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## TECHNICAL BULLETIN

# Implementation Challenges of Incorporating Greenhouse Gas Compliance Costs

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## Revision History

Date	Version	Description	Author
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**Note:** *Consistent with Attachment G to the Business Practice Manual for Market Operations, the purpose of this technical bulletin is to provide the ISO's market participants with information concerning implementation issues the ISO experienced when implementing the greenhouse gas cost adder effective as of January 1, 2013*

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## Executive Summary

The ISO encountered two implementation issues in connection with its implementation of the greenhouse gas (GHG) adder as of January 1, 2013. First, the greenhouse gas (GHG) adder was not included in the day-ahead market for the January 1, 2013 trading day due to a data availability issue. The total bid cost for the January 1, 2013 trading day was approximately \$200,000 lower without the GHG adder than what it would have been with the GHG adder. In addition, the total energy payment from load was about \$25,000 lower than what it would have been had the GHG adder been incorporated in to the market. The ISO did not issue price corrections. The ISO will include the adder in bid cost recovery for the January 1, 2013 trading day thereby substantially mitigating the impact to the generating resources that were in the market. Second, from January 1, 2013 to January 8, 2013, one of the gas price indices used to calculate the GHG allowance adder was from an alternative publication rather than from the publications identified in the business practice manual. The cost differences were minor and the market impact was negligible. The ISO is not proposing any mitigation.

## Background

The state of California started the GHG emission cap-and-trade program in 2012 with one element—GHG compliance costs—to be enforced beginning January 1, 2013. GHG compliance costs may affect the relevant resources' costs including energy bids, minimum load cost, start-up costs and variable cost-based default energy bids. Market participants can choose to use cost-based or registered cost for their minimum load start-up costs as set forth in ISO tariff section 30.4. Cost based minimum load and start-up costs are calculated on a daily basis using the most recent available natural gas prices and, as of the January 1, 2013 trading day, the most recent available greenhouse gas emissions costs as well. Scheduling coordinators electing the registered cost option submit minimum load and start-up cost values subject to a cap of 200% of the projected cost-based calculations. Accordingly, the natural gas costs and GHG costs affect both the daily cost-based calculations as well as the registered cost cap.

Pursuant to the ISO tariff, the ISO started to incorporate GHG compliance costs into generated bids, minimum load and start-up costs as well default energy bids as of the January 1, 2013 trading day for resources with GHG compliance obligations. An independent entity, Potomac Economics, calculates the GHG cost adder and provides

the information to the ISO on a daily basis. Potomac Economics also calculates and streams the default energy bids to the ISO.

## Implementation Issues Encountered

The ISO encountered two implementation issues. First, the GHG cost adder was received too late on December 31, 2012 to be available for the day-ahead market run for the January 1, 2013 trading day. The data were made available for the real-time market for the January 1, 2013 trading day, so the real-time market was not affected. No price corrections were made for the day-ahead market results for the January 1, 2013 trading day. The market impact analysis for the January 1, 2013 trading day and the ISO's proposed mitigation are set forth in the next section.

The second issue was related to the gas price indices used to calculate the GHG allowance price index. As with the natural gas price index, the ISO uses at least two of three daily prices to calculate the GHG adder. In its tariff amendment filing the ISO had proposed to identify the names of the publications in the business practice manual rather than the tariff to allow greater flexibility to address changes in the publication industry.<sup>1</sup> The business practice manual required gas price indices from at least two of the following publications to be used: Intercontinental Exchange (ICE), Platt's Daily, and ARGUS Air Daily. However, the following publications were actually used in the first 8 days beginning with the January 1, 2013 trading day: Intercontinental Exchange (ICE), CME Group, and ARGUS Air Daily. Starting on January 8, 2013 (for the January 9 day-ahead market and January 8 real-time market), the publications identified in the business practice manual were utilized. In Table 1 below, the ISO identifies the GHG adder that was used in the ISO markets and the GHG value calculated based on the values in the publications identified in the business practice manual. Because the difference is negligible, the ISO has concluded that no further market impact assessment is warranted and no mitigation is necessary.<sup>2</sup>

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<sup>1</sup> FERC subsequently required the ISO to identify the names of the publications in the ISO tariff and the publications are identified in ISO tariff section 39.7.1.1.1.

<sup>2</sup> Platt's is not yet publishing a GHG price.

Table 1

Trade date	ICE	CME	Argus	GHG_INDEX	GHG_INDEX without CME	Difference
1/1/2013	14.75	15.10	14.65	14.83	14.7	(0.13)
1/2/2013	16.20	16.10	15.75	16.02	15.98	(0.04)
1/3/2013	15.85	15.65	15.75	15.75	15.80	0.05
1/4/2013	15.95	15.90	15.95	15.93	15.95	0.02
1/5/2013	Saturday	Saturday	Saturday	15.93	15.95	0.02
1/6/2013	Sunday	Sunday	Sunday	15.93	15.95	0.02
1/7/2013	16.25	16.35	16.35	16.32	16.30	(0.02)

\*No GHG data are available on Saturdays and Sundays. The last available GHG data are used for the weekend GHG index calculation.

## Market Impact Assessment for January 1, 2013 Trading Day

The ISO assessed the market impact of not including the GHG adder in the day-ahead market for the January 1 trading day by rerunning the market optimization with corrected start-up, minimum load and default energy bid values. With the GHG cost adder included in the rerun case, the total bid cost for the 24 hours increased by approximately \$200,000. The rerun of the day-ahead market for the January 1, 2013 trading day also showed system wide energy component price fluctuations as illustrated in Figure 1. The hourly price change ranges from -\$2.30 (lower price in rerun case) to \$5.16 (higher price in rerun case). The price fluctuations are largely due to the unit commitment changes as a result of GHG cost being considered. Some resources become uneconomic with GHG adder, and thus were decommitted in the rerun case; other resources were committed to make up for the uneconomic generation decommitments. The rerun case shows that total load energy payment (load\*LMP) would have increased by about \$25,000 if the GHG adder had been included in the day-ahead market for the January 1, 2013 trading day.

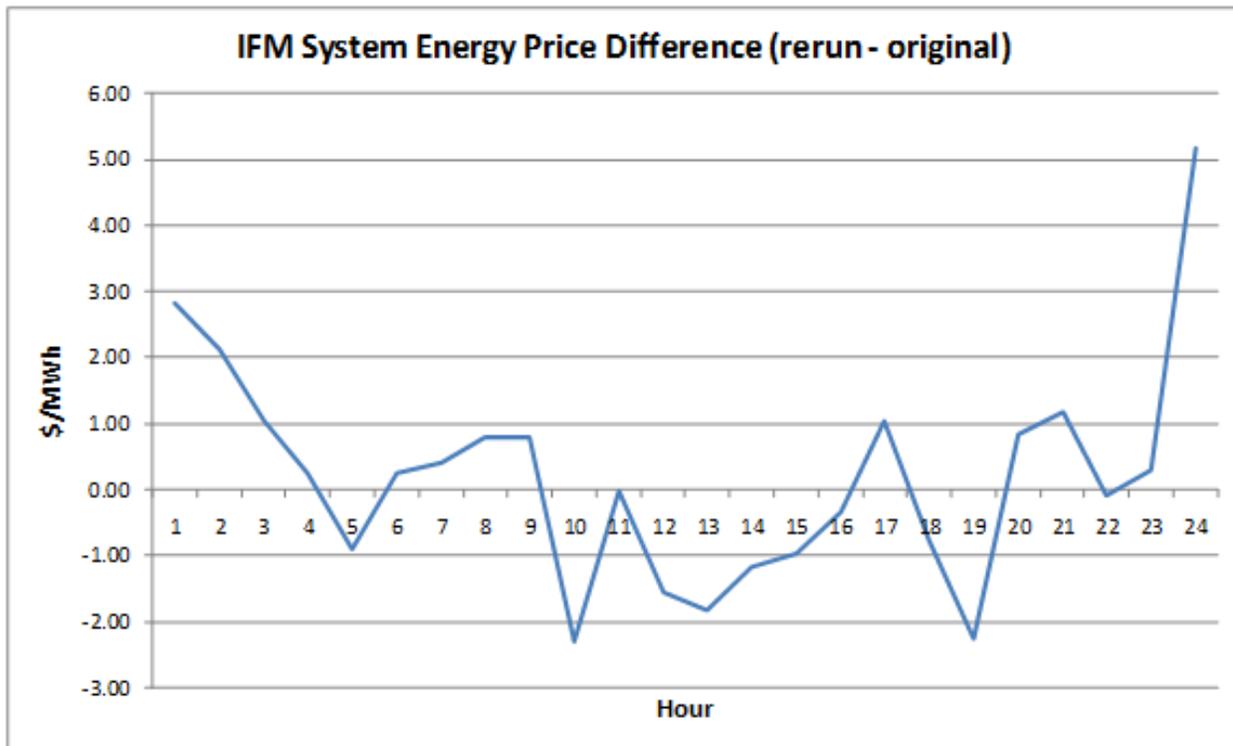


Figure 1: Trade day 1/1/2013 IFM system energy price changes after rerun

## Mitigation

The ISO did not issue any price corrections and does not believe the price impact is significant enough to warrant an application to FERC to correct the prices outside of the five day price correction window. Furthermore, since the actual commitment would not have changed, performing a price correction would have created an inconsistency between the corrected prices and the actual resource commitment and dispatch results, which would not be overcome by the slim benefit of price correction. The ISO will include the GHG adder in bid cost recovery for the January 1, 2013 trading day for resources with GHG compliance obligations. This will ensure that resources with a GHG compliance obligation that actually operated consistently with the the day ahead market results recover their GHG costs. The settlement adjustment will be issued in Recalculation Settlement Statement T+9M for the trade date of January 1, 2013 that is scheduled to publish on October 7, 2013. As discussed above, the ISO does not

propose any mitigation for the January 1-January 8, 2013 period associated with how the GHG adder was calculated.