Natural Gas and Fuels Markets

Central
# Midwest Natural Gas Market: Annual Hub Prices

## Midwest Day-Ahead Natural Gas Prices
Averaged Annually/Seasonally

<table>
<thead>
<tr>
<th>Year</th>
<th>Chicago City Gate</th>
<th>MichCon</th>
<th>AECO C Hub</th>
<th>Dawn Ontario</th>
<th>NNG/NBP Ventura</th>
<th>Henry Hub</th>
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<tr>
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## Notes:
Source: Derived from ICE data

Updated Apr-2016
Midwest Day-Ahead Prices

Source: Derived from ICE data

Updated Apr-2016
Midwest Natural Gas Market: Average Basis to Henry Hub

Midwest Day-Ahead Basis

Day Ahead Basis ($/MMBtu)

- Chicago City Gate Basis
- MichCon Basis
- AECO (USD/MMBtu) Basis
- Dawn Ontario USD Basis
- Northern Natural Ventura Basis

30D Moving Avg

Source: Derived from ICE data

Updated Apr-2016
Midwest Natural Gas Market: Average Monthly Basis

Midwest Monthly Average Basis Value To Henry Hub

Day-Ahead Basis Averaged Monthly ($/MMBtu)

- Chicago City Gate Basis
- AECO Basis
- MichCon Basis
- Dawn Ontario Basis
- Northern Natural Ventura Basis

Source: Derived from ICE data

Notes:

Updated Apr-2016
Midwest Natural Gas Market: Daily Demand

Daily Midwest Natural Gas Demand All Sectors

Source: Derived from Bentek Energy data

Note: Midwest is defined as Michigan, Indiana, Illinois, Wisconsin, Iowa, Minnesota, Nebraska, South Dakota, and North Dakota

Updated: Oct 2015
Midwest Natural Gas Market: NG Consumption for Power Generation

Midwest Natural Gas Consumption for Power Generation

Source: Derived from Bentek Energy data

Note: Midwest is defined as Michigan, Indiana, Illinois, Wisconsin, Iowa, Minnesota, Nebraska, South Dakota, and North Dakota

Updated: Oct 2015
Daily Texas Natural Gas Demand All Sectors

Source: Derived from Bentek Energy data

Updated: Oct 2015
Texas Natural Gas Consumption for Power Generation

Source: Derived from Bentek Energy data

Updated: Oct 2015
Electricity Markets
Central
Midwest Electricity Market: MISO Real Time Prices

MISO Real Time Prices—Two Year History

- Prior Year
- Last 30 days Indiana Hub Daily Avg Real Time Price was $26.25.
- Last 30 days Illinois Hub Daily Avg Real Time Price was $26.86.
- Last 30 days Michigan Hub Avg Real Time Price was $26.84.
- Last 30 days Minnesota Hub Daily Avg Real Time Price was $18.63.

Source: Genscape via Bloomberg

Updated: Oct 2015
Last 30 days average on peak load was 93 GW.
Midwest Electricity Markets Overview: MISO East On-Peak Spark & Dark Spreads

MISO East On-Peak Spark & Dark Spreads – One Year History

- Last 30 Days Avg On-Peak Spark Spread was $13.55 per MWh.
- Last 30 Days Avg On-Peak Dark Spread was $16.82 per MWh.

MISO East On-Peak Spark minus Dark Spread

- NG more profitable.
- Coal more profitable. (Last 30 day avg $1.64 per MWh.)

Assumptions:
- Electricity Price = Indiana Hub On-Peak DA
- NG Price Point = Chicago City Gate Spot
- NG Heat Rate = 7000 mmBtu/kWh
- Coal Type = Illinois Basin Mid Sulfur
- Coal Heat Content = 11800 Btu/lb
- Coal Heat Rate = 10000 mmBtu/kWh

Sources (all via Bloomberg): Electricity Price: Genscape; Coal Price: NYMEX

Sources: Bloomberg Genscape and NYMEX data

Updated: Oct 2015
MISO West On-Peak Spark & Dark Spreads – One Year History

Last 30 Days Avg On-Peak Spark Spread was $1.16 per MWh.

Last 30 Days Avg On-Peak Dark Spread was $11.99 per MWh.

MISO West On-Peak Spark minus Dark Spreads

NG more profitable. Coal more profitable. (Last 30 day avg $5.42 per MWh.)

Assumptions:
- Electricity Price = Minnesota Hub Hub On-Peak DA
- NG Price Point = Chicago City Gate Spot
- NG Heat Rate = 7000 mmBtu/kWh
- Coal Type = Powder River Basin
- Coal Heat Content = 8800 Btu/lb
- Coal Heat Rate = 10000 mmBtu/kWh

Sources (all via Bloomberg): Electricity Price: Genscape; Coal Price: NYMEX

Sources: Bloomberg Genscape and NYMEX data

Updated: Oct 2015
East North Central Generation Mix

States: IL, IN, MI, OH, WI

Sources: Bloomberg EIA data

Updated: Oct 2015
Midwest Electricity Markets Overview: East South Central Generation Mix

East South Central Generation Mix

States: AL, KY, MS, TN

- Coal Generation in Jul '15 was 17460 GWh (49%).
- Gas Generation in Jul '15 was 9050 GWh (26%).
- Nuclear Generation in Jul '15 was 6883 GWh (19%).
- Hydro Generation in Jul '15 was 1445 GWh (4%).
- Othr Renew Generation in Jul '15 was 541 GWh (2%).
- Oil Generation in Jul '15 was 24 GWh (0%).
- Total Generation in Jul '15 was 35403 GWh.

Sources: Bloomberg EIA data Updated: Oct 2015