8] North American Electric Reliability Council.

MISO was the market. And the market -- MISO -- committed the units of which KIUC complains pursuant to its authority as NERC Reliability Coordinator and the RAC procedures set forth in the FERC-approved tariff. Thus, the fact that the LMPs for those units did not meet the units' fuel costs is irrelevant; the Reliability Coordinator committed the units.

It is also incorrect to contend that the Companies could have purchased market-priced energy to fulfill their obligation to run the units MISO dispatched for reliability purposes. Several different unit characteristics and parameters are important to proper unit dispatch to ensure reliability, including the *location* of the committed unit; available energy alternatives from the market are not a factor when assessing which generating units, with the right characteristics and in the right locations, are needed to ensure reliable grid operation.

It is well established within the industry that the reasonable and prudent dispatch of generating units is not made solely on the basis of different units' fuel costs. The Energy Policy Act, Section 1234, defines economic dispatch as "the operation of generating facilities to produce energy at the lowest cost to reliably service consumers, recognizing any operational limits of generation and transmission facilities." Running a prudent economic dispatch ensures reliability and thus requires taking a number of reliability and operating factors into account. A strictly "*economic*" dispatch of the units based only on fuel cost has no value if the electric transmission system is unreliable and fails.

Q. Does KIUC's recommendation in these cases constitute single-issue ratemaking?

A. Yes. KIUC's proposal to take a single kind of revenue and in effect credit it to the

Companies' customers is clear violation of the Commission's restriction against single-issue ratemaking and nothing more than selective cherry-picking of revenues without matching costs. As I will discuss below, when the Companies proposed a tariff mechanism to account for all the Companies' MISO-related costs and revenues not already included in base rates associated with serving native load, KIUC objected that the prohibition against single-issue ratemaking prohibited the mechanism. Thus, it is a complete conflict in position for KIUC now to advocate for selecting just one MISO revenue stream to pass along to customers through the FAC mechanism, leaving the Companies' shareholders to bear all the related costs.

Other than in a full-fledged base rate case, any attempt to credit to customers RSG make-whole payments constitutes single-issue ratemaking because any such credit would ignore all the other MISO costs and revenues LG&E and KU faced during the periods under review, many of which are not presently included in the Companies' current base electric rates (only Schedule 10 Day-One costs have been considered and the accounting treatment for the MISO exit fee has been agreed upon). KIUC's proposal to select one revenue stream from MISO – day-ahead and real-time RSG make-whole payments -- and credit it to customers without accounting for all of the other 33 MISO Day-Two costs and revenues not already included in base rates is a particularly provoking form of single-issue ratemaking, and the Commission should reject it as such.

Q. What is KIUC's position on the prohibition against single-issue ratemaking?

A. In 2004 the Companies filed an application for a "MISO Tracker Mechanism," which would have passed through to customers *all* MISO-related revenues and costs not already included in base rates. Ironically, KIUC objected to the Companies' MISO tracker

proposal -- which accounted for *all* MISO costs and revenues not already in base rates, including RSG make-whole payments -- as single-issue ratemaking.[9] Applying KIUC's own analysis of the prohibition against single-issue ratemaking from the MISO Tracker Mechanism case to the facts in this case shows why the Commission should reject KIUC's recommendation in these cases:

- "There is no justification for creating an alternative form of regulation whereby the Companies cherry-pick which components to include in their filing and which to exclude."[10] If it was "cherry-picking" to include in a tracker mechanism all MISO costs and revenues not already included in base rates, then it certainly is cherry-picking to select just one MISO revenue stream to credit to customers while ignoring all other related costs and revenues.
- "It is inequitable and counter to Commission policy to allow the recovery of one item without reference to every other item."[11] If it would have been "inequitable and counter to Commission policy" to allow the Companies to have recovery of the net of all MISO costs and revenues, it is even more inequitable and counter to Commission policy to credit to customers a single MISO revenue stream without also taking account of all other related costs and revenues.

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[9] *See In the Matter of the Application of Louisville Gas and Electric Company for Approval of New Tariffs Containing a Mechanism for the Pass-Through of MISO-Related Revenues and Costs Not Already Included in Existing Base Rates*, and *In the Matter of the Application of Kentucky Utilities Company for Approval of New Tariffs Containing a Mechanism for the Pass-Through of MISO-Related Revenues and Costs Not Already Included in Existing Base Rates*, Case Nos. 2004-00459 and 2004-00460 ("MISO Tracker Cases"), KIUC Brief at 3-5 (Jan. 21, 2005); MISO Tracker Cases, KIUC Reply Brief at 2-3 (Feb. 7, 2005).

[10] MISO Tracker Cases, KIUC Brief at 3; MISO Tracker Cases, KIUC Reply Brief at 2-3.

[11] MISO Tracker Cases, KIUC Brief at 5.

- "If a utility can be ordered to refund particular revenues, it can also be authorized to collect a particular expense."[12] This is the very concern that has supported the Commission's strict interpretation of the fuel adjustment clause for many years.

It is evident from KIUC's past position that there is a complete conflict between KIUC's vigorous opposition to what it characterized as single-issue ratemaking in the MISO tracker proceeding and its assertion of what is much more clearly single-issue ratemaking in these proceedings. The application of KIUC's MISO Tracker analysis to its proposal in these proceedings clearly demonstrates why KIUC's disallowance proposal violates the restriction against single-issue ratemaking.

Q. Are you aware of Commission precedent relevant to the appropriate means by which to address non-fuel-related costs like RSG make-whole payments and distributions?

A. Yes, and it is a Commission Order concerning FERC-filed rates, just as the Companies' MISO costs and revenues were incurred and generated under MISO's FERC tariff. In the Order, which concerned a Union Light, Heat, and Power Company rate proceeding, the Commission stated that costs and revenues associated with FERC-filed rates should be considered in general base rate proceedings, where they can be offset with other costs and revenues:

> Despite our inability to investigate the reasonableness of CG&E's FERC-filed rate, we can exercise our discretion under KRS 278.190(2) to suspend ULH&P's proposed rates and conduct an investigation of ULH&P's overall financial condition to determine if other expenses have decreased or economies have been

[12] MISO Tracker Cases, KIUC Reply Brief at 3 (quoting *Re Big Rivers Electric Corp.*, Case No. 94-453, 1997 WL 152646 (1997).

> achieved. . . . In such a situation, the increased FERC-filed rate may properly be off-set with other changes in revenues or expenses, potentially resulting in no increase to retail customers.[13]

The RSG Amounts (both Payments and Distributions) are assessed by MISO pursuant to its tariffs filed with FERC. They are FERC-filed rates. This Commission precedent further demonstrates that RSG make-whole payments, along with all other non-fuel-related MISO costs and revenues, should be addressed in a base rate proceeding, not an FAC proceeding.

Q. Do you agree with Mr. Baron's criticism that the Companies should have credited the Make Whole Payments against the cost of fuel and as part of the calculation of the fuel adjustment clause factors?[14]

A. No. As I discussed briefly above, RSG make-whole payments have no relation at all to, nor are they reimbursement for, the Companies' fuel costs. Certainly they are not the "cash or other discounts" to which the Uniform Fuel Adjustment Clause regulation refers where it states, "The cost of fossil fuel shall include no items other than the invoice price of fuel less any cash or other discounts."[15] The Companies did not purchase fuel from MISO and thus could not receive from MISO "cash or other discounts" to subtract from "the invoice price of fuel." MISO was not a fuel vendor of any kind for LG&E and KU. The make-whole payments were from MISO and not the Companies' fuel vendors. Neither did the Companies receive from MISO any other kinds of payments for fuel. The RSG make-whole payment a RAC-committed generator received, if any, merely bridged the gap between the Companies' offer and the Energy Market Revenues received over the

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[13] *In the Matter of Application of the Union Light, Heat and Power Company to Adjust Electric Rates*, Case No. 91-370, Order at 4 (May 26, 1992).

[14] KIUC Responses to PSC Data Requests No. 2 ("The Company did not credit these amounts and therefore, its fuel expenses were excessive and unreasonable during the review period.")

[15] 807 KAR 5:056 § 1(6).

Commitment Period for that generator. This RSG make-whole payment is allocated evenly over all hours of the Commitment Period regardless of and un-related to the unit's fuel cost in a given hour. As I said before, even if such a generator's fuel cost were zero, if the Energy Market Revenue was less than the generator's offer over the Commitment Period, the generator could receive an RSG make-whole payment for the difference. Such gap-filler payments, which have a relationship to the market price, but no relation to fuel costs, have no proper bearing on FAC recovery.

Q. Does KIUC's recommendation conflict with the requirements of the fuel adjustment clause regulation?

A. Yes. Assuming for the sake of the argument, which is the basis under which the Companies performed the analysis submitted in response to the KIUC's data request, that the Companies' FAC recovery from customers and the RSG make-whole payments they received from MISO somehow overlapped by $5.6 million, and the RSG distributions that offset the overlap are ignored, the Commission's authorities do not support KIUC's position.

First, the requirements of 807 KAR 5:056 Section 1(6) define the cost of fuel recoverable through the fuel clause as follows:

> The cost of fossil fuel shall include no items other than the invoice price of fuel less any cash or other discounts. The invoice price of fuel includes the cost of the fuel itself and necessary charges for transportation of the fuel from the point of acquisition to the unloading point, as listed in Account 151 of FERC Uniform System of Accounts for Public Utilities and Licensees.

Revenues and costs associated with RSG (both payments and distributions) clearly do not meet these requirements.

The Commission's interpretation of the fuel adjustment clause regulation also

makes clear that damages or awards, even if fuel-related (and the Companies' RSG revenues are not), are not fuel costs and cannot be credited in the calculation of the fuel adjustment clause. In the Commission's December 8, 1993 Order in a KU proceeding to refund to Kentucky customers over $35 million in excessive fuel charges KU recovered from fuel suppliers and held in escrow, the Commission denied KU's request to flow the escrowed funds back to customers through KU's FAC:

> The use of the FAC to accomplish the refund of the escrow fund is not appropriate. 807 KAR 5:056 narrowly defines what constitutes fuel costs which are recoverable through the mechanism. The refund of the escrow fund does not conform to this narrow definition.[16]

The Commission described this holding in a subsequent order as "significantly limiting the type of costs which qualify as fuel costs."[17] If the refund of excessive fuel costs recovered from fuel suppliers is not appropriate to credit through the FAC, neither is it appropriate to credit RSG make-whole payments through the FAC, which payments are not related to fuel costs and were not provided by fuel vendors.

Then, in its July 21, 1994 Order in Case No. 90-360-C, the Commission expressly stated that "damages awarded by courts, while fuel related, are not fuel costs as defined by the FAC regulation." (Order, pp. 25-26). Furthermore, in its February 21, 1997 Order in Case No. 94-523, the Commission addressed whether the proceeds from litigation resulting from fraudulent fuel procurement contracts should be returned through the fuel adjustment clause, and held that the proceeds could not be returned to customers through

[16] *In the Matter of: Application of Kentucky Utilities Company to Amortize, by Means of Temporary Decrease in Rates, Net Fuel Cost Savings Recovered in Coal Contract Litigation*, Case No. 93-113, Order at 4 (December 8, 1993) (emphasis in original).

[17] *In the Matter of Big Rivers Electric Corporation's Proposed Mechanism to Credit Customers Amounts Recovered in Judicial Proceedings Involving Fuel Procurement Contracts*, Case No. 94-453, Order at 4 (February 21, 1997).

utility's FAC because such proceeds were not sufficiently fuel-related.[18] The Commission stated:

> [S]ince the recovered amounts are not fuel cost refunds coming from fuel suppliers and are for actions other than fuel procurement (i.e. breach of fiduciary duty), considering the proceeds as a reduction or adjustment to fuel costs is contrary to the literal language of Commission Regulation 807 KAR 5056.

If "damages awarded by courts, while fuel related, are not fuel costs as defined by the FAC regulation," neither are RSG make-whole payments appropriate to include in the Companies' FAC calculations or review process because such payments are not necessarily or directly related to fuel costs, were not provided by fuel vendors and were for actions other than fuel procurement (i.e., the difference between the offer and the Energy Market Revenues for the Commitment Period).

For years the Commission has strictly interpreted FAC requirements, in part to avoid any "unintended consequences" of a more liberal interpretation. A consequence of this policy of strict interpretation is that if the sum of the Companies' RSG make-whole payments and RSG distributions (i.e., the net RSG amount) created an expense, it would not be recoverable through the FAC.

Q. Toward the end of his testimony, Mr. Baron engages in a very brief discussion and analysis of what he calls "distribution costs."[19] What are "distribution costs" and how do they relate to this proceeding?

A. The "distribution costs" to which Mr. Baron refers are the RSG distributions I discussed at the beginning of my testimony. RSG distributions are uplift costs MISO collects from all market participants to fund the RSG make-whole payments it pays out to generators.

[18] *In the Matter of Big Rivers Electric Corporation's Proposed Mechanism to Credit Customers Amounts Recovered in Judicial Proceedings Involving Fuel Procurement Contracts*, Case No. 94-453, Order at 6-8 (February 21, 1997).
[19] Direct Testimony of Stephen J. Baron at 16.

(When the Companies were MISO members, they were such generators.) The very fact that RSG make-whole payments are funded by socialized uplift costs, not fuel-related revenues of any kind, is yet more evidence that RSG make-whole payments have no relation to fuel costs, making such payments inappropriate to consider in a fuel adjustment clause review proceeding.

Q. Do you agree with KIUC's position that the Commission need not consider the amount of RSG distributions the Companies paid to MISO?

A. No. KIUC asks the Commission to ignore completely the most directly related cost (RSG distributions) of obtaining RSG make-whole payment revenue. The Companies' position is that neither RSG cost nor RSG revenue is relevant to these proceedings. Nevertheless, if the Commission decides to take RSG make-whole payments into account in these proceedings, then the amount of RSG distributions the Companies paid must be recognized. Assuming for the sake of the argument that the RSG make-whole payments are FAC-related, then RSG distributions necessarily are as well because they are the means by which RSG make-whole payments are funded; they are the cost most directly related to obtaining RSG make-whole revenue. In other words, if RSG make-whole payments are erroneously construed to be "cash or other discounts" for FAC purposes, then RSG distributions must be construed to be part of the "invoice price of fuel."[20] Indeed, KIUC's position in its February 7, 2007 First Set of Data Requests expressly defines "Make Whole Payment" to include both RSG make-whole payments and RSG distributions.[21]

In the event the Commission decides to take RSG make-whole payments and

[20] *See* 807 KAR 5:056 §1(6).
[21] Definitions No. 13 p. 1

RSG distributions into account, it should disregard Mr. Baron's "analysis" thereof. Mr. Baron asserts that because $15.8 million (which is the difference between the $29.6 million of RSG make-whole payments "associated" with native load and the $13.8 million the Companies paid in RSG distributions for native load) is greater than the $5.6 million disallowance he recommends, there is no need to take RSG distributions into account. Mr. Baron provides no justification for his assertion.

RSG make-whole payments make the Companies whole for the times when the Energy Market Revenue for a unit's Commitment Period was not sufficient to meet the Companies' offer for that Commitment Period. Thus, RSG make-whole payments are not a windfall profit, but merely serve to make the Companies whole compared to their offer price.

The RSG distributions the Companies and others paid are what funded the RSG make-whole payments the Companies received. Based on the analysis to match the MISO settlement amounts with the Companies' AFB system, $13.8 million in RSG distributions paid by the Companies to MISO is attributable to native load. Thus, the Companies had to pay $13.8 million to obtain the $29.6 million they needed to be made whole; in other words, though the Companies needed $29.6 million to be made whole for the generation MISO required the Companies to dispatch to maintain reliable grid operations, the Companies received a net payment of only $15.8 million because they had to pay $13.8 million in RSG distributions. The net effect of the RSG make-whole payments the Companies received and the RSG distributions they had to pay is that the Companies are still $13.8 million short of being made whole.

Thus, assuming for the sake of the argument that the Companies' FAC recovery

from customers and the RSG make-whole payments they received from MISO somehow overlapped by $5.6 million, when RSG distributions are taken into account the "overlap" disappears and continues to leave the Companies $8.2 million short of being made whole. In sum, when RSG costs and revenues are netted, as they should be, there is no reasonable basis to claim that $5.6 million of the Companies' FAC recovery was improper because there is no overlap between the Companies' FAC recovery and the Companies' net RSG revenue.

Q. Mr. Baron asserts that if the Commission determines that a disallowance is necessary, interest on the amount of the disallowance is appropriate, and that the interest rate should be either "each Company's respective weighted cost of capital or, at a minimum, the short term cost of debt capital for each Company." Do you agree with Mr. Baron's assertions?

A. No. Mr. Baron's recommendation is not only punitive, but in direct conflict with the Commission's long standing policy to use the Three-Month Commercial Paper Rate as reported in the Federal Reserve Bulletin and the Federal Reserve Statistical Release.[22]

Q. What is your recommendation to the Commission?

A. The Commission should reject KIUC's claims and approve the proposed roll-in of fuel costs in these proceedings and the charges and credits billed by LG&E and KU through their FACs for the two-year period under review in these proceedings. The RSG make-whole payments and distributions are clearly base rate costs and revenues which should

[22] *In the Matter of an Examination by the Public Service Commission of the Application of the Fuel Adjustment Clause of the Louisville Gas and Electric Company from November 1, 1996 to April 30, 1997*, Case No. 96-524-A, and *In the Matter of an Examination by the Public Service Commission of the Application of the Fuel Adjustment Clause of the Louisville Gas and Electric Company from May 1, 1997 to October 31, 1997*, Case No. 96-524-B, and *In the Matter of an Examination by the Public Service Commission of the Application of the Fuel Adjustment Clause of the Louisville Gas and Electric Company from November 1, 1997 to April 30, 1998*, Case No. 96-524-C, Order at 8-9 (December 2, 1999) (citing *re Equitable Gas Co.*, 144 P.U.R.4th 378 (Ky. P.S.C. April 12, 1993).

be allowed not only to offset or net with other MISO revenues and expenses that are either presently included in base rates or are base rate items, but also to offset against the other changes in costs and revenues in base rates. Indeed, as noted in the February 23, 2007 data response to KIUC Request No. 2 and earlier in my testimony, the estimated amounts of RSG make-whole payments are still subject to the ongoing MISO settlement and resettlement process. Though the impact of MISO's latest resettlement process is unknown at this time, it is certain that the process has and will continue to affect the amounts of the Companies' RSG make-whole payments and distributions, as well as other MISO-related costs and revenues for an indefinite period.

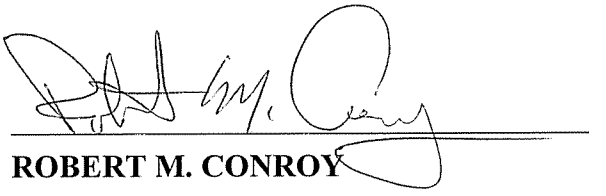
Q. Does this conclude your testimony?

A. Yes.

VERIFICATION

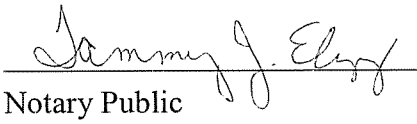
COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Manager, Rates for E.ON U.S. Services, Inc., that he has personal knowledge of the matters set forth in the foregoing testimony, and the answers contained therein are true and correct to the best of his information, knowledge and belief.



ROBERT M. CONROY

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 3rd day of May 2007.



Notary Public (SEAL)

My Commission Expires:

November 9, 2010

APPENDIX A

Robert M. Conroy

Manager, Rates
E.ON U.S. Services Inc.
220 West Main Street
Louisville, Kentucky 40202
(502) 627-3324

Education

Masters of Business Administration

Indiana University (Southeast campus), December 1998. GPA: 3.9.

Bachelor of Science in Electrical Engineering;
Rose Hulman Institute of Technology, May 1987. GPA: 3.3

Essentials of Leadership, London Business School, 2004.

Center for Creative Leadership, Foundations in Leadership program, 1998.

Registered Professional Engineer in Kentucky, 1995.

Previous Positions

Manager, Generation Systems Planning	Feb. 2001 – April 2004
Group Leader, Generation Systems Planning	Feb. 2000 – Feb. 2001
Lead Planning Engineer	Oct. 1999 – Feb. 2000
Consulting System Planning Analyst	April 1996 – Oct. 1999
System Planning Analyst III & IV	Oct. 1992 - April 1996
System Planning Analyst II	Jan. 1991 - Oct. 1992
Electrical Engineer II	Jun. 1990 - Jan. 1991
Electrical Engineer I	Jun. 1987 - Jun. 1990

Professional/Trade Memberships

Registered Professional Engineer in Kentucky, 1995.

A.2 Charge Type Overview

Charge Types represent specific credits and charges as authorized by the Midwest ISO approved Federal Energy Regulatory Commission (FERC) tariff. Each Settlement Statement has separately defined Charge Types.

Settlement Charge Type totals are provided at a daily aggregate level for participants for each Operating Day settled. Depending on the Charge Type, they may be calculated hourly and summed to a daily total, or they may be calculated on a daily interval. All daily totals are rounded to the nearest cent.

Each Operating Day is settled a minimum of four times and may be settled additional times as deemed necessary by the Midwest ISO. Charge Types are fully calculated every time an Operating Day is settled with the results displayed on the Settlement Statement as the "Total." For invoicing purposes, all Settlement Statements display the original calculated Charge Type total value with each subsequent settlement displaying any calculated difference between the current and the prior calculated settlement. For additional details, please refer to Section 2.6.5.

A.2.1 Day-Ahead Charge Types

The following Charge Types are utilized in the Day-Ahead Settlement Statements.

Exhibit A.2-1: Day-Ahead Charge Type Names

Section	Day-Ahead Charge Type Name	Acronym
B.1	Day-Ahead Asset Energy Amount	DA_ASSET_EN
B.2	Day-Ahead Financial Bilateral Transaction Congestion Amount	DA_FIN_CG
B.3	Day-Ahead Financial Bilateral Transaction Loss Amount	DA_FIN_LS
B.4	Day-Ahead Market Administration Amount	DA_ADMIN
B.5	Day-Ahead Schedule 24 Allocation Amount	DA_SCHD_24_ALC
B.6	Day-Ahead Non-Asset Energy Amount	DA_NASSET_EN
B.7	Day Ahead Congestion Rebate on Carve-Out Grandfathered Agreements	DA_GFACO_RBT_CG
B.8	Day Ahead Losses Rebate on Carve-Out Grandfathered Agreements	DA_GFACO_RBT_LS
B.9	Day Ahead Congestion Rebate on Option B Grandfathered Agreements	DA_GFAOB_RBT_CG
B.10	Day Ahead Losses Rebate on Option B Grandfathered Agreements	DA_GFAOB_RBT_LS
B.11	Day-Ahead Revenue Sufficiency Guarantee Distribution Amount	DA_RSG_DIST
B.12	Day-Ahead Revenue Sufficiency Guarantee Make Whole Payment Amount	DA_RSG_MWP
B.13	Day-Ahead Virtual Energy Amount	DA_VIRT_EN

A.2.2 Financial Transmission Rights Charge Types

The following Charge Types are utilized in the FTR Settlement Statements.

Exhibit A.2-2: Financial Transmission Rights Charge Type Names

Section	FTR Charge Type Name	Acronym
C.1	FTR Hourly Allocation Amount	FTR_HR_ALC
C.2	FTR Market Administration Amount	FTR_ADMIN
C.3	FTR Monthly Allocation Amount	FTR_MN_ALC
C.4	FTR Transaction Amount	FTR_TXN
C.5	FTR Yearly Allocation Amount	FTR_YR_ALC

A.2.3 Real-Time Charge Types

The following Charge Types are utilized in the Real-Time Settlement Statements.

Exhibit A.2-3: Real-Time Charge Type Names

Section	Real-Time Charge Type Name	Acronym
D.1	Real-Time Asset Energy Amount	RT_ASSET_EN
D.2	Real-Time Distribution of Losses Amount	RT_LOSS_DIST
D.3	Real-Time Financial Bilateral Transaction Congestion Amount	RT_FIN_CG
D.4	Real-Time Financial Bilateral Transaction Loss Amount	RT_FIN_LS
D.5	Real Time Congestion Rebate on Carve-Out Grandfathered Agreements	RT_GFACO_RBT_CG
D.6	Real Time Losses Rebate on Carve-Out Grandfathered Agreements	RT_GFACO_RBT_LS
D.7	Real-Time Market Administration Amount	RT_ADMIN
D.8	Real-Time Schedule 24 Allocation Amount	RT_SCHD_24_ALC
D.9	Real-Time Schedule 24 Distribution Amount	RT_SCHD_24_DIST
D.10	Real-Time Miscellaneous Amount	RT_MISC
D.11	Real-Time Net Inadvertent Distribution Amount	RT_NI_DIST
D.12	Real-Time Non-Asset Energy Amount	RT_NASSET_EN
D.13	Real Time Revenue Neutrality Uplift Amount	RT_RNU
D.14	Real-Time Revenue Sufficiency Guarantee First Pass Distribution Amount	RT_RSG_DIST1
D.15	Real-Time Revenue Sufficiency Guarantee Make Whole Payment Amount	RT_RSG_MWP
D.16	Real-Time Uninstructed Deviation Amount	RT_UD
D.17	Real-Time Virtual Energy Amount	RT_VIRT_EN

Attachment C

REVENUE SUFFICIENCY GUARANTEE ELIGIBILITY SUPPLEMENT

Version 1.3

Last Updated: January 12, 2007

Revision History

Version	Date	Description
3	11-20-2006	Revisions were made in the following sections: - Removed sections pertainign the Unit Trip within Min Run eligibility checks - Updated multiple sections to reflect the change from "in an Approved UDS Case Soltuion" to On-Line - Updated certain definitions and added CP Stop Time and MW amounts specified in the SCUC schedule to the List - Used SCUC Instruction and SCUC Instructed Hour Of Operation were pertinent - Modified Start Up Eligiblity - Updated the Is Following Dispatch section - Added a new example for a Unit Not Follwing Dispatch
2	08-29-2006	Revisions were made in the following sections: A. Revenue Sufficiency Guarantee Overview - Carify Overview - Clarify Commitment Block Definition - Clarify Initial On Hours Definition B. Start-up Cost - Clarified Start-up Cost determination paragraph to correspond to the formulation -Correct Start-up Cost determination example - Clarified DA Start-up Cost table, removed IOH equal to zero F. Special Topics - Update section F.3 to include special logic for Quick Start Generation Resources
1	05-15-2006	Revisions were made in the following sections: A. Revenue Sufficiency Guarantee Overview - Minor edits throughout section - Abbreviations added - Terms and Full Descriptions added and clarified B. Start-up Cost - Minor edits throughout section - Clarified use of Control Mode Transition in Start-up Cost determination - Corrected the formula for determining the appropriate Start-up Cost - Added a row to exhibit B.2-1: Day-Ahead Start-up Eligibility Summary C. No-Load Cost

Version	Date	Description
		- Minor edits throughout section - Clarification across section in uniform usage 'On-Line', 'Off-Line', and a unit being 'Present in an Approved UDS Solution' - Clarification across section in uniform usage of Set Point for Hourly Integrated values and Dispatch Instructions for 5-minute values D. Incremental Energy Cost - Minor edits throughout section - Clarification across section in uniform usage 'On-Line', 'Off-Line', and a unit being 'Present in an Approved UDS Solution' - Clarification across section in uniform usage of Set Point for Hourly Integrated values and Dispatch Instructions for 5-minute values E. Unit Commitment and Dispatch - Minor edits throughout section F. Special Topics - Minor edits throughout section - Added section 'F.5 Hourly No-Load and Incremental Energy Cost as calculated using LMP Case interval Data' G. Eligibility Scenarios - Minor edits throughout section
0	03-01-2006	Initial Draft

TABLE OF CONTENTS

List of Exhibits:

A. Revenue Sufficiency Guarantee Overview

A.1 Introduction

The Revenue Sufficiency Guarantee (RSG) Supplement provides additional detail on the eligibility rules for RSG Make Whole Payments. This supplement describes how the Day-Ahead and Real-Time Make Whole Payments are calculated by considering eligibility rules related to Start-up, No-Load, and Incremental Energy Costs. The document also provides detail on related special topics that have been the source of Market Participant disputes and questions.

Resources that are economically committed by the Midwest ISO and receive SCUC Instructions in the Day-Ahead and Real-Time Energy Markets are guaranteed recovery of their Start-up, No-Load, and Incremental Energy Costs providing that they meet specified eligibility criteria. Start-up, No-Load, and Incremental Energy Costs are collectively referred to as Production Costs. On an hourly basis, the Day-Ahead Real-Time System (DART) determines whether a Resource has met the eligibility requirements to have their Production Costs guaranteed. A settlement calculation compares the Resource's Market Value during the relevant SCUC-Instructed hours of operation to the Production Costs for those same hours. For the Day-Ahead Market, the Market Value and Production Costs are compared across all eligible hours within a single Operating Day whereas the Real-Time Market compares these values across the hours of each contiguous set of SCUC Instructions within a single Operating Day. If the total Market Value is less than the total eligible Production Cost amount, the difference is credited to the Asset Owner as a RSG Make Whole Payment Amount.

RSG Make Whole Payment Amounts may be mitigated by Resource by day when Production Costs for the Operating Day exceed the Independent Market Monitor's pre-determined reference tolerances. These actions prevent Asset Owners from exercising undue influence when their Resources are known to be in demand for reliability.

The RSG Make Whole Payment Amount is summed for each hour for all Asset Owners. RSG Make Whole Payments are funded through the RSG Distribution Amount. Both the RSG Make Whole Payment and Distribution Amounts are presented in the main section of the *Business Practices Manual (BPM) for Market Settlements*.

RSG Independent Market Monitoring and RSG Distribution Amount rules and calculations are not covered in this document. The objective of this document is to provide additional detail on the Production Cost calculation and related eligibility criteria.

A.2 Revenue Sufficiency Guarantee Definitions

In addition to the Midwest ISO *Business Practices Manual for Definitions*, there are several abbreviations and definitions that are unique to RSG. The abbreviations and acronyms are provided in Section A.2.1 whereas the definitions of terms are provided in Section A.2.2.

A.2.1 Abbreviations and Acronyms

This supplement provides background information, guidelines, business rules and processes established by the Midwest ISO for the calculation of RSG Make Whole Payment Amounts. Exhibit A.2-1 lists the abbreviations and acronyms used in this document.

Exhibit A.2-1: RSG Abbreviations

Abbreviation	Term (units)
CP	Commitment Period
DA_ASOF_MWP	Day-Ahead As-Offered Make Whole Payment
DA_LMP	Day-Ahead Locational Marginal Price
DA_RSG_ELIGIBILITY	Hourly Day-Ahead Revenue Sufficiency Guarantee Eligibility (flag)
DA_RSG_PC	Day-Ahead Revenue Sufficiency Guarantee Production Cost Amount ($)
DART	Day-Ahead and Real-Time Energy Market System
GEN_SP	Hourly Generation Set Point Volume (MWh)
HE	Hour Ending (date)
IOH	InitialOnHours (integer)
MV	Market Value ($)
MWP	Make Whole Payment ($)
OD	Operating Day (date)
REG_DN	Hourly Generation Regulation Down Volume (MWh)
REG_UP	Hourly Generation Regulation Up Volume (MWh)
RT_ASOF_MWP	Real-Time As-Offered Make Whole Payment
RT_BLL_MTR	Hourly Real-Time Metered Billable Volume per Resource (MWh)

Abbreviation	Term (units)
RT_LMP	Real-Time Locational Marginal Price
RT_PC_AMT_CP	Commitment Period Real-Time Revenue Sufficiency Guarantee Production Cost Amount ($)
RT_RSG_ASSET_CR_HR	Hourly Real-Time Revenue Sufficiency Guarantee Credit Amount for a Market Resource ($)
RT_RSG_ELIGIBILITY	Real-Time Revenue Sufficiency Guarantee Eligibility (flag)
RT_RSG_MIT_PC	Real-Time Mitigated RSG Production Cost Amount ($)
RT_RSG_PC	Real-Time RSG Production Cost Amount ($)
UD_XMPT	Uninstructed Deviation Exemption Flag (flag)

A.2.2 Definitions

The following definitions are for capitalized terms used in this document.

Exhibit A.2-2: RSG Definitions

Term	Full Description
As-Committed Offer	The Market Participant's Offer parameters at the actual time the commitment was made.
As-Dispatched Offer	The Market Participant's Offer parameters at the time the Resource was dispatched.
Commitment Block	A Commitment Block is a single set of Midwest ISO specified Day-Ahead or Real-Time SCUC Instructions. In short, a Commitment Block refers to a Call On / Call Off SCUC Instruction pair. Adjacent or Overlapping Commitment Blocks form a single continuous Commitment Period.
Commitment Period	A Commitment Period is defined as the set of contiguous Commitment Blocks.

Term	Full Description
Control Mode	The Control Mode is a flag set by the Balancing Authority that indicates the status of each Generating Resource. The three possible statuses are "0" indicating the Resource is offline, "1" indicating the Resource is online and not regulating, and "2" indicating the resource is online and regulating. Please see Data Exchange Specification – *Volume 07 – ICCP Data Exchange Specification for technical information.*
Cooling Time	Cooling Time represents how long it takes the Resource to cool from a state of Hot to Intermediate -or- from a state of Hot to Cold. Both of these values are submitted by Market Participants as part of their Offer parameters. The Cooling Time is used to figure the state of the Resource for the next Start-up (and the related Start-up Cost).
CP Start Time	Call On time of the Commitment Period as defined by the SCUC Instructions.
CP Stop Time	Call Off time of the Commitment Period as defined by the SCUC Instructions.
Day-Ahead Revenue Sufficiency Guarantee Production Cost Amount	Hourly Production Cost calculated by DART system that includes Start-up Costs, No-Load Costs and the Incremental Energy Costs. DART allocates awarded Start-up Costs across all eligible hours of the Commitment Period. The total hourly eligible Production Cost value is calculated by DART for each generator and provided to Market Settlements.
Hourly Day-Ahead Revenue Sufficiency Guarantee Eligibility	An hourly flag that indicates whether a Resource/hour was economically committed by the Midwest ISO. A "Y" indicates the Resource may be eligible for cost recovery of Production Costs and an "N" indicates the Resource is not eligible for cost recovery of Production Costs.
Hourly Generation Regulation Down Volume	This value is provided to Market Settlements as a positive value for each Generation Resource. It represents the Generation Resource's responsibility to provide downward Regulation.
Hourly Generation Regulation Up Volume	This value is provided to Market Settlements as a positive value for each Generation Resource. It represents the Generation Resource's responsibility to provide upward Regulation.
Hourly Generation Set Point Volume	This is also known as the Midwest ISO dispatch instruction that is integrated to an hourly value per Resource and includes any activated reserve sharing response.

Term	Full Description
Hourly Incremental Energy Cost	Dollar amount representing the cost incurred by the Market Participant for operating a Generation Resource at a non-zero MW output level. Based on the Market Participant's Energy Offer, the Hourly Incremental Energy Cost is the "Area under the Curve" from zero to the State Estimator observed MW level sampled in each LMP Case. Each LMP Case interval within the Commitment Period is integrated to determine the Hourly Incremental Energy Cost for Real-Time or the "Area under the Curve" for zero to the cleared Day-Ahead MW for Day-Ahead.
Hourly No-Load Cost	Dollar amount representing the cost incurred by the Market Participant for operating an On-Line Generation Resource at zero (0) MW.
Hourly Real-Time Revenue Sufficiency Guarantee Eligibility	An hourly flag that indicates whether a Resource/hour was economically committed by the Midwest ISO. A "Y" indicates the Resource may be eligible for cost recovery of Production Costs and an "N" indicates the Resource is not eligible for cost recovery of Production Costs.
Hourly Real-Time Revenue Sufficiency Guarantee Make Whole Payment Amount	This is the hourly Asset Owner total credit amount for all their Resources. The formula result is per hour. The hourly values are displayed beneath the Charge Type total in the Line Item section of the statement. Please refer to *Business Practices Manual (BPM) for Market Settlements* - Attachment A, Section D.13.3 for the calculation definition of this component.
Initial Commit Status	Indicates the original commitment status (either MISO committed or Must-Run) for the initial Commitment Block within a Commitment Period.
InitialOnHours	InitialOnHours (IOH) is the number of hours elapsed since the Resource was on-line as seen by the Day-Ahead Commitment Process. A positive value means that the Resource was seen as on-line for a period of time leading up to the start of the OD. A negative value means that the Resource was seen as off-line for a period leading up to the start of the OD.
Make Whole Payment	Represents for a Commitment Period, the total amount of Production Costs not covered by the Resource's Market Value. This equation is performed for all Commitment Periods for a Resource for an Operating Day.
Market Value	LMP Revenue based on generator output of a Market Resource over the Commitment Period. Day-Ahead Market Value is calculated as DA_LMP times DA_SCHD. Real-Time Market Value is calculated as RT_LMP times RT_BLL_MTR.
MW amounts specified in the SCUC schedule	MW amounts specified in the SCUC schedule is defined as the Hourly Integrated Generation Set Point.

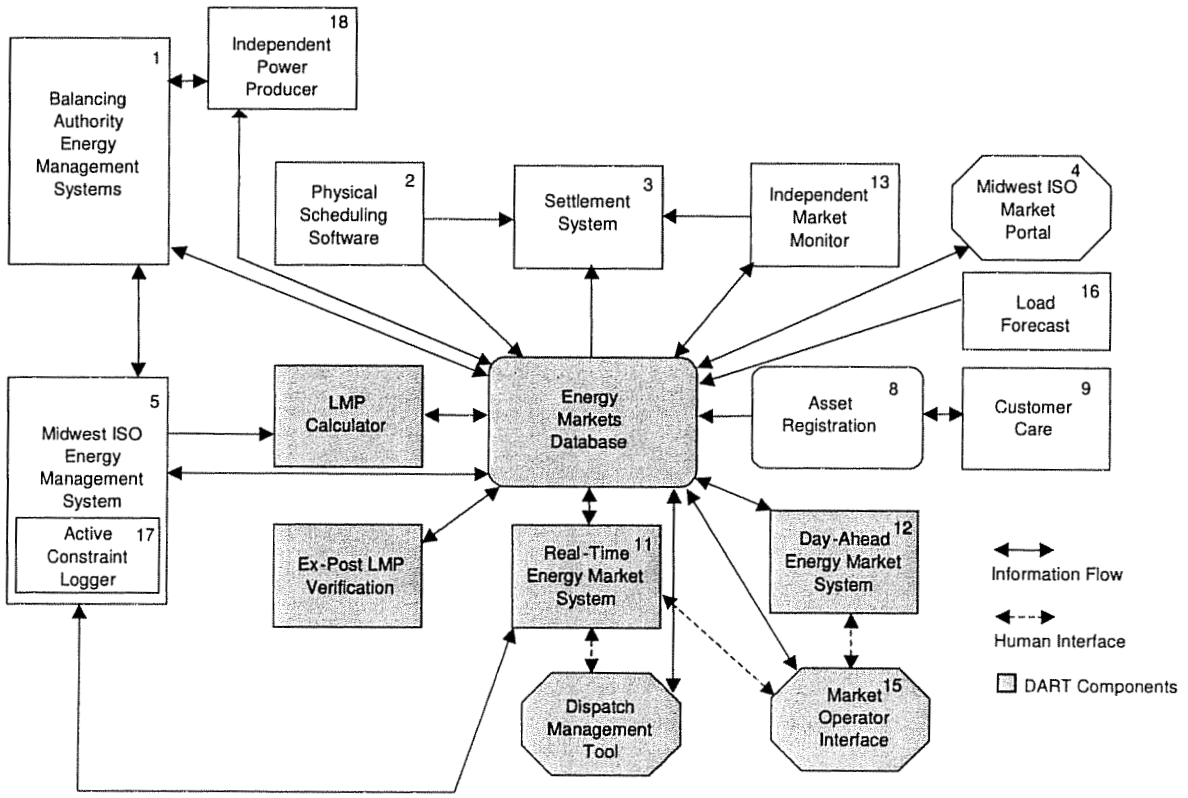
Term	Full Description
Notification Period Start	The CP Start Time minus the Start-up time minus Notification Time.
Notification Window	The period of time bounded by the Notification Period Start and the CP Start Time.
Off Duration	Off Duration represents the time difference between the Resource's last Control Mode Transition to Off prior to the start of the Commitment Period and the CP Start Time. The value is used to determine the state of the Resource (Hot, Intermediate, or Cold) at Start-up.
Off-Line	The unit is not present in the State Estimator solution, meaning that the Midwest ISO system has seen breaker open or less than .5 MWs of injection.
On-Line	The unit is present in the State Estimator solution, meaning that the Midwest ISO system has seen breaker closure and at least .5 MWs of injection.
Real-Time Mitigated RSG Production Cost Amount	Hourly mitigated Start-up Cost, No-Load Costs, and Incremental Energy Offer provided by Independent Market Monitor.
Real-Time Revenue Sufficiency Guarantee Make Whole Payment Amount	Represents for a Commitment Period, the total amount of Production Costs not covered by the Resource's Market Value. This equation is performed for all Commitment Periods for a Resource for an Operating Day.
Real-Time Revenue Sufficiency Guarantee Production Cost Amount	This amount represents the total eligible Commitment Period Real-Time Production Costs, defined as Start-up, No-Load and Incremental Energy Costs. This equation is performed for each Commitment Period for a Resource for an Operating Day.
Real-Time RSG Production Cost Amount	Hourly Production Cost calculated by DART system that includes Start-up Costs, No-Load Costs and the Incremental Energy Costs. DART allocates awarded Start-up Costs across the entire Commitment Period. Commitment Periods spanning midnight places all Start-up Costs across the start of the Commitment Period in the prior OD.
Start Time Window	The Start Time Window is the period between the CP Stop Time of the first non-contiguous commitment block preceding the Commitment Period and the CP Stop Time of the Commitment Period
Start-up Cost	Dollar amount representing all fixed costs incurred by the Market Participant associated with fulfilling a Midwest ISO commitment. The Start-up Cost should include all fixed costs associated with fulfilling the commitment including ramping on and ramping off the Resource.

Term	Full Description
Uninstructed Deviation Exemption Flag	If Uninstructed Deviation Exemption Flag is "Y", the Resource is exempted of Uninstructed Deviation charges.

A.3 System Overview

There are several systems involved with generating the RSG Make Whole Payment determinants. The systems consist of software, servers, and related applications used to support the operation and settlement of Day-Ahead and Real-Time Energy Markets. Exhibit A.3-1 depicts the major components of these systems.

Exhibit A.3-1: System Components Diagram



The following components are shown in Exhibit A.3-1.

1) ***Balancing Authority Energy Management Systems*** – The Balancing Authority Energy Management Systems are within the Market Footprint and include Resources that are dispatched by the Midwest ISO.

2) ***Physical Scheduling Software (PSS)*** – PSS is the system for entering and disseminating interchange transaction information including Physical Bilateral Transactions. Physical Bilateral Transactions are submitted to the PSS via NERC E-Tag.

3) ***Settlement System*** – This system calculates the Market Participant charges and credits for the Day-Ahead Energy Market, the Real-Time Energy Market, and the Financial Transmission Rights (FTR) Market.

4) ***Midwest ISO Market Portal*** – This is the secure internet website through which Market Participants can upload information to and download information from the Midwest ISO. Market Participant information is entered via input/output displays and data templates.

5) ***Midwest ISO Energy Management System (EMS)*** – The Midwest ISO's EMS consists of the power system network analysis functions (including the State Estimator and Contingency Analysis) that are used by Midwest ISO Operators to maintain reliable power system operations.

6) ***Locational Marginal Pricing (LMP) Calculator*** – The LMP Calculator performs ex-post analysis of Real-Time Energy Market operations to identify marginal resources/demands based on actual performance versus Dispatch Instructions and calculates the three components of LMP (energy, congestion, losses) for each commercially significant location in the Market Footprint.

7) ***Energy Markets Database*** – This is the central repository of all market-related data and coordinates market component communications.

8) ***Asset Registration*** – Asset Registration is the system for the storing of authorized Market Participant information relevant to participation in Midwest ISO markets.

9) ***Customer Care*** – Customer Care supports customer services and Midwest ISO response to market inquiries. It is the source of participant initiated Asset Registration changes.

10) ***Ex-Post LMP Verification*** – Ex-Post LMP compares and corrects the LMP Calculator's results against actual operating conditions and events

11) ***Real-Time Energy Market System*** – This system provides desired generation dispatches for a near-term forecast of operating conditions for the Real-Time Energy Market, using a least-offer price SCED algorithm. For the Real-Time Energy Market the Scheduling, Pricing, and Dispatch (SPD) application is executed on a five-minute periodic basis to produce a constrained economic dispatch and determines ex-ante LMPs based on the current system conditions, the actively managed transmission constraints, and the forecast system conditions.

12) ***Day-Ahead Energy Market System*** – The Day-Ahead Market System provides Security Constrained Unit Commitment (SCUC) and Security Constrained Economic Dispatch (SCED) schedules, based on Market Participant submitted Offers and Bids. The following applications are executed for each hour:

- ***Resource Scheduling and Commitment (RSC)*** is a Security Constrained Unit Commitment which performs generation commitment for the 24-hour period
- ***Scheduling, Pricing, and Dispatch (SPD)*** uses the Network Model to perform dispatch for 24 hours and determines LMPs
- ***Simultaneous Feasibility Test (SFT)*** performs contingency analysis for each hour to evaluate network security of a set of injections and withdrawals under a range of contingent scenarios

13) ***Independent Market Monitor (IMM)*** – The IMM provides the independent observation of the market activities to detect market rule violations and the influence of market power.

14) ***Dispatch Management Tool (DMT)*** – The DMT allows the Operator to make changes to the planned operation of specific Generation and Demand Response Resources.

15) ***Market Operator Interface (MOI)*** – The MOI allows the Operator to view the inputs and outputs of the market system and to make input parameter adjustments.

16) ***Load Forecast*** – This system provides short-term Load forecast over the next hour for the Real-Time Energy Market dispatch and provides 24 hour Load forecast values for rolling seven days for use in the Reliability Assessment Commitment (RAC) for the Real-Time Energy Market.

17) ***Active Constraint Logger*** – The Active Constraint Logger records and logs transmission constraints that are "actively" being controlled and impacting the dispatch solution produced by UDS in the Real-Time Energy Market.

18) ***Independent Power Producer (IPP)*** – IPP is a Generation Resource that operates within a Balancing Authority (or is a BA) and that submits MW/Price Offers into the Energy Markets, independently of any other Generation Resource(s) within the BA.

A.4 Calculation Overview

This section provides a simple example of a RSG Make Whole Payment. This initial example is applicable to either the Day-Ahead or Real-Time Market; the example will be referenced throughout the document as eligibility rules and calculations are discussed. The objective of this section is to provide the reader with an introduction to basic RSG Make Whole Payment components. Future sections will break these components down into more granular elements. For a detailed description of the Day-Ahead and Real-Time RSG Make Whole Payment calculations please see the *Business Practices Manual for Market Settlements – Attachment A.*

On an hourly basis, DART will calculate and pass to Market Settlements a Resource's eligible Production Costs. The Midwest ISO will allocate this Production Cost over the Commitment Period (CP). On a daily basis, settlement calculations will compare the Production Cost of a resource to the total revenue or Market Value (MV) of the resource. If the MV is less than the Production Cost, the difference will be made whole and will be allocated over all hours of the CP. If the Independent Market Monitor provides mitigated production cost determinants for a Resource, the Market Settlements system will calculate a Make Whole Payment and if certain criteria are met, replace the As Offered Make Whole Payment with a mitigated Make Whole Payment. Hourly As-Offered and IMM Mitigated Make Whole Payment amounts are displayed on the Asset Owners Settlement Statement.

Exhibit A.4-1 illustrates a simple example of how Market Value is compared to Production Cost to determine the RSG Make Whole Payment.

Exhibit A.4-1: Resource with CP of 12 Hours (Simple Example)

	"Market Value"			Production Costs				
HE	MW	LMP	MV	Start-up	No-Load	Incremental	PC	Net
1	30	$18.99	$569.70	$45.76	$4.00	$667.14	$716.90	
2	30	$17.90	$537.00	$45.76	$4.00	$667.14	$716.90	
3	30	$17.33	$519.90	$45.76	$4.00	$667.14	$716.90	
4	30	$17.23	$516.90	$45.76	$4.00	$667.14	$716.90	
5	30	$17.32	$519.60	$45.76	$4.00	$667.14	$716.90	
6	30	$17.63	$528.90	$45.76	$4.00	$667.14	$716.90	
7	30	$18.19	$545.70	$45.76	$4.00	$667.14	$716.90	
8	30	$19.28	$578.40	$45.76	$4.00	$667.14	$716.90	
9	30	$19.86	$595.80	$45.76	$4.00	$667.14	$716.90	
10	30	$20.45	$613.50	$45.76	$4.00	$667.14	$716.90	
11	30	$21.27	$638.10	$45.76	$4.00	$667.14	$716.90	
12	30	$21.79	$653.70	$45.76	$4.00	$667.14	$716.90	
Totals			$6817.20	$549.12	$48.00	$8,005.68	$8,602.80	-$1,785.84

In this example, the RSG Make Whole Payment Amount of -$1,785.54 will be allocated over all hours of the CP (HE1-12). Market Participants will see -$148.80 (-$1785.54/12) as their hourly Asset Owner Make Whole credit amount. For further examples and greater detail on the calculation of Make Whole Payments please refer to the *BPM for Market Settlements Attachment A.*

B. Start-up Cost

B.1 Definition and Calculation

Start-up Cost represents all costs associated with making the Resource available at the start of the Commitment Period. The Start-up Cost should include all fixed costs associated with fulfilling the commitment including ramping on and ramping off the Resource.

Start-up Costs are calculated using three sets of Market Participant submitted data: 1) Cooling Time, 2) Start-up Time, and 3) Start-up Cost. This data is organized into three states: Cold, Intermediate and Hot. The Midwest ISO recognizes that the engineering definition of Cold, Intermediate, and Hot will vary across Resources. The purpose of these states is to provide the Market Participant with three reference points to define the Transition Time, Start-up Time, and Start-up Cost.

The three datasets in Exhibit B.1-1 are used to determine the Start-up Cost.

Exhibit B.1-1: Start-up Cost Submitted Data

State	Cooling Time[1]	Start-up Time	Start-up Cost
Cold	HottoColdTime HHH:MM	ColdStartupTime HHH:MM	ColdStartupCost Number(10.2)
Intermediate	HottoIntermediateTime HHH:MM	IntermediateStartupTime HHH:MM	IntermediateStartupCost Number(10.2)
Hot	Not Applicable	HotStartupTime HHH:MM	HotStartupCost Number(10.2)

The time value submitted by the Market Participant for Cooling Time represents how long it takes the Resource to cool from a state of Hot to Intermediate (HottoIntermediateTime) and from a state of Hot to Cold (HottoColdTime).

The time value submitted by the Market Participant for Start-up Time represents how long it takes to make the Resource available from each of the three states (including ramp time).

The compensation requested by the Market Participant for Start-up Cost represents all costs associated with making the Resource available at the start of Commitment Period for each of the three states.

First, DART calculates the time difference between when the Resource last had a Control Mode transition to OFF prior to the start of the Commitment Period and the CP Start Time. For Day-Ahead Commitments time that the Resource last transitioned to OFF is determined by InitialOnHours plus the number of hours in the Operating Date up to the CP Start Time. The resultant time period is referred to as the Off Duration.

Next, the Off Duration is checked against the sum of the Cooling Time and Start-up Time to see if the Resource is a candidate for a Hot, Intermediate or Cold Start-up Cost. The Off Duration is initially compared against the Cooling Time and Start-up for Cold Start-up. If the Off Duration Period is greater than or equal to the sum of Hot-to-Cold plus Cold Start-up time, then the Start-up will be determined as Cold. Otherwise, the same check will be performed for Intermediate. If the Off Duration was greater than or equal to the sum of Hot-to-Intermediate plus Intermediate Start-up Time then the Start-up will be determined as Intermediate. Otherwise, the Start-up time will be determined as Hot..

[1] Cooling time is submitted for Hot-to-Intermediate and Hot-to-Cold only.

The calculation for determining the appropriate Start-up Cost is:

(Off Duration) = (Start of Commitment Period) – (Last Off Time)

If (Off Duration) >= (HotToColdTime) + (ColdStartupTime) then (ColdStartupCost)

Elseif (Off Duration) >= (HotToIntermediateTime) + (IntermediateStartupTime) then (IntermediateStartupCost)

Else (HotStartupCost)

Exhibit B.1-2: Start-up Cost Determination Example

	HottoColdTime HottoIntTime	ColdStartupTime IntStartupTime HotStartupTime	Last Off Time	Commitment Period Start	Result
1	24 hours 12 hours	12 hours 8 hours 5 hours	01/03/00 01:00	01/03/00 17:00	Hot
2	24 hours 12 hours	12 hours 8 hours 5 hours	01/02/00 10:00	01/03/00 17:00	Intermediate
3	24 hours 12 hours	12 hours 8 hours 5 hours	01/02/00 02:00	01/03/00 17:00	Cold
4	0 hours 0 hours	0 hours 0 hours 0 hours	01/02/00 09:00	01/03/00 17:00	Cold
5	24 hours 12 hours	5 hours 4 hours 4 hours	01/03/00 02:00	01/03/00 17:00	Hot
6	24 hours 12 hours	5 hours 4 hours 4 hours	01/03/00 01:00	01/03/00 17:00	Intermediate

B.2 Eligibility Rules

This section will address the general Eligibility Rules for Start-up Cost reimbursement. Eligibility Rules that are unique to the Day-Ahead and Real-Time Energy Markets will be discussed in their own subsection. Please see Section G for specific Start-up Cost eligibility scenarios.

Resource must be committed by the Midwest ISO - When a Market Participant submits their Resources to the Midwest ISO, each Resource Offer will have an associated Resource Offer commitment status. The four commitment statuses are as follows:

1) Unavailable - Designates that the Resource is not available for consideration in Energy Market commitment or dispatch (typically represents an off-line Resource out for maintenance).

2) Emergency - Designates that the Resource is available for commitment and dispatch in Emergency situations only.

3) Economic - Designates that the Resource is available for commitment and dispatch by the Midwest ISO. This is a default status for a Resource.

4) Must-Run (self-commit) - Designates that the Resource is committed per the Market Participant request and is available for dispatch by the Midwest ISO.

Resource Offers with an Initial Commit Status of Must-Run are not eligible because the Market Participant has self-committed this Resource. Eligibility to receive Start-up Costs is based upon the Midwest ISO economically committing that Resource.

Start-up Costs will be allocated - Resources that meet eligibility criteria will receive Start-up Costs. Such Start-up Costs will be allocated on a per minute basis across the Midwest ISO designated Commitment Period.

B.2.1 Day-Ahead Eligibility

On an hourly basis, DART determines whether a Generation Resource has met the eligibility requirements to have their Production Costs guaranteed. A Resource committed by the Midwest ISO in the Day-Ahead Market will be represented on the Settlement Statement as the Day-Ahead Revenue Sufficiency Guarantee Eligibility flag (DA_RSG_ELIGIBILITY).

DART uses the InitialOnHours field to track how long a Resources has been off-line or on-line. Please see the definitions in the Section A.2.2 of this document for an explanation on how the

InitialOnHours is determined by DART. Day-Ahead Commitment Periods adjacent to or overlapping a Must-Run Period are ineligible for Start-up Cost recovery.

The rules for Start-up eligibility in the Day-Ahead Market are outlined below.

Exhibit B.2-1: Day-Ahead Start-up Eligibility Summary

Commitment Period	Condition(s)	Eligibility
Day-Ahead Schedule starts after HE1 and ends before HE24	Not adjacent to or overlapping a Must-Run Period.	Eligible
Day-Ahead Schedule starts after HE1 and ends before HE24	Adjacent to or overlapping a Must-Run Period.	Ineligible
Day-Ahead Schedule starts on HE1	InitialOnHours is greater than zero.	Ineligible
	InitialOnHours is less than zero.	Eligible
Day-Ahead Schedule ends on HE24	First hour of next Operating Day is forecasted to be Must-Run.[2]	Ineligible
	First hour of next Operating Day is forecasted not to be Must-Run.[2]	Eligible

B.2.2 Real-Time Eligibility

Similar to Day-Ahead, DART determines whether a Resource committed by the Midwest ISO has met eligibility requirements. The Real-Time Commitment Period is represented on the Settlement Statement by the Real-Time Revenue Sufficiency Guarantee Eligibility flag (RT_RSG_ELIGIBILITY).

If any hour within the initial Commitment Period contains a commit status of Must-Run, this Resource will not be eligible to recover Start-up Costs for this Commitment Period. Additionally, the Market Participant will not be eligible to recover No-Load Costs and Incremental Energy Costs during Must-Run hours.

If there is an adjacent Commitment Block, then the new commitment inherits the Initial Commit Status of the oldest contiguous Commitment Block. Start-up costs are also inherited from the oldest Commitment Block.

The rules for Start-up eligibility in the Real-Time Market are outlined below.

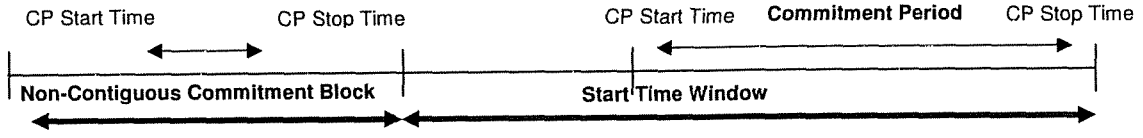
[2] Next Operating Day forecast is conducted by using the current Operating Day's schedule.

Exhibit B.2-2: Real-Time Start-up Eligibility Summary

Commitment Period	Condition(s)	Eligibility
Real-Time CP is adjacent/overlapping Day-Ahead Schedule	No other conditions are required.	Ineligible
Real-Time CP is adjacent/overlapping Must-Run Schedule	Must-Run Period was pre-existing the initial commitment.	Ineligible
	Must-Run added after Real-Time commitment.	Eligible
Real-Time commitment is for current OD	Real-Time CP started prior to the current OD.	Ineligible
	Real-Time CP started in current OD.	Eligible

Resource shall start within the specified Start Time Window – Resources that do not have a Control Mode transition to ON within their Start Time Window will not be reimbursed their Start-up Costs. The Midwest ISO defines the Start Time Window as the period between the CP Stop Time of the first non-contiguous commitment block preceding the Commitment Period and the CP Stop Time of the Commitment Period. Resources that fail to properly set the Control Mode flag may be deemed ineligible for Start-Up. The Midwest ISO will not grant exemptions for improperly set Control Mode instances.

Exhibit B.2-3: Start Time Window



Resource must be available and Injecting Energy during the Commitment Period - Resources are only eligible to recover Start-up Costs for Midwest ISO designated Commitment Periods. To be eligible for Start-up, the Resource must have a Control Mode transition to ON during the Start Time Window. The resource must also inject energy during the commitment period as determined by having at least one hour within the Commitment Period with an hourly integrated State Estimator value representing energy injection. Special provisions apply to Midwest ISO initiated cancellations as defined in section B.5 of this document.

Timing of Must-Run designation impacts eligibility - The timing of designating a Resource as Must-Run is an important factor in determining Start-up eligibility. For example, a Resource is committed for four hours (HE4 – HE7) with a Must-Run status in the middle two hours (HE5 & HE6). If the Resource was offered as Must-Run for the two middle hours before the Midwest

ISO's commitment, it will not be eligible to receive Start-up Costs. On the other hand, if the Resource became designated as Must-Run after the Midwest ISO's commitment, the Resource will still be a candidate for Start-up Cost reimbursement. Providing that the Resource meets other eligibility criteria, DART will award Start-up Cost reimbursement across the entire four-hour Commitment Period. The reason is that the Resource was running continuously from HE4 to HE7 and only incurred the costs of the initial Start-up. The Resource will not be eligible to recover Incremental Energy Costs and No-Load Costs during hours designated as Must-Run.

B.3 Offer Selection Criteria

In general, DART captures two sets of Offer data: 1) As-Dispatched and 2) As-Committed. While both sets of Offer data are important for the calculation of No-Load and Incremental Energy Costs, only the As-Committed Offer is used by the Start-up Cost calculation and calculation of Day-Ahead Production Cost. Therefore, As-Dispatched will be discussed in the No-Load and Incremental Energy sections of this document. As-Committed Offer data is captured when the Resource clears in the Day-Ahead Market or is committed.

B.4 Allocation Rules

Awarded Start-up Costs are allocated on a per minute basis across the Midwest ISO designated Commitment Period. The costs are allocated independent of the Resource's actual on-line or off-line times.

In cases where the Commitment Period includes a partial first hour, the Start-up Costs will be allocated in proportion to the number of minutes in the partial hour. For the last hour of the Commitment Period, any remaining Start-up Cost amounts that were not allocated over the previous hours will be allocated to the final hour. This accounts for rounding and partial last hour commitments. For example, if the total awarded Start-up Cost is $810.01 and the Commitment Period is from 7:00AM to 11:30AM, the Start-up Cost will be awarded as $180.00 per hour for HE8 to HE11 and $90.01 for HE12.

HE	Start-up Cost	Formula Minutes in hour/total minutes in CP x Start-up Cost
8	$ 180.00	60/270 * $810.01
9	$180.00	60/270 * $810.01
10	$180.00	60/270 * $810.01
11	$180.00	60/270 * $810.01
12	$ 90.01	30/270 * $810.01 Any rounding goes to final hour
Total	$810.01	

B.5 Cancellations

In the event that the Resource is cancelled, DART applies a special set of rules to determine the awarded Start-up Costs. The rules for the most common scenarios are summarized in Exhibit B.5-1.

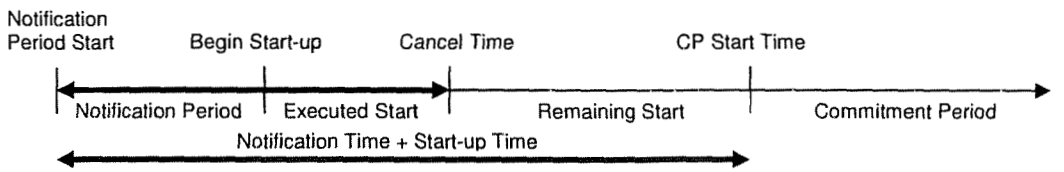
Exhibit B.5-1: Cancellations

Event Time	Midwest ISO Initiated Cancel
Before Commitment Period Start	Eligible for prorated Start-up Cost Award.
After Commitment Period Start	Eligible for full Start-up Cost Award.

When a Resource is cancelled by the Midwest ISO, the Resource is eligible for part or all of the Start-up Costs providing it meets all other eligibility criteria. If the Midwest ISO cancels a Resource prior to the CP Start Time, then the Start-up Cost is prorated by applying the following formula.

$$\text{Awarded Start-up Cost} = \text{Full Start-up Cost} * \left\{ 1 + \left[\frac{(\text{Cancel Time} - \text{CP Start Time})}{(\text{Start-up Time} + \text{Notification Time})} \right] \right\}$$

Exhibit B.5-2: Prorated Start-up Cost



In cases where the Resource is cancelled by the Midwest ISO after the start of the Commitment Period, the Resource is eligible for Start-up, No Load, and Incremental Energy Costs providing it meets all other eligibility criteria.

In the event that the Resource is cancelled by the Midwest ISO then restarted with a new Commitment Period that overlaps with the original Commitment Period, special rules apply. The original Commitment Period is treated as if it never existed. The new commitment is assessed for Start-up Cost eligibility just like any other commitment. The Resource will be eligible for full Start-up Costs for the new commitment if it meets the requirements discussed in Section B.2.

C. No-Load Cost

C.1 Definition and Calculation

No-Load Cost is the compensation requested by the Market Participant for operating an On-Line Resource at zero (0) MW. No-Load Cost is an hourly value that is applied to the Midwest ISO specified Commitment Period. No-Load Cost Awards are prorated during partial hour commitments. No-Load Costs and eligibility are based on when the unit is On-Line and Off-Line for the Midwest ISO specified Commitment Period.

No-Load Costs are based on a single Market Participant submitted data field.

Exhibit C.1-1: No-Load Cost Submitted Data

No-Load Cost
NoLoadCost Number(10.2)

DART calculates No-Load Costs based on when the unit is On-Line and Off-Line. The Control Mode is not used by DART to define No-Load eligible periods. If the Resource is not On-Line at the CP Start Time or is Off-Line prior to the CP Stop Time, the No-Load Cost Award period will be prorated (or shortened).

Market Participants can avoid a prorated No-Load Cost Award by being On-Line prior to the CP Start Time and by going Off-Line subsequent to the CP Stop Time.

Exhibit A.4-1 illustrates a Resource that submitted a No-Load Cost (NoLoadCost) of $4 per hour. This example shows a Resource that was On-Line at the CP Start Time and Off-Line at the CP Stop Time. If the unit was first On-Line at 12:13AM, resulting in the unit existing in the first LMP Case at 12:15 AM, the first hour's No-Load Cost Award would be prorated. The resultant award would be $3 for HE1. Further examples of Hourly No-Load calculation based on LMP Case-interval data can be found in section F.5 of this BPM.

C.2 Eligibility Rules

This section will address the general eligibility rules for No-Load Cost reimbursement. The eligibility rules for Incremental Energy Cost reimbursement are the same as they are for No-Load. Please see Section G for several specific No-Load Cost eligibility scenarios.

Resource must be committed by the Midwest ISO - When a Market Participant offers their resources to the Midwest ISO, each Resource Offer will have an associated Resource Offer commitment status. The four commitment statuses (Unavailable, Emergency, Economic, and Must-Run) were described in Section B.1.

Resource Offers with a commit status of Must-Run are not eligible because the Market Participant has self-committed this Resource. Eligibility to receive No-Load and Incremental Energy Costs is based on the Midwest ISO committing the Resource. The Commitment Period is the period instructed by the Midwest ISO.

Must-Run hours do not receive No-Load or Incremental Energy Costs - Resources will not be eligible to recover No-Load Costs and Incremental Energy Costs during Must-Run hours. Must-Run offers submitted after the initial commitment (As-Committed) do not qualify for No-Load Cost and Incremental Energy reimbursement. Section C.3 will provide more details on the definition of As-Committed and As-Dispatched.

Real-Time Eligibility is based on Day-Ahead Eligibility – Hours in a Real-Time Commitment Period that overlap with a Day-Ahead Commitment Period will not be eligible for No-Load and Incremental Energy Cost Awards. For example, if for a given hour the Day-Ahead status is Must-Run, then the Real-Time commitment status is irrelevant; the Resource is ineligible for No-

Load and Incremental Energy Costs. In cases where the Midwest ISO commits the Resource in the Day-Ahead, the Resource will only be eligible for No-Load and Incremental Energy Costs in the DA Market.

No-Load Eligibility is based on State Estimated Observed Flow - DART will start accumulating No-Load and Incremental Energy Costs within the Commitment Period when the unit is On-Line.

Awarded No-Load Costs will be prorated - Please see section C.4 for rules definition.

C.3 Offer Determination

The Day-Ahead RSG Production Cost Calculation uses the As-Committed Offer exclusively.

For the Real-Time RSG Production Cost calculation, DART captures Offer data at two time points: 1) As-Committed and 2) As-Dispatched. Both sets of data are considered in determining Real-Time No-Load and Incremental Energy Costs. DART takes a snapshot of the As-Committed Offer data at the actual time the resource is committed by the Midwest ISO. DART subsequently takes a second snapshot of the As-Dispatched Offer data at the time the resource is dispatched. The As-Dispatched data may reflect changes that the Market Participant made to their Offers between the time that the Resource was committed and when the resource was dispatched.

Production Costs include Start-up, No-Load and Incremental Energy Costs. For each Operating Day, DART provides Market Settlements with the minimum of the Resource's As-Committed Production Costs or As-Dispatched Production Costs. The final value is the Real-Time Revenue Sufficiency Production Cost Amount.

Exhibit C.3-1: Offer Determination Summary

Market	Start-Up Offer Used	No-Load Offer Used	Incremental Energy Offer Used
Day-Ahead	As-Committed by Day-Ahead Market	As-Committed by Day-Ahead Market	As-Committed by Day-Ahead Market
Real-Time	As-Committed by Real-Time Market	As-Committed or As-Dispatched by Real-Time Market based on lesser resultant total Production Cost	As-Committed or As-Dispatched by Real-Time Market based on lesser resultant total Production Cost

C.4 Prorated Period Rules

Both No-Load and Incremental Energy Costs are prorated within the Commitment Period based on when the unit is On-Line and Off-Line. These values can be prorated if either the Commitment Period does not start or end on the top of the hour or if the Resource is not On-Line at the CP Start Time or goes Off-Line prior to the CP Stop Time. As previously stated, the State Estimator is used to determine when the Resource is On-Line and Off-Line.

To be eligible for No-Load during the Commitment Period, the Resource must be On-Line. No-Load is calculated for each LMP Case interval within the bounds of the Commitment Block and integrated to an hourly value for each hour in the Commitment Period.

C.5 Cancellations

In the event that the Resource is cancelled, DART enforces a special set of rules to determine the awarded No-Load and Incremental Energy Costs. The rules for the most common scenarios are summarized in Exhibit C.5-1.

Exhibit C.5-1: Cancellation and Forced Generation Outage Scenarios

Event Time	Midwest ISO Initiated Cancel
Before Commitment Period Start	Not Eligible for No-Load and Incremental Energy Costs
After Commitment Period Start	Eligible for No-Load and Incremental Energy Costs

Any cancellation of a Resource initiated prior to the start of a Commitment Period makes the Resource ineligible to receive No-Load or Incremental Energy costs. A cancellation initiated by the Midwest ISO which occurs after the start of a Commitment Period does not make the Resource ineligible to receive No-Load and Incremental Energy costs.

D. Incremental Energy Cost

D.1 Definition and Calculation

Incremental Energy Cost represents the compensation requested by the Market Participant for operating an On-Line Generation Resource at a non-zero MW level. Incremental Energy Costs

are based on the Resource's Offer Curve and are calculated as the "Area under the Curve." The area is determined for each hour by integrating the curve from zero to the lesser of the Generation Set Point within the specified tolerance or the State Estimator value . Each LMP Case interval within the Commitment Period is integrated to determine the Hourly Incremental Energy Cost. All approved LMP cases, without regard for Approved UDS case existence, within the bounds of the SCUC Instructions are utilized in the calculation of Hourly Incremental Energy. Using all approved LMP Cases will calculate the Hourly Incremental Energy based on a State Estimator value adjusted to reflect actual production. Incremental Energy is prorated within the Commitment Period between when the unit is On-Line and Off-Line, and it does not include Start-up and No-Load Costs.

Incremental Energy Costs are calculated using the Resource's hourly Offer Price Curve. The Offer Curve contains two data components: 1) PriceCurveHourly and 2) PricePoint. For a detailed explanation of the technical specs see *Volume 3 - Market User Interface Participant XML Specification*

Exhibit D.1-1: Incremental Energy Cost Submitted Data

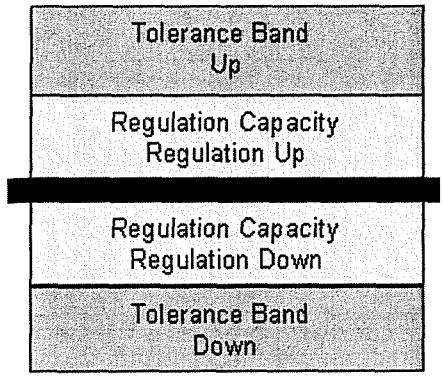
PriceCurveHourly	PricePoint[3]
Hour HH	MW Number(9.1)
Slope Boolean	Price Number(10.2)

Incremental Energy Costs are calculated for the lesser of the Generation Set Point within the specified tolerance or the State Estimator value. Tolerance for following dispatch is determined by applying the same tolerance as the UD_TOL UP value used to determine Uninstructed Deviation penalties. The Resource's hourly integrated State Estimator Observed MWs must be within the Tolerance Band Up that is defined by a standard Tolerance Band Up percentage plus the Resource's Regulation Up Volume (REG_UP).

For example, a Resource with an hourly integrated dispatch (GEN_SP) of 130 MWhs and Regulation Up Volume (REG_UP) of 5 MWhs would have a Tolerance Band Up as illustrated in the following example.

[3] Up to ten Price Points can be entered for each Resource's hourly price curve.

Exhibit C.2-1: Uninstructed Deviation Example



(*GEN_SP x 10%) = (130 x 10%) = 13 MWhs

*REG_UP = 5 MWhs

Generation Set Point (*GEN_SP) = 130 MWhs

*REG_DN = 5 MWhs

(*GEN_SP x 10%) = (130 x 10%) = 13 MWhs

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

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

In general, the Tolerance Band Up is equal to 10% of the Generation Set Point bounded by an up maximum volume limit of 25 MWhs and up minimum volume limit of 5 MWhs. The tolerance up band is rounded to the nearest whole Megawatt for following dispatch determination. The Uninstructed Deviation Exemption flag (UD_XMPT) does not impact the RSG "is following dispatch" determination.

A Resource exempted from Uninstructed Deviation penalties per MISO Business Practices or the Energy Market Tariff is not exempt from the treatment as defined above if the State Estimator Observed Flow of the resource falls outside the Tolerance Up Band. An exception to this eligibility requirement can be granted during ramping hours; please refer to Section F.3 Eligibility during Ramp Hours for more information.

DART calculates Incremental Energy Costs based on the Resource's State Estimator sampled in each Real-Time LMP Case, adjusted for failure to follow dispatch instructions. The Control Mode is not used by DART to define Incremental Energy eligible periods. The Incremental Energy calculation is only dependent on when the Resource was On-Line and Off-Line.

If the Resource is not On-Line at the CP Start Time, the Incremental Energy Cost Award period will be prorated. Similarly, if the Resource is Off-Line prior to the CP Stop Time, the Incremental Energy Cost Award period will be prorated.

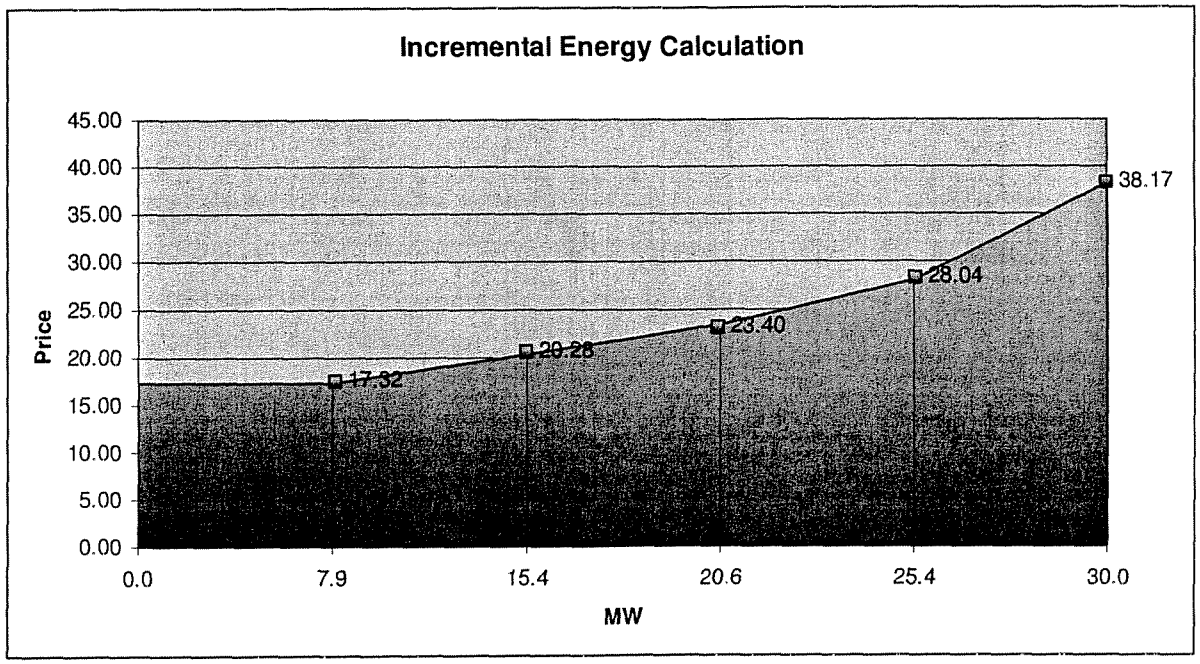
Market Participants can avoid prorated Incremental Energy Costs by being On-Line prior to the CP Start Time and by going Off-Line subsequent to the CP Stop Time. By ramping within the Commitment Period, Resources experience prorated Incremental Energy Cost Awards.

The following example shows how the Incremental Energy Cost is calculated for Production Costs presented in Exhibit A.4-1. Please refer to section F.5 in this BPM for further examples and explanation on the calculation of Hourly Incremental Energy and No-Load costs based on a LMP Case interval data.

The example assumes that the Resource maintained the same Offer Curve and maintained generation of exactly 30 MW for each LMP Case interval for HE1 to HE12. The Offer Curve includes five Price Points with a piece-wise linear curve (slope is True). If the slope was set to false the Price Points would be integrated as blocks.

Exhibit D.1-2: Sample Offer Curve

PriceCurveHourly	**PricePoint$_1$**	**PricePoint$_2$**	**PricePoint$_3$**	**PricePoint$_4$**	**PricePoint$_5$**
Hour	MW	MW	MW	MW	MW
HE 1 to 12	7.9	15.4	20.6	25.4	30.0
Slope	Price	Price	Price	Price	Price
True	17.32	20.28	23.40	28.04	38.17



The example shows how the five Price Points were integrated from 0 to 30MW to total a LMP Case interval Incremental Energy Cost of $666.17. By integrating each LMP Case interval for the hour, the result is $666.17 of Hourly Incremental Energy Cost as shown in Exhibit A.4-1.

D.2 Eligibility Rules

Eligibility Rules for Incremental Energy Costs are the same as they are for No-Load Costs. Please see section C.2 for the detailed rule definitions.

- Resource must be committed by the Midwest ISO.
- Must-Run hours do not receive Incremental Energy Costs.
- Real-Time Eligibility is based on Day-Ahead Eligibility.
- Incremental Energy eligibility is based on the resource being On-Line.
- Awarded Incremental Energy Costs can be prorated.

Please see Section G for several specific Incremental Energy Cost eligibility scenarios and section F.5 for specific Incremental Energy calculations.

D.3 Offer Determination

The Offer Determination Rules for Incremental Energy are the same as the rules for No-Load. Please see section C.3 for the rules definition.

D.4 Prorated Hour Rules

The Prorated Hours Rules for Incremental Energy are the same as the rules for No-Load. Please see section C.4 for the rules definition.

Incremental Energy is prorated within the Commitment Period between when the unit is On-Line and Off-Line. Each LMP Case interval within the Commitment Period is integrated to determine the Hourly Incremental Energy Cost.

D.5 Cancellations

The Cancellation Rules for Incremental Energy are the same as the rules for No-Load. Please see section C.5 for the rules definition.

E. Unit Commitment and Dispatch

E.1 Unit Commitment Overview

The purpose of this section is to provide an overview of the Unit Commitment processes. The overview will focus on the aspects of the Unit Commitment processes that are relevant to RSG. Please see Midwest ISO *Business Practices Manual for Energy Markets* for a more detailed description of these processes.

In establishing either Day-Ahead or Real-Time LMP, the Midwest ISO tries to commit enough Resources to meet demand while minimizing Production Costs over the commitment horizon. In the Day-Ahead market, all Production Costs are considered. In the Real-Time Market (or RAC), Start-up Cost, No-Load Cost, and cost at minimum load are all used to determine which Resources to commit.

The Day-Ahead RSG Make Whole Payment Amount revolves around the concept of a Commitment Period (CP). In the Midwest ISO Energy Market, a CP is a period of continuous operation bounded by a scheduled start-up and scheduled shut-down. It includes "release for dispatch" to "stop release for dispatch."

If the CP contains any hours that are Must-Run, then the Start-up Cost will not be eligible for recovery during the CP. Additionally, any hours in the CP that have a Must-Run commit status will not be eligible for recovering No-Load Costs and Incremental Energy Costs. When the Midwest ISO decides to commit the Resource in the RAC, the commitment is based on Start-up, No-Load, time to get On-Line, minimum runtime, dispatch maximum, and all other variables involved in production. Once committed, the Offer Curve is used with the LMP and State Estimated output to determine if that Resource is eligible for a Make Whole Payment.

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 Resource is NOT eligible for the Real-Time RSG Make Whole Payment in hours the Resource was committed in the Day-Ahead Market.

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. Production Costs are guaranteed by Commitment Period.

E.2 Unit Commitment Implications

The objective of this section is to describe Unit Commitment implications to the RSG Make Whole Payment.

The Day-Ahead process only clears generation to cover the Load requirements bid into the Day-Ahead Energy Market. As such, additional commitments can be made to facilitate reliability based on changes in system conditions. Some possible causes for system changes are: 1) load not bid into the Day-Ahead Energy Market, 2) unexpected Resource outages in the Real-Time Energy Market, and 3) changes in Real-Time Physical Bilateral Transactions.

Generation Resources that are committed by the Midwest ISO in the Real-Time Energy Market and meet eligibility requirements are guaranteed cost recovery of their Start-up Costs, No-Load Costs, and Incremental Energy Costs. Start-up, No-Load, and Incremental Energy Costs are collectively referred to as Production Costs.

The Midwest ISO ensures that sufficient Resources are available and on-line to meet Load Forecast and Capacity requirements projected for each Hour of the Operating Day. After the Day-Ahead Energy Market is cleared, the Midwest ISO performs the Real-Time related RAC process and may commit additional Resources beyond those cleared in the Day-Ahead Energy Market. The RAC process employs a Security Constrained Unit Commitment algorithm and is performed as necessary prior to, and throughout, the Operating Day.

On an hourly basis, DART determines whether a Generation Resource was committed in Real-Time, and if the Resource has met the eligibility requirements. The Real-Time Market Settlement compares whether the Resource's Market Value for a committed period exceeds the guaranteed Production Costs for those hours. The Resource's energy value is calculated without regard to Financial Bilateral Transactions. If the total Market Value is less than the guaranteed Production Cost amount, the difference is credited to the Asset Owner as a Real-Time Revenue Sufficiency Guarantee Make Whole Payment Amount.

A Commitment Period can cross over more than one Operating Day. If the CP of a Resource crosses more than one Operating Day, Start-up Costs are prorated over the hours of the first Operating Day in the Commitment Period.

Example of a Real-Time Continuous Period that crosses over two days:

For OD 1, when appropriate, the Market Participant will be eligible to recover their Start-up Costs allocated over the hours of the CP along with their No-Load Costs and Incremental Energy Costs. Real-Time RSG Make Whole Payment Amount of -$614.47 will be allocated

over all eligible hours of the CP (HE15-24). Market Participants will see -$61.45 (-$614.47/10) as their hourly Asset Owner Make Whole credit amount.

Exhibit E.2-1: Two-day Commitment Period Example (Day 1)

	"Market Value"			Production Costs				
HE	MW	LMP	MV	Start-up	No-Load	Incremental	PC	Net
15	30	$22.85	$685.50	$54.91	$4.80	$667.14	$726.85	
16	30	$23.00	$690.00	$54.91	$4.80	$667.14	$726.85	
17	30	$23.12	$693.60	$54.91	$4.80	$667.14	$726.85	
18	30	$23.08	$692.40	$54.91	$4.80	$667.14	$726.85	
19	30	$22.82	$684.60	$54.91	$4.80	$667.14	$726.85	
20	30	$22.33	$669.90	$54.91	$4.80	$667.14	$726.85	
21	30	$22.29	$668.70	$54.91	$4.80	$667.14	$726.85	
22	30	$21.65	$649.50	$54.91	$4.80	$667.14	$726.85	
23	30	$20.78	$623.40	$54.91	$4.80	$667.14	$726.85	
24	30	$19.88	$596.40	$54.91	$4.80	$667.14	$726.85	
Totals			$6,654.00	$549.12	$48.00	$6,671.35	$7,268.47	-$614.47

For OD 2, the Market Participant will be eligible to recover their No-Load and Incremental Energy Costs, however as this is no longer a current day commitment the Resource is not eligible to recover Start-Up Costs.

Exhibit E.2-2: Two-day Commitment Period Example (Day 2)

	"Market Value"			Production Costs				
HE	MW	LMP	MV	Start-up	No-Load	Incremental	PC	Net
1	30	$18.99	$569.70	$0.00	$4.80	$667.14	$671.84	
2	30	$17.90	$537.00	$0.00	$4.80	$667.14	$671.84	
3	30	$17.33	$519.90	$0.00	$4.80	$667.14	$671.84	
4	30	$17.23	$516.90	$0.00	$4.80	$667.14	$671.84	
5	30	$17.32	$519.60	$0.00	$4.80	$667.14	$671.84	
6	30	$17.63	$528.90	$0.00	$4.80	$667.14	$671.84	
7	30	$18.19	$545.70	$0.00	$4.80	$667.14	$671.84	
8	30	$19.28	$578.40	$0.00	$4.80	$667.14	$671.84	
9	30	$19.86	$595.80	$0.00	$4.80	$667.14	$671.84	
10	30	$20.45	$613.50	$0.00	$4.80	$667.14	$671.84	
Totals			$5,525.40	$0.00	$48.00	$6,671.35	$6,719.35	-$1,193.56

Real-Time RSG Make Whole Payment Amount of -$1,193.95 will be allocated over all eligible hours of (HE1-10). Market Participants will see -$119.40 (-$1,193.95/10) as their hourly Asset Owner Make Whole credit amount.

E.3 Dispatch and RSG Calculation Overview

The purpose of this section is to provide the reader with an overview of the Dispatch and RSG Calculation process. Please also see Midwest ISO *Business Practices Manual for Energy Markets* for additional information on the Dispatch process.

After Resources are committed in the Day-Ahead or Real-Time Markets, the Midwest ISO dispatches them through the DART notification engine. After Dispatch, the DART calculates the Make Whole Payments based on available operational data.

It is important to note that any Resource that comes On-Line, scheduled or unscheduled, will receive Set Points. This is a characteristic of the Midwest ISO UDS. Resources are only eligible to receive RSG Make Whole Payments during Midwest ISO designated Commitment Periods. Resources without a Midwest ISO economic commitment are not eligible for RSG Make Whole Payment.

F. Special Topics

F.1 Intermittent Resources

Intermittent Resources are not eligible for Real-Time RSG Make Whole Payment. Intermittent Resources are wind, run-of-river, or solar Resources that are typically less than 5 MWs and are not dispatchable. These Resources are not charged Uninstructed Deviation penalties and will receive a Dispatch Instruction equal to their output in the previous state estimator solution. If an Intermittent Resource is modeled, the Midwest ISO will provide a Commercial Pricing Node for the Resource. The node will allow the Resource to be associated with a Market Participant, to have a designated Meter Data Management Agent (MDMA) and to submit after-the-fact generation volumes that will be used by Market Settlements.

Intermittent Resources can receive Day-Ahead Make Whole Payments should the Midwest ISO commit these Resources. Please see The Midwest ISO *Business Practices Manual for Network and Commercial Models and the Business Practices Manual for Energy Market Instruments* for additional information on Intermittent Resources.

F.2 Following Dispatch Determination

Eligibility for full recovery of Incremental Energy Costs is based on several criteria, including whether the Resource followed dispatch. This determination is made by comparing hourly integrated Midwest ISO-instructed MW to hourly integrated State Estimator Observed MW. RSG Incremental Energy Costs for Resources are calculated using the Generation Set Point when the resource's State Estimator value exceeds the Tolerance Band Up calculated in the Uninstructed Deviation formula (see Section C.2). The Uninstructed Deviation Exemption flag (UD_XMPT) does not impact the RSG "is following dispatch" determination. Please note that the determination for whether a Resource was following dispatch is made based on the hourly State Estimator data, not on actual meter data. State Estimator is used for all calculations except for Market Value.

ICCP, not XML, is used to determine if a generator is following dispatch. The Midwest ISO provides two mechanisms for outbound dispatch signals; each mechanism has its own unique protocol: 1) Inter-Control Center Communications Protocol (ICCP), and 2) Extensible Markup Language (XML). ICCP data is the primary source for Midwest ISO Generation Set Points. The ICCP Generation Set Points is the basis for the hourly integrated Generation Set Points (GEN_SP). GEN_SP is the value used by Market Settlements and is the value reported on the Real-Time Settlement Statement for each Resource.

ICCP data is sampled by the Midwest ISO every 30 seconds. These 120 samples are integrated into hourly Set Points, which become the basis for determining if the Resource is following dispatch.

F.3 Eligibility during Ramp Hours

Resources ramping on or off outside of the Commitment Period will not receive Make Whole Payments during ramping. The Real-Time RSG Make Whole Payment calculation does not include Production Costs incurred outside the Midwest ISO's Commitment Period. Resources are expected to ramp on and ramp off outside of the Commitment Period. The associated ramping costs should be included as part of the Resource's Start-up Costs.

Following Dispatch determination for Resources that are partially committed within an hour will be made for the entire hour. When a Resource has a partial hour commitment, the determination of whether a Resource is following dispatch is made for the entire hour. Since the Midwest ISO has a 10-minute UDS, a unit that follows their Midwest ISO issued Set Points, may be seen as not following dispatch in the first or last hour of their commitment. Therefore, an exception to the following dispatch eligibility check is granted during the first and last hours of a Commitment Period, so long as the Hourly Integrated State Estimator value is greater than zero,

to account for the Midwest ISO 10-minute UDS. In these hours the State Estimator will be used in the calculation of Incremental Energy.

Special consideration is made for Quick Start units. A quick start unit is defined as a Generation Resource with Hot, Intermediate and Cold Start Up times of less than or equal to 15 minutes. Quick start units with a Midwest ISO Economic Commitment starting 15 minutes or less to the top of the hour may also be seen as not following dispatch in the second hour of their commitment. Therefore, an exception to the following dispatch eligibility check is granted during the second hour of the Commitment Period, along with the first and last hours of the Commitment Period, so long as the Hourly Integrated State value is greater than zero, to account for the Midwest ISO 10-minute UDS. In these hours the State Estimator will be used in the calculation of Incremental Energy.

Market Settlements uses the entire hour's Market Value for calculating the Make-Whole Payment whereas Production Costs are only calculated for the committed portion of the hour.

F.4 Mitigation of RSG Costs

The Midwest ISO employs an Independent Monitor to monitor and potentially mitigate RSG Production Costs. Revenue Sufficiency Guarantee Make Whole Payment Amounts may be mitigated by Resource by day when Production Costs for the Operating Day exceed the Independent Market Monitor's pre-determined reference tolerances (RT_RSG_MIT_PC). These actions prevent Asset Owners from exercising undue influence when their Resources are known to be in demand. When the Independent Market Monitor takes action, the mitigated amounts appear on the Market Settlements statement.

F.5 Hourly No-Load and Incremental Energy Cost as calculated using LMP Case interval Data

The Midwest ISO calculates No-Load and Incremental Energy for each hour of a Commitment Period using LMP Case interval data. Below are five examples of how the LMP Case interval calculation is performed to derive the Hourly Incremental Energy and No-Load Production Cost. For each scenario, there will be a detailed description of the scenario, followed by a graphical representation of the calculation.

Scenario 1: Unit On-Line prior to CP Start Time and Off-Line after CP Stop Time

The Unit had a Real Time Midwest ISO Economic Commitment from 10:00 until 11:00. The Unit was On-Line at 9:52. State Estimator ran and solved for the unit showing Injection MWs for the unit, prior to the LMP Case that ran for 9:55.

The Unit continued to receive and follow Midwest ISO Base Points throughout the Commitment between its Economic Minimum of 40 MWs and Economic Maximum of 50 MWs. The Unit ran through the end of its commitment. The Unit was Off-Line at 11:08. As a result of being On-Line prior to the CP Start Time and going Off-Line after the CP Stop Time, No Load and Incremental Energy are calculated for the entire duration of the Commitment.

The unit had a two segment bid curve, Use Bid Slope equal to 1, and a No Load Cost of $100. For this Commitment the Unit would have $3413.75 of Incremental Energy Cost and $100 of No Load Cost.

Bid Data

Bid Slope	1

Market Hour	10:00

Case	SEGMENTID	MW	PRICE	Case	MWs	Inc Energy$	Effective Minutes (EM)	IE*EM/60	No Load	NL*EM/60
0	1	50	75	0	42.5	3187.5	5	265.625	100	8.33
1	1	50	75	1	44.5	3337.5	5	278.125	100	8.33
2	1	50	75	2	48.8	3660	5	305	100	8.33
3	1	50	75	3	50	3750	5	312.5	100	8.33
4	1	50	75	4	48.8	3660	5	305	100	8.33
5	1	50	75	5	46.5	3487.5	5	290.625	100	8.33
6	1	50	75	6	47.6	3570	5	297.5	100	8.33
7	1	50	75	7	44.5	3337.5	5	278.125	100	8.33
8	1	50	75	8	44.5	3337.5	5	278.125	100	8.33
9	1	50	75	9	45.9	3442.5	5	286.875	100	8.33
10	1	50	75	10	42.6	3195	5	266.25	100	8.33
11	1	50	75	11	40	3000	5	250	100	8.33
							Total	3413.75	Total	100

LMP Case Interval Data

Effective Start	Effective Stop	Market Hour	Case MWs	EM
1/1/2006 9:50	1/1/2006 9:55	1/1/2006 9:00	25	5
1/1/2006 9:55	1/1/2006 10:00	1/1/2006 9:00	40	5
1/1/2006 10:00	1/1/2006 10:05	1/1/2006 10:00	42.5	5
1/1/2006 10:05	1/1/2006 10:10	1/1/2006 10:00	44.5	5
1/1/2006 10:10	1/1/2006 10:15	1/1/2006 10:00	48.8	5
1/1/2006 10:15	1/1/2006 10:20	1/1/2006 10:00	50	5
1/1/2006 10:20	1/1/2006 10:25	1/1/2006 10:00	48.8	5
1/1/2006 10:25	1/1/2006 10:30	1/1/2006 10:00	46.5	5
1/1/2006 10:30	1/1/2006 10:35	1/1/2006 10:00	47.6	5
1/1/2006 10:35	1/1/2006 10:40	1/1/2006 10:00	44.5	5
1/1/2006 10:40	1/1/2006 10:45	1/1/2006 10:00	44.5	5
1/1/2006 10:45	1/1/2006 10:50	1/1/2006 10:00	45.9	5
1/1/2006 10:50	1/1/2006 10:55	1/1/2006 10:00	42.6	5
1/1/2006 10:55	1/1/2006 11:00	1/1/2006 10:00	40	5
1/1/2006 11:00	1/1/2006 11:05	1/1/2006 11:00	25	5
1/1/2006 11:05	1/1/2006 11:10	1/1/2006 11:00	5	5
1/1/2006 11:10	1/1/2006 11:15	1/1/2006 11:00	0	5
1/1/2006 11:15	1/1/2006 11:20	1/1/2006 11:00	0	5

General Commitment Information

Commitment Period	10:00 until 11:00
Breaker Close with .5 MWs of Injection	9:52
Breaker Open	11:08
Hourly No Load in Dollars	100

LMP Cases associated to the Real Time Midwest ISO Commitment Period

Scenario 2: Unit On-Line AFTER CP Start Time and Off-line after CP Stop Time

The Unit had a Real Time Midwest ISO Economic Commitment from 10:00 until 11:00. The Unit was On-Line at 10:12. State Estimator ran and solved for the unit showing Injection MWs for the unit, prior to the LMP Case that ran for 10:15.

The Unit continued to receive and follow Midwest ISO Base Points throughout the Commitment between its Economic Minimum of 40 MWs and Economic Maximum of 50 MWs. The Unit ran through the end of its commitment. The Unit Opened its Breaker at 11:08. As a result of being On-Line **AFTER** the CP Start Time and running through the end of its Commitment, No Load and Incremental Energy are calculated for the 10:10 until 11:00 portion of the Commitment.

The unit had a two segment bid curve, Use Bid Slope equal to 1, and a No Load Cost of $100. For this Commitment the Unit would have $2372.50 of Incremental Energy Cost and $83.33 of No Load Cost.

Bid Data

Bid Slope	1

Market Hour	10:00									
Case	SEGMENTID	MW	PRICE	Case	MWs	Inc Energy$	Effective Minutes (EM)	IE*EM/60	No Load	NL*EM/60
0	1	50	75	0	0	0	0	0	100	0
1	1	50	75	1	0	0	0	0	100	0
2	1	50	75	2	5	375	5	31.25	100	8.333333333
3	1	50	75	3	25	1875	5	156.25	100	8.333333333
4	1	50	75	4	40	3000	5	250	100	8.333333333
5	1	50	75	5	44.5	3337.5	5	278.125	100	8.333333333
6	1	50	75	6	47.6	3570	5	297.5	100	8.333333333
7	1	50	75	7	44.5	3337.5	5	278.125	100	8.333333333
8	1	50	75	8	44.5	3337.5	5	278.125	100	8.333333333
9	1	50	75	9	45.9	3442.5	5	286.875	100	8.333333333
10	1	50	75	10	42.6	3195	5	266.25	100	8.333333333
11	1	50	75	11	40	3000	5	250	100	8.333333333
							Total	2372.5	Total	83.33

LMP Case Interval Data

Effective Start	Effective Stop	Market Hour	Case MWs	EM
1/1/2006 10:10	1/1/2006 10:15	1/1/2006 10:00	5	5
1/1/2006 10:15	1/1/2006 10:20	1/1/2006 10:00	25	5
1/1/2006 10:20	1/1/2006 10:25	1/1/2006 10:00	40	5
1/1/2006 10:25	1/1/2006 10:30	1/1/2006 10:00	44.5	5
1/1/2006 10:30	1/1/2006 10:35	1/1/2006 10:00	47.6	5
1/1/2006 10:35	1/1/2006 10:40	1/1/2006 10:00	44.5	5
1/1/2006 10:40	1/1/2006 10:45	1/1/2006 10:00	44.5	5
1/1/2006 10:45	1/1/2006 10:50	1/1/2006 10:00	45.9	5
1/1/2006 10:50	1/1/2006 10:55	1/1/2006 10:00	42.6	5
1/1/2006 10:55	1/1/2006 11:00	1/1/2006 10:00	40	5
1/1/2006 11:00	1/1/2006 11:05	1/1/2006 11:00	25	5
1/1/2006 11:05	1/1/2006 11:10	1/1/2006 11:00	5	5
1/1/2006 11:10	1/1/2006 11:15	1/1/2006 11:00	0	5
1/1/2006 11:15	1/1/2006 11:20	1/1/2006 11:00	0	5

LMP Cases associated to the Real Time Midwest ISO Commitment Period

General Commitment Information

Commitment Period	10:00 until 11:00
Breaker Close with .5 MWs of Injection	10:12
Breaker Open	11:08
Hourly No Load in Dollars	100

Scenario 3: Unit On-Line prior to CP Start Time and Off-Line PRIOR to CP Stop Time

The Unit had a Real Time Midwest ISO Economic Commitment from 10:00 until 11:00. The Unit was On-Line at 9:52. State Estimator ran and solved for the unit showing Injection MWs for the unit, prior to the LMP Case that ran for 9:55.

The Unit continued to receive and follow Midwest ISO Base Points throughout the Commitment between its Economic Minimum of 40 MWs and Economic Maximum of 50 MWs. The Unit was Off-Line **PRIOR** to the CP Stop Time. The Unit was Off-Line at 10:41. As a result of being On-Line prior to the CP Start Time but going Off-Line prior to the CP Stop Time, No Load and Incremental Energy are calculated for the 10:00 until 10:40 portion of the Commitment.

The unit had a two segment bid curve, Use Bid Slope equal to 1, and a No Load Cost of $100. For this Commitment the Unit would have $2254.38 of Incremental Energy Cost and $66.67 of No Load Cost.

Bid Data

Bid Slope	1

Market Hour	10:00										
Case	SEGMENTID	MW	PRICE	Case	MWs	Inc Energy$	Effective Minutes (EM)	IE*EM/60	No Load	NL*EM/60	
0	1	50	75	0	42.5	3187.5	5	265.625	100	8.333333333	
1	1	50	75	1	44.5	3337.5	5	278.125	100	8.333333333	
2	1	50	75	2	48.8	3660	5	305	100	8.333333333	
3	1	50	75	3	50	3750	5	312.5	100	8.333333333	
4	1	50	75	4	48.8	3660	5	305	100	8.333333333	
5	1	50	75	5	46.5	3487.5	5	290.625	100	8.333333333	
6	1	50	75	6	47.6	3570	5	297.5	100	8.333333333	
7	1	50	75	7	32	2400	5	200	100	8.333333333	
8	1	50	75	8	0	0	5	0	100	0	
9	1	50	75	9	0	0	0	0	100	0	
10	1	50	75	10	0	0	0	0	100	0	
11	1	50	75	11	0	0	0	0	100	0	
							Total	2254.38	Total	66.67	

LMP Case Interval Data

Effective Start	Effective Stop	Market Hour	Case MWs	EM
1/1/2006 9:50	1/1/2006 9:55	1/1/2006 9:00	25	5
1/1/2006 9:55	1/1/2006 10:00	1/1/2006 9:00	40	5
1/1/2006 10:00	1/1/2006 10:05	1/1/2006 10:00	42.5	5
1/1/2006 10:05	1/1/2006 10:10	1/1/2006 10:00	44.5	5
1/1/2006 10:10	1/1/2006 10:15	1/1/2006 10:00	48.8	5
1/1/2006 10:15	1/1/2006 10:20	1/1/2006 10:00	50	5
1/1/2006 10:20	1/1/2006 10:25	1/1/2006 10:00	48.8	5
1/1/2006 10:25	1/1/2006 10:30	1/1/2006 10:00	46.5	5
1/1/2006 10:30	1/1/2006 10:35	1/1/2006 10:00	47.6	5
1/1/2006 10:35	1/1/2006 10:40	1/1/2006 10:00	32	5
1/1/2006 10:40	1/1/2006 10:45	1/1/2006 10:00	0	5
1/1/2006 10:45	1/1/2006 10:50	1/1/2006 10:00	0	5
1/1/2006 10:50	1/1/2006 10:55	1/1/2006 10:00	0	5
1/1/2006 10:55	1/1/2006 11:00	1/1/2006 10:00	0	5
1/1/2006 11:00	1/1/2006 11:05	1/1/2006 11:00	0	5
1/1/2006 11:05	1/1/2006 11:10	1/1/2006 11:00	0	5
1/1/2006 11:10	1/1/2006 11:15	1/1/2006 11:00	0	5
1/1/2006 11:15	1/1/2006 11:20	1/1/2006 11:00	0	5

General Commitment Information

Commitment Period	10:00 until 11:00
Breaker Close with .5 MWs of Injection	9:52
Breaker Open	10:41
Hourly No Load in Dollars	100

LMP Cases associated to the Real Time Midwest ISO Commitment Period

Scenario 4: Call On and Call Off at non LMP Case interval times

The Unit had a Real Time Midwest ISO Economic Commitment from 10:03 until 10:56. The Unit was On-Line at9:52. State Estimator ran and solved for the unit showing Injection MWs for the unit, prior to the LMP Case that ran for 9:55.

The Unit continued to receive and follow Midwest ISO Base Points throughout the Commitment between its Economic Minimum of 40 MWs and Economic Maximum of 50 MWs. The Unit ran through the end of its commitment The Unit was Off-Line at 11:08. As a result of being On-Line prior to the CP Start Time and going Off-Line after the CP Stop Time, No Load and Incremental Energy are calculated for the entire duration of the Commitment.

The unit had a two segment bid curve, Use Bid Slope equal to 1, and a No Load Cost of $100. For this Commitment the Unit would have $3054.38 of Incremental Energy Cost and $88.33 of No Load Cost.

Bid Data

Bid Slope	1

Market Hour	10:00										
Case	SEGMENTID	MW	PRICE	Case	MWs	Inc Energy$	Effective Minutes (EM)	IE*EM/60	No Load	NL*EM/60	
0	1	50	75	0	42.5	3187.5	2	106.25	100	3.333333333	
1	1	50	75	1	44.5	3337.5	5	278.125	100	8.333333333	
2	1	50	75	2	48.8	3660	5	305	100	8.333333333	
3	1	50	75	3	50	3750	5	312.5	100	8.333333333	
4	1	50	75	4	48.8	3660	5	305	100	8.333333333	
5	1	50	75	5	46.5	3487.5	5	290.625	100	8.333333333	
6	1	50	75	6	47.6	3570	5	297.5	100	8.333333333	
7	1	50	75	7	44.5	3337.5	5	278.125	100	8.333333333	
8	1	50	75	8	44.5	3337.5	5	278.125	100	8.333333333	
9	1	50	75	9	45.9	3442.5	5	286.875	100	8.333333333	
10	1	50	75	10	42.6	3195	5	266.25	100	8.333333333	
11	1	50	75	11	40	3000	1	50	100	1.666666667	
							Total	3054.38	Total	88.33	

LMP Case Interval Data

Effective Start	Effective Stop	Market Hour	Case MWs	EM	
1/1/2006 9:50	1/1/2006 9:55	1/1/2006 9:00	25	5	
1/1/2006 9:55	1/1/2006 10:00	1/1/2006 9:00	40	5	
1/1/2006 10:00	1/1/2006 10:05	1/1/2006 10:00	42.5	2	= Effective Stop - Call On
1/1/2006 10:05	1/1/2006 10:10	1/1/2006 10:00	44.5	5	
1/1/2006 10:10	1/1/2006 10:15	1/1/2006 10:00	48.8	5	
1/1/2006 10:15	1/1/2006 10:20	1/1/2006 10:00	50	5	
1/1/2006 10:20	1/1/2006 10:25	1/1/2006 10:00	48.8	5	
1/1/2006 10:25	1/1/2006 10:30	1/1/2006 10:00	46.5	5	
1/1/2006 10:30	1/1/2006 10:35	1/1/2006 10:00	47.6	5	
1/1/2006 10:35	1/1/2006 10:40	1/1/2006 10:00	44.5	5	
1/1/2006 10:40	1/1/2006 10:45	1/1/2006 10:00	44.5	5	
1/1/2006 10:45	1/1/2006 10:50	1/1/2006 10:00	45.9	5	
1/1/2006 10:50	1/1/2006 10:55	1/1/2006 10:00	42.6	5	
1/1/2006 10:55	1/1/2006 11:00	1/1/2006 10:00	40	1	= Call Off - Effective Stop
1/1/2006 11:00	1/1/2006 11:05	1/1/2006 11:00	25	5	
1/1/2006 11:05	1/1/2006 11:10	1/1/2006 11:00	5	5	
1/1/2006 11:10	1/1/2006 11:15	1/1/2006 11:00	0	5	
1/1/2006 11:15	1/1/2006 11:20	1/1/2006 11:00	0	5	

General Commitment Information

Commitment Period	10:00 until 11:00
Breaker Close with .5 MWs of Injection	9:52
Breaker Open	11:08
Hourly No Load in Dollars	100
Breaker Open	11:08

LMP Cases associated to the Real Time Midwest ISO Commitment Period

Scenario 5: Unit Is Not Following Dispatch Instructions

The Unit had a Real Time Midwest ISO Economic Commitment from 8:00 until 14:00. To avoid any confusion with the "Eligibility during Ramp Hours" section of this document, we will evaluate Hour Ending 11. The Unit was On-Line at 7:52. State Estimator ran and solved for the unit showing Injection MWs for the unit, prior to the LMP Case that ran for 7:55.

The Unit did not following Midwest ISO Base Points during Hour Ending 11 of the commitment period. The Unit ran through the end of its commitment. The Unit was Off-Line at 14:08. As a result of not following Midwest ISO Base Points outside of the tolerance, Incremental Energy is calculated using the SCUC Instructions for Hour Ending 11.

The unit had a two segment bid curve, Use Bid Slope equal to 1, and a No Load Cost of $100. For this Commitment the Unit would have $2851.04 of Incremental Energy Cost and $100 of No Load Cost.

Bid Data

Bid Slope	1

Market Hour	10:00									
Case	SEGMENTID	MW	PRICE	Case	MWs	Inc Energy$	Effective Minutes (EM)	IE*EM/60	No Load	NL*EM/60
0	1	50	75	0	35.49	2662.088	5	221.8406606	100	8.33
1	1	50	75	1	37.16	2787.363	5	232.2802211	100	8.33
2	1	50	75	2	40.76	3056.703	5	254.7252762	100	8.33
3	1	50	75	3	41.76	3131.868	5	260.9890125	100	8.33
4	1	50	75	4	40.76	3056.703	5	254.7252762	100	8.33
5	1	50	75	5	38.84	2912.637	5	242.7197816	100	8.33
6	1	50	75	6	39.75	2981.538	5	248.4615399	100	8.33
7	1	50	75	7	37.16	2787.363	5	232.2802211	100	8.33
8	1	50	75	8	37.16	2787.363	5	232.2802211	100	8.33
9	1	50	75	9	38.33	2875.056	5	239.5879135	100	8.33
10	1	50	75	10	35.58	2668.352	5	222.3626387	100	8.33
11	1	50	75	11	33.41	2505.495	5	208.79121	100	8.33
							Total	2851.04	Total	100

LMP Case Interval Data

Effective Start	Effective Stop	Market Hour	Case MWs	SP to SE Ratio	Adjusted MW	EM
1/1/2006 9:50	1/1/2006 9:55	1/1/2006 9:00	44	1	44.00	5
1/1/2006 9:55	1/1/2006 10:00	1/1/2006 9:00	43	1	43.00	5
1/1/2006 10:00	1/1/2006 10:05	1/1/2006 10:00	42.5	0.83516484	35.49	5
1/1/2006 10:05	1/1/2006 10:10	1/1/2006 10:00	44.5	0.83516484	37.16	5
1/1/2006 10:10	1/1/2006 10:15	1/1/2006 10:00	48.8	0.83516484	40.76	5
1/1/2006 10:15	1/1/2006 10:20	1/1/2006 10:00	50	0.83516484	41.76	5
1/1/2006 10:20	1/1/2006 10:25	1/1/2006 10:00	48.8	0.83516484	40.76	5
1/1/2006 10:25	1/1/2006 10:30	1/1/2006 10:00	46.5	0.83516484	38.84	5
1/1/2006 10:30	1/1/2006 10:35	1/1/2006 10:00	47.6	0.83516484	39.75	5
1/1/2006 10:35	1/1/2006 10:40	1/1/2006 10:00	44.5	0.83516484	37.16	5
1/1/2006 10:40	1/1/2006 10:45	1/1/2006 10:00	44.5	0.83516484	37.16	5
1/1/2006 10:45	1/1/2006 10:50	1/1/2006 10:00	45.9	0.83516484	38.33	5
1/1/2006 10:50	1/1/2006 10:55	1/1/2006 10:00	42.6	0.83516484	35.58	5
1/1/2006 10:55	1/1/2006 11:00	1/1/2006 10:00	40	0.83516484	33.41	5
1/1/2006 11:00	1/1/2006 11:05	1/1/2006 11:00	45	1	45.00	5
1/1/2006 11:05	1/1/2006 11:10	1/1/2006 11:00	44	1	44.00	5
1/1/2006 11:10	1/1/2006 11:15	1/1/2006 11:00	45	1	45.00	5
1/1/2006 11:15	1/1/2006 11:20	1/1/2006 11:00	44	1	44.00	5

LMP Cases associated to the Real Time Midwest ISO Commitment Period

General Commitment Information

Commitment Period	8:00 until 14:00
Breaker Close with .5 MWs of Injection	9:52
Breaker Open	14:08
Hourly No Load in Dollars	100
Hourly Integrated SEMW (HI SE)	45.5
HI Generation Set Point (HI SP)	38
Regulatoin Up Volume	0
Tolerance Up Band	5 MW
UD_TOL_UP	43 MW
SP to SE Ratio*	0.83516484

*equal to HI SP/HI SE rounded to 8 decimals

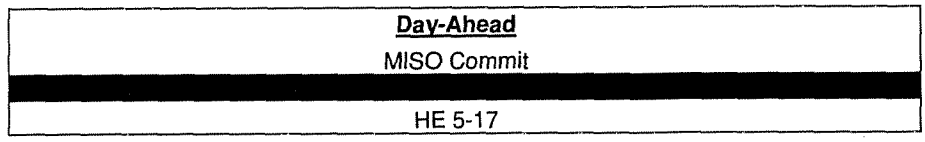
G. Eligibility Scenarios

The objective of this section is to provide several RSG eligibility examples. The examples are based on the eligibility rules presented in earlier sections of this document.

G.1 Day-Ahead Commitment

G.1.1 Day-Ahead Eligibility

Generation Resource committed in the Day-Ahead Market by Midwest ISO.



Day-Ahead	Start-up	No-Load	Incremental Energy
	Eligible	Eligible	Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 5-17

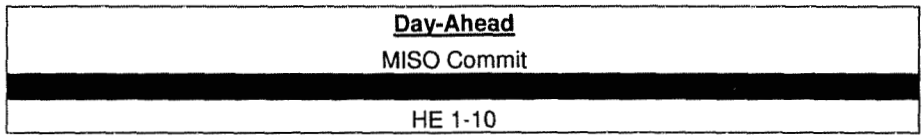
2) Resource meets all Day-Ahead eligibility requirements

3) Resource is eligible for Start-up, No-Load and Incremental Energy Costs in Day-Ahead

G.2 InitialOnHours Determination

G.2.1 Positive InitialOnHours (IOH)

Generation Resource committed in the Day-Ahead Market by Midwest ISO.



Day-Ahead	Start-up	No-Load	Incremental Energy
	Not Eligible	Eligible	Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 1-10

2) IOH reviewed to determine number of hours elapsed since Resource was last online

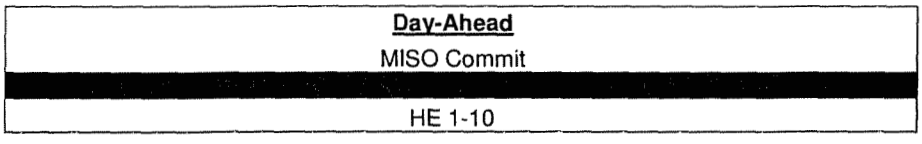
3) If IOH is positive, Resource will NOT be eligible for Start-up Costs since Resource was seen as online at beginning of the Operating Day

4) Resource recovered Start-up in previous commitment

5) Resource is eligible for No-Load and Incremental Energy Costs for commitment

G.2.2 Negative InitialOnHours (IOH)

Generation Resource committed in the Day-Ahead Market by Midwest ISO.



Day-Ahead	Start-up	No-Load	Incremental Energy
	Eligible	Eligible	Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 1-10

2) IOH reviewed to determine number of hours elapsed since Resource was last online

3) If IOH is negative, Resource will be eligible for Start-up costs since Resource seen as offline prior to the beginning of the current Operating Day

4) Resource is eligible for Start-up, No-Load, and Incremental Energy Costs in Day-Ahead

G.3 Next Day Must-Run Forecast Determination

G.3.1 Must-Run Forecast Does Not Exist

Generation Resource committed in the Day-Ahead Market by Midwest ISO.

Day-Ahead
MISO Commit
HE 11-24

Day-Ahead	Start-up	No-Load	Incremental Energy
	Eligible	Eligible	Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 11-24

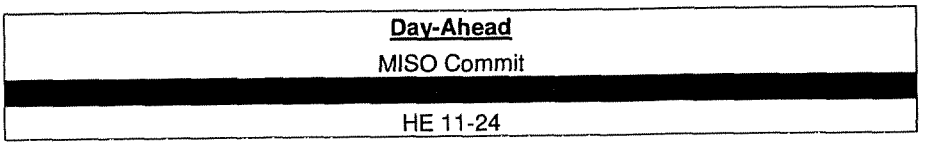
2) Check is performed to determine if Resource is forecasted Must-Run for next OD HE 1

3) If no forecasted Must-Run exists for next OD HE 1 then Resource is eligible for Start-up Costs

4) Resource is eligible for Start-up, No-Load, and Incremental Energy Costs in Day-Ahead

G.3.2 Must-Run Forecast Exists

Generation Resource committed in the Day-Ahead Market by Midwest ISO.



Day-Ahead	Start-up	No-Load	Incremental Energy
	Not Eligible	Eligible	Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 11-24

2) Check is performed to determine if Resource is forecasted Must-Run for next OD HE 1

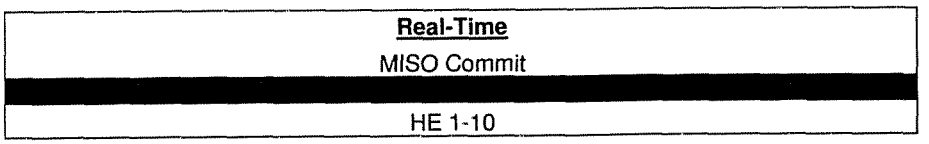
3) If a forecasted Must-Run exists for next OD HE 1 then Resource is NOT eligible for Start-up Costs

4) Resource is eligible for No-Load and Incremental Energy Costs in Day-Ahead

G.4 Real-Time Commitment

G.4.1 Following Dispatch

Generation Resource committed in the Real-Time Market by Midwest ISO. Resource follows dispatch during the Commitment Period.



Day-Ahead	Start-up		No-Load		Incremental Energy
	Not Eligible		Not Eligible		Not Eligible
Real-Time	**Start-up**		**No-Load**		**Incremental Energy**
	Yes		HE 1-10		HE 1-10

1) No Day-Ahead commitment exists

2) Generation Resource committed by Midwest ISO in Real-Time for HE 1-10

3) Resource began ramp within Start Time Window

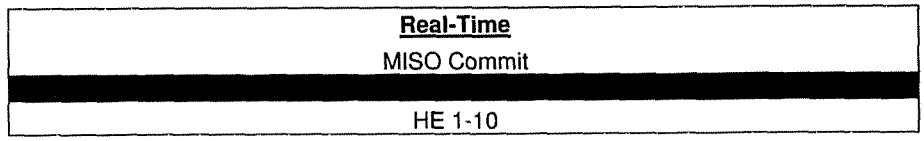
4) Resource is Present in an Approved UDS Solution at start of Commitment Period

5) Resource follows dispatch for entire Commitment Period

6) Resource is eligible for Start-up, No-Load, and Incremental Energy Costs in Real-Time

G.4.2 Not Following Dispatch

Generation Resource committed in the Real-Time Market by Midwest ISO. Resource does not follow dispatch for the last two hours of the Commitment Period.



Day-Ahead	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Yes	HE 1-10	HE 1-8 and 10 calculated using SE, HE 9 calculated using GEN_SP

1) No Day-Ahead commitment exists

2) Generation Resource committed by Midwest ISO in Real-Time for HE 1-10

3) Resource began ramp within Start-up Window

4) Resource is Present in an Approved UDS Solution at start of Commitment Period

5) Resource follows dispatch for HE 1-8, does not follow dispatch for HE 9 & 10

6) Resource is eligible for Start-up costs

7) Resource Incremental Energy is calculated using GEN SP in HE9 as it is not following dispatch

8) Resource Incremental Energy is calculated using SE in HE 10 as it is the last hour of the Commitment Period

G.4.3 Pre-existing Must-Run Designation

Generation Resource committed in Real-Time Market by Midwest ISO; pre-existing Market Participant specified Real-Time Must-Run period exists.

Real-Time	
MISO Commit	MP specified Must-Run
HE 1-8	HE 9-12

Day-Ahead	**Start-up**		**No-Load**		**Incremental Energy**
	Not Eligible		Not Eligible		Not Eligible
Real-Time	**Start-up**		**No-Load**		**Incremental Energy**
	Not Eligible		HE 1-8		HE 1-8

1) No Day-Ahead commitment exists

2) Market Participant specified Must-Run for HE 9-12, prior to MISO committed Real-Time CP

3) Generation Resource committed by Midwest ISO in Real-Time for HE 1-8

4) Resource is Present in an Approved UDS Solution at start of Commitment Period

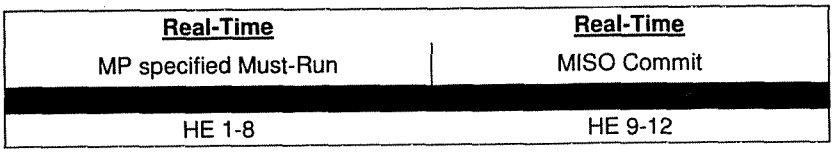
5) Resource follows dispatch for HE 1-8

6) Resource is NOT eligible for Start-up costs due to Must-Run status

7) Resource is eligible for No-Load and Incremental Energy Costs for all hours except Must-Run

G.4.4 Subsequent Must-Run Designation

Generation Resource committed in the Real-Time Market by Midwest ISO; subsequent to the MISO committed CP, Market Participant specifies a Real-Time Market Must-Run period.



Day-Ahead	Start-up		No-Load		Incremental Energy
	Not Eligible		Not Eligible		Not Eligible
Real-Time	**Start-up**		**No-Load**		**Incremental Energy**
	Eligible		HE 9-12		HE 9-12

1) No Day-Ahead commitment exists

2) Generation Resource committed by Midwest ISO in Real-Time for HE 9-12

3) Market Participant specified Must-Run subsequent to MISO committed Real-Time CP

4) Resource began ramp within Start Time Window

5) Resource is Present in an Approved UDS Solution at start of Commitment Period

6) Resource follows dispatch for all hours

7) Resource is eligible for Start-up Costs

8) Resource is eligible for No-Load and Incremental Energy Costs for all hours except Must-Run

G.5 Day-Ahead/Real-Time Commitment

G.5.1 Day-Ahead and Real-Time MISO Commitment

Generation Resource committed in Day-Ahead Market by Midwest ISO, subsequently two additional Real-Time periods committed by Midwest ISO.

	Day-Ahead	
Real-Time MISO Commit HE 1-6	MISO Commit HE 7-9	**Real-Time** MISO Commit HE 10-24

Day-Ahead	**Start-up**		**No-Load**		**Incremental Energy**
	Eligible		Eligible HE 7-9		Eligible HE 7-9
Real-Time	**Start-up**		**No-Load**		**Incremental Energy**
	Not Eligible		HE 1-6, 10-24		HE 1-6, 10-24

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 7-9

2) Generation Resource committed by Midwest ISO in Real-Time for HE 1-6 and HE 10-24

3) Resource is eligible for Start-up, No-Load and Incremental Energy costs for HE 7-9 that were committed in the Day-Ahead Market

4) Resource is eligible for No-Load and Incremental Energy Costs only for HE 1-6 and 10-24 that were committed in the Real-Time Market providing Resource began ramp within Start-up Window, is Present in an Approved UDS Solution at start of Commitment Period, and follows dispatch for all hours.

G.5.2 Day-Ahead MISO Commitment, Real-Time Must-Run

Generation Resource committed in Day-Ahead Market by the Midwest ISO, subsequent to the MISO committed CP; Market Participant specifies a Real-Time Market Must-Run period.

Day-Ahead	Real-Time
MISO Commit	MP specified Must-Run
HE 3-10	HE 11-21

Day-Ahead	Start-up	No-Load	Incremental Energy
	Eligible	HE 3-10	HE 3-10
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO in Day-Ahead for HE 3-10

2) Market Participant specified Real-Time Must-Run for HE 11-21 subsequent to MISO committed CP

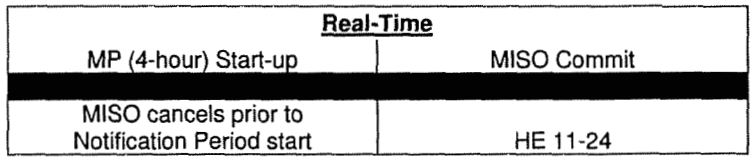
3) Resource is eligible for Start-up, No-Load, and Incremental Energy costs for HE 3-10 that were committed in the DA Market

4) Resource is NOT eligible for No-Load and Incremental Energy Costs for HE 11-21 that were designated Must-Run

G.6 Cancellations

G.6.1 Cancellation Prior to Notification Period

Generation Resource committed by Midwest ISO, subsequently cancelled by Midwest ISO prior to Notification Period start.



Day-Ahead	Start-up	No-Load	Incremental Energy
	Not Eligible	Not Eligible	Not Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible

1) Generation Resource committed by Midwest ISO

2) Generation Resource cancelled by Midwest ISO prior to Notification Period start

3) Resource does not run

4) Resource is NOT eligible for Start-up, No-Load, and Incremental Energy costs

G.6.2 Cancellation During Start-up Period

Generating Resource committed by Midwest ISO, subsequently cancelled by Midwest ISO during Resource Start-up period.

Real-Time	
MP (4-hour) Start-up	MISO Commit
MISO cancels during Start-up Period	HE 11-24

Day-Ahead	**Start-up**		**No-Load**		**Incremental Energy**
	Not Eligible		Not Eligible		Not Eligible
Real-Time	**Start-up**		**No-Load**		**Incremental Energy**
	Prorated		Not Eligible		Not Eligible

1) Generation Resource committed by Midwest ISO

2) Generation Resource cancelled by Midwest ISO during Start-up period

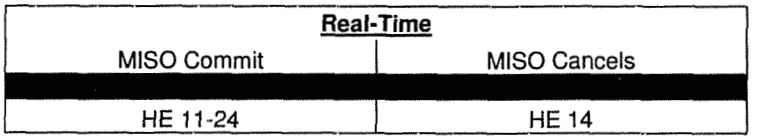
3) Resource does not run for HE 11-24

4) Eligibility for Start-up Costs will be prorated

5) Resource is NOT eligible to recover No-Load and Incremental Energy Costs.

G.6.3 Cancellation During Commitment Period

Generation Resource committed by Midwest ISO, subsequently cancelled by Midwest ISO after start of Commitment Period.



Day-Ahead	Start-up		No-Load		Incremental Energy
	Not Eligible		Not Eligible		Not Eligible
Real-Time	**Start-up**		**No-Load**		**Incremental Energy**
	Yes		HE 11-14 (per hour online)		HE 11-14 (per hour online)

1) Generation Resource committed by Midwest ISO
2) Resource began ramp within Start-up Window
3) Resource is on-line at start of Commitment Period
4) Resource follows dispatch for hours on line
5) Generation Resource cancelled by Midwest ISO after start of Commitment Period at HE 14
6) Resource is eligible to recover Start-up costs
7) Resource is eligible to receive No-Load and Incremental Energy costs for hours online prior to Commitment Period cancellation by Midwest ISO

G.7 Special

G.7.1 Early Start-up

Generation Resource committed by Midwest ISO. Resource does not have a Control Mode Transition to on during Start Time Window.

Real-Time	
MP Start-up	MISO Commit
MP comes online HE 2 for Must Run period HE 2-8 and never transitions to OFF prior to MISO commitment	HE 11-24

Day-Ahead	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	Not Eligible	Not Eligible
Real-Time	**Start-up**	**No-Load**	**Incremental Energy**
	Not Eligible	HE 11-24	HE 11-24

1) Generation Resource committed by Midwest ISO
2) Resource does not have Control Mode Transition to on during the Start-Time Window
3) Resource follows dispatch for HE 11-24
4) Resource is NOT eligible for Start-up Costs
5) Resource is eligible for No-Load and Incremental Energy costs