

## Northeast Natural Gas Regions



## Overview:

### Market Description

Natural gas use is increasingly important to the Northeast. Though traditionally the Northeast has been a winter peaking region, increased reliance on natural-gas fired generation has evened out annual gas use. Increased dual requirements for natural gas as a space heat fuel and utilization of gas-fired plants has imposed greater challenges on the Northeast, compared to other regions, in aligning commercial and operating conditions between the gas and power industries. The Northeast has little indigenous production (mainly in the Appalachian basin) and none in New England. The Northeast relies upon conventional and LNG storage to meet peak-day gas needs. Despite increased gas use for power generation, pipeline utilization remains highly seasonal; major regional pipelines often operate at high load factors during the winter resulting in basis differentials to upstream liquid trading points that may greatly exceed firm transportation tariff levels. LNG plays a critical role in the overall supply mix and accounts for up to 30 percent of peak-day gas needs in New England. Market participants in the Northeast can draw upon the nation's most extensive portfolio of dual, gas-oil fired power plants to flexibly respond to market price and load changes.

### Geography

**States covered:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia, and Vermont.

### Major Trading Hubs

Algonquin Citygates, Columbia Gas Appalachia, Texas Eastern M3, Transco Zone 6 NY, and, Transco Zone 6 Non-NY.

## Storage

**State Capacity:** New York, Pennsylvania, and West Virginia accounted for 100 percent of total conventional storage capacity in the Northeast in 2005. New England has no conventional storage capacity, but it has about 18.4 Bcf of LNG storage capacity – 3.4 Bcf at the Everett terminal and the remainder at satellite storage locations throughout New England. New York and New Jersey add about 3.2 Bcf and 3.7 Bcf of LNG related storage capacity, respectively.

Aquifer Capacity: 0%

Depleted Field Capacity: 99%

Salt Cavern: 1%

Total Capacity: Northeast has 18 percent of total US storage capacity.

Major Storage Pipelines and Capacity:

Columbia System: 246 Bcf

Dominion: 290 Bcf

National Fuels: 69 Bcf

### Demand by Sector (2005):

- Residential: 38%
- Commercial: 21%
- Industrial: 33%

**State:** New York, New Jersey, and Pennsylvania make up 68 percent of total Northeast demand and about 12 percent of total U.S. demand.

**Northeast Total:** 3.5 Tcf annually ( or 9.9 Bcfd) which makes up 18 percent of total U.S. daily demand.

**Consumer Total:** 14.4 million, which is approximately 21 percent of total consumers in the U.S.

**Key Consuming States:** New York, New Jersey, and Pennsylvania make up 71 percent of total consumers in the Northeast and about 15 percent of total consumers in the U.S.

**Residential Consumers:** 91%

**Production**

**State:** Northeast gas production concentrated in Pennsylvania and West Virginia; together they account for 87 percent of total Northeast production. Nationally, however, these supplies equal about 2 percent of total U.S. production.

**Total:** Total Northeast production equals 0.4 Bcfd; it makes up 2 percent of total U.S. daily production.

**Yearly Change:** Northeast regional gas production in 2005 declined about 4 percent from 2004; much of this decline is attributable to declines in Pennsylvania production which declined 15 percent.

**Prices**

<b>Transco Zone 6 NY</b>	<b>2005</b>	<b>2006</b>
Average Price	\$10.03	\$7.36
Average Basis	\$1.17	\$0.63
Highest Daily Price	\$28.12	\$10.75
Lowest Daily Price	\$6.24	\$3.93

**Pipeline Flows**

**Average Daily Northwest Deliveries to the Midwest:** 6.9 Bcfd (2005) 6.6 Bcfd (2006)

**Major Pipelines:** Transco, Texas Eastern and Columbia carry a significant amount of gas from the Gulf coast to the Northeast.

**Average Daily Midwest Deliveries to the Northeast:** 1.6 Bcfd (2005) 1.6 Bcfd (2006)

**Major Pipelines:** Columbia, Texas Eastern and Dominion move gas from the Midwest to the Northeast.

## Imports and Exports

### Average Daily Imports from Canada into the Northeast:

2005: 2.8 Bcfd

2006: 2.7 Bcfd

**Major Importers:** Maritimes and Northeast pipeline, Tennessee Gas Pipeline and Iroquois Gas Transmission System flow the majority of the gas from Canada to the Northeast. Together, they represent the following percentages of pipeline gas imports:

2005: 83%

2006: 85%

### Average Daily LNG Send out:

2005: 0.3 Bcfd

2006: 0.3 Bcfd

Note: Represents daily receipts from Everett to Tennessee and Algonquin. Excluding volumes delivered via truck, consumed at Mystic or other distribution.

## Focal Points

**Gas Imports Decline:** Based on analysis of available capacity data from pipelines, northeast gas imports from Canada declined 5.8 percent in 2006, falling to 2.5 Bcfd from 2.6 Bcfd. Several factors accounted for declining net imports, including high gas storage levels in the United States, increased regional gas production from the Appalachian Basin, improvements in post-hurricane supplies from the Gulf of Mexico, mild weather in the United States, and structural demand growth in Canada.

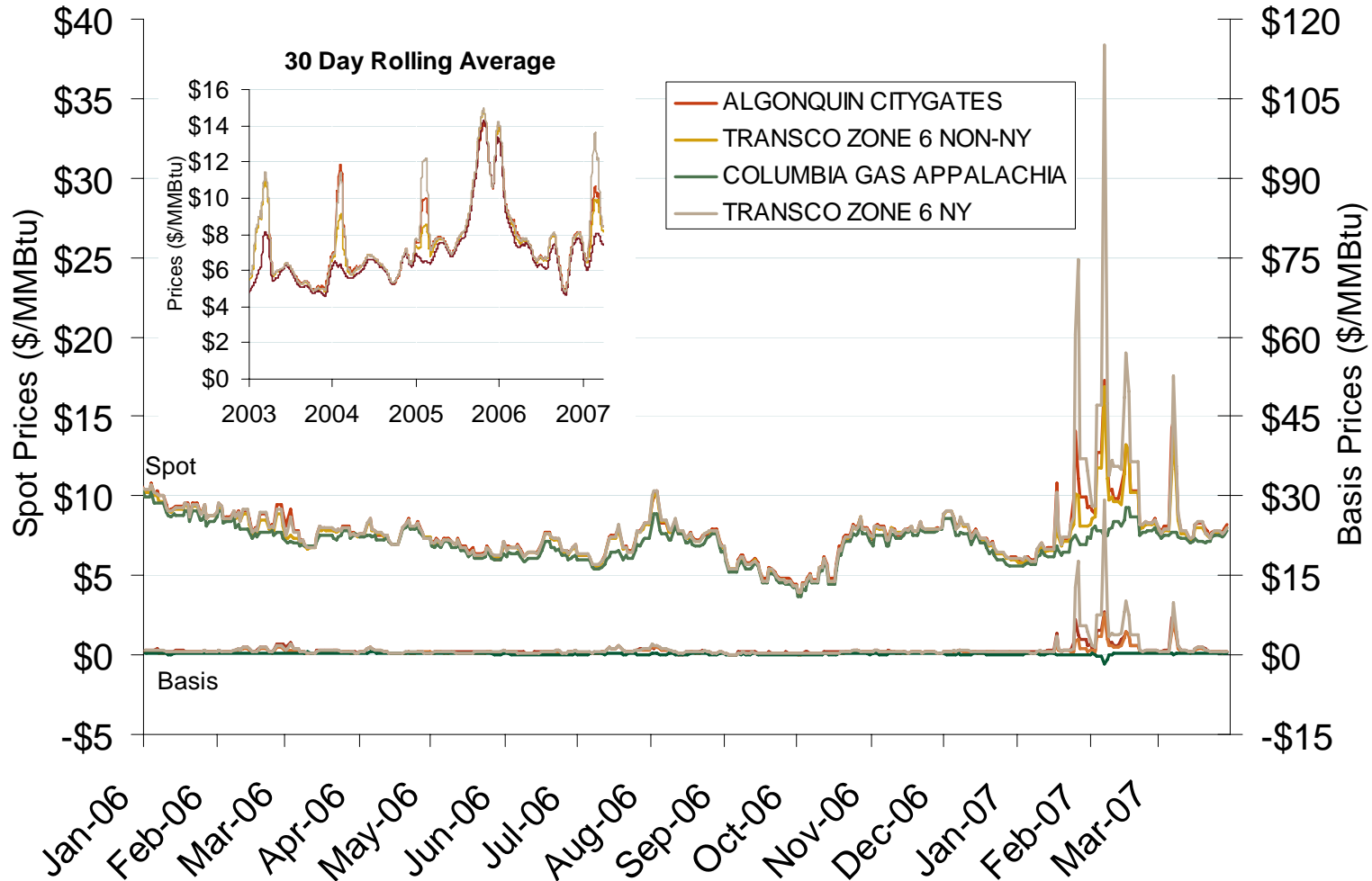
**Mid-Atlantic Capacity:** The LNG facility at Cove Point, Md., boosted pipeline capacity by 433 MMcfd in April 2005 by adding compressors on the Dominion Cove Point East project. Transcontinental Gas Pipe Line Corp. added 150 MMcfd of capacity to its system in New Jersey via looping.

**Production Rises:** Pipeline information indicates that Appalachian natural gas production grew 13 percent in 2006, to 1,055 MMcfd from 934 MMcfd.

## Yearly Average of DA Hub Prices

<b>Annual Average Day Ahead Prices (\$/MMBtu)</b>			
	<b>2005</b>	<b>2006</b>	<b>5-Years</b>
Algonquin citygates	\$9.75	\$7.40	\$6.87
Transco Z6 NY	\$10.04	\$7.36	\$6.90
Transco Z6 non-NY	\$9.63	\$7.30	\$6.71
Columbia-Appalachia	\$9.18	\$6.97	\$6.30

# Northeastern Day-ahead Hub Spot Prices and Basis

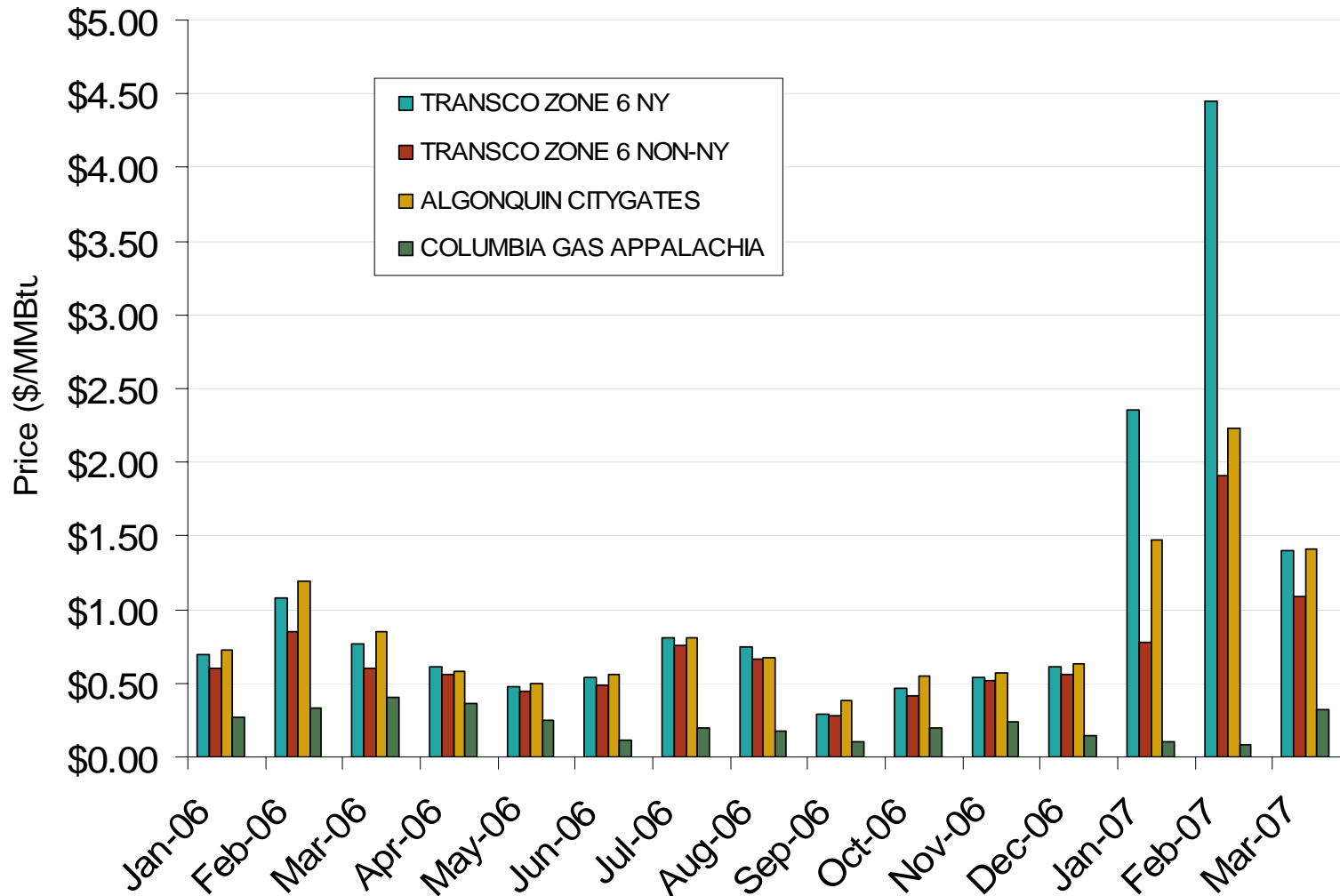


Source: Derived from Platts data.

Updated March 30, 2007

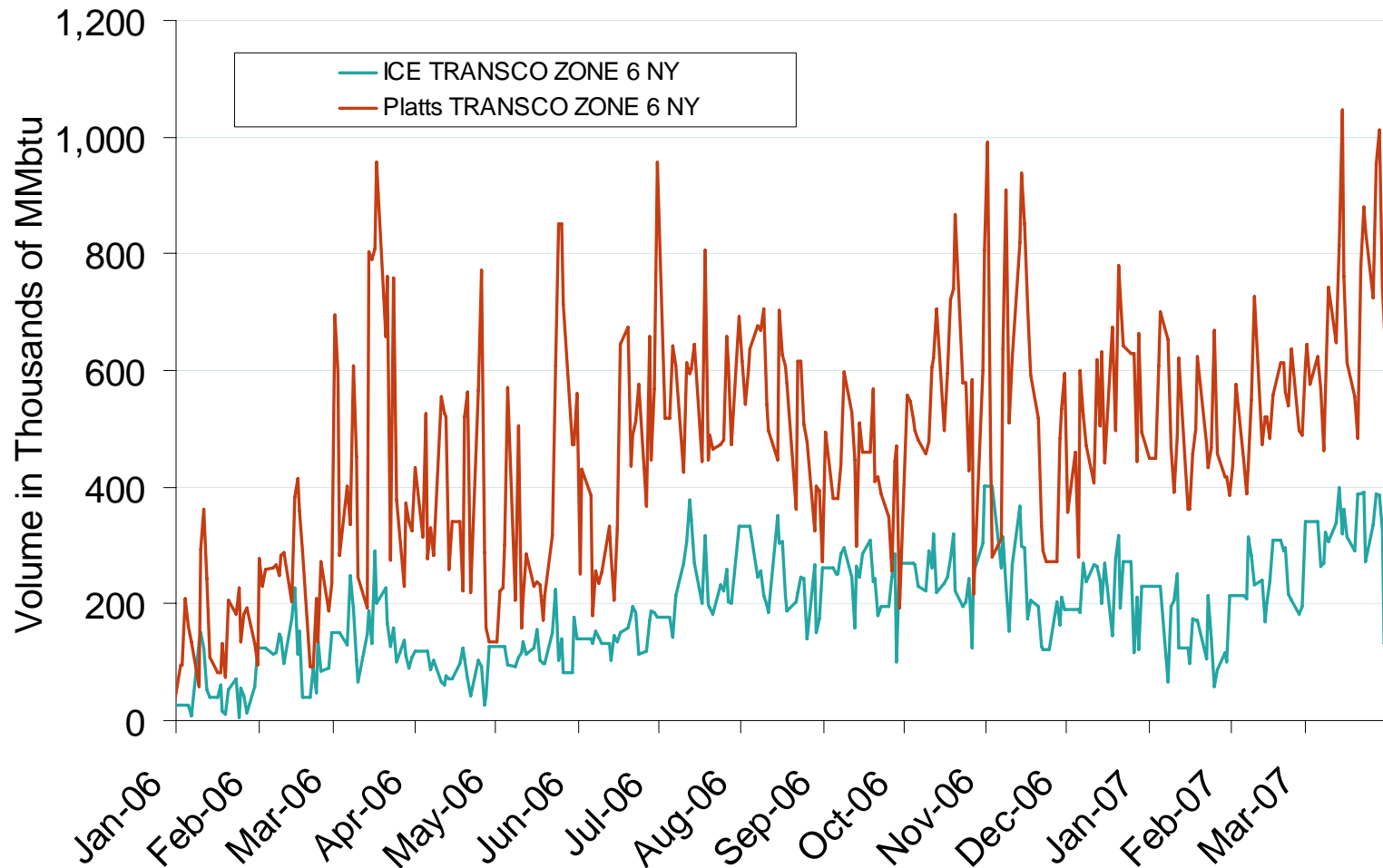


# Northeastern Monthly Average Basis Value to Henry Hub



Source: Derived from Platts data.

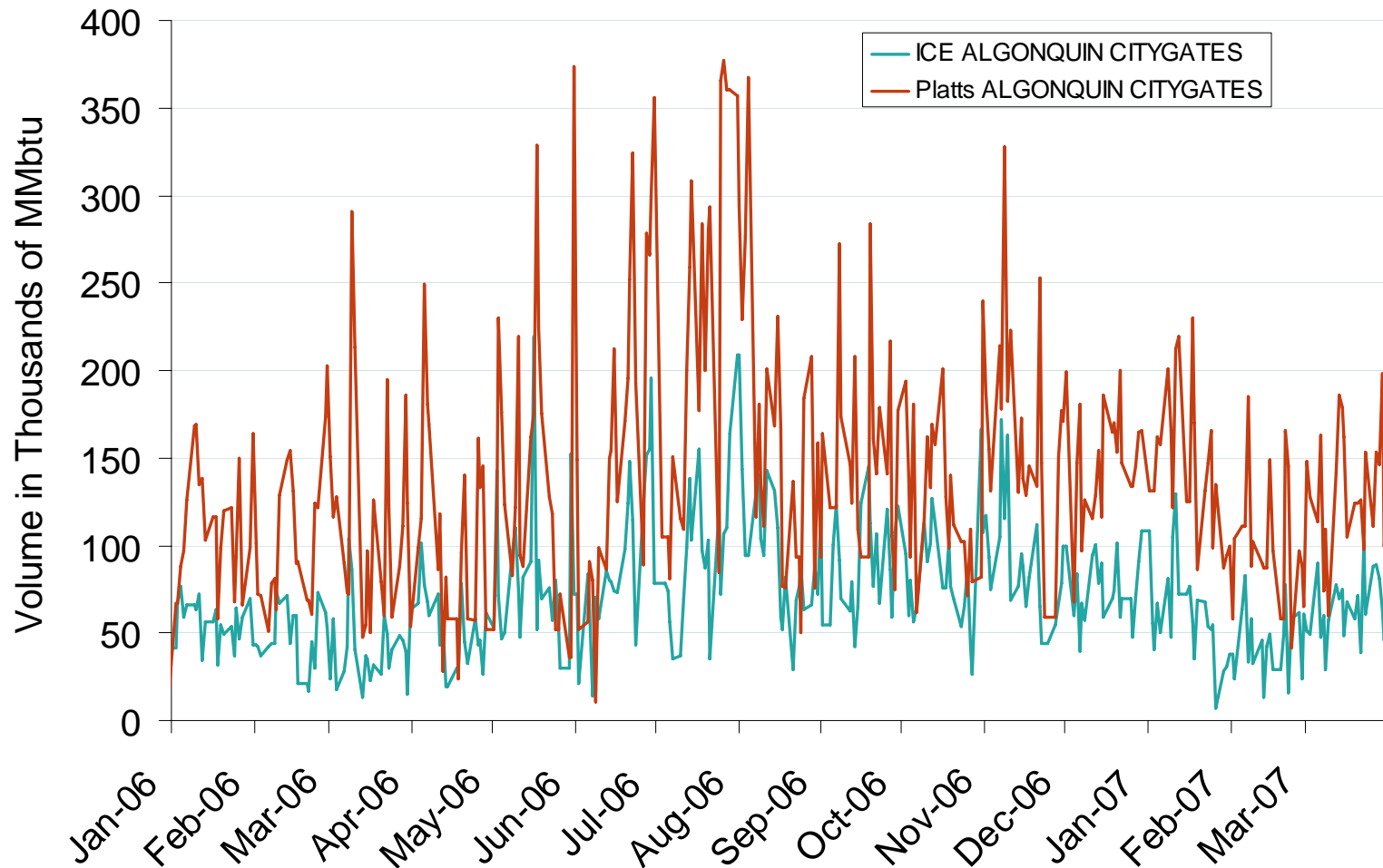
## Published and Traded Daily Spot Volumes at Transco Zone 6



Source: Derived from *Platts* and *ICE* data.

Corrected May 7, 2007

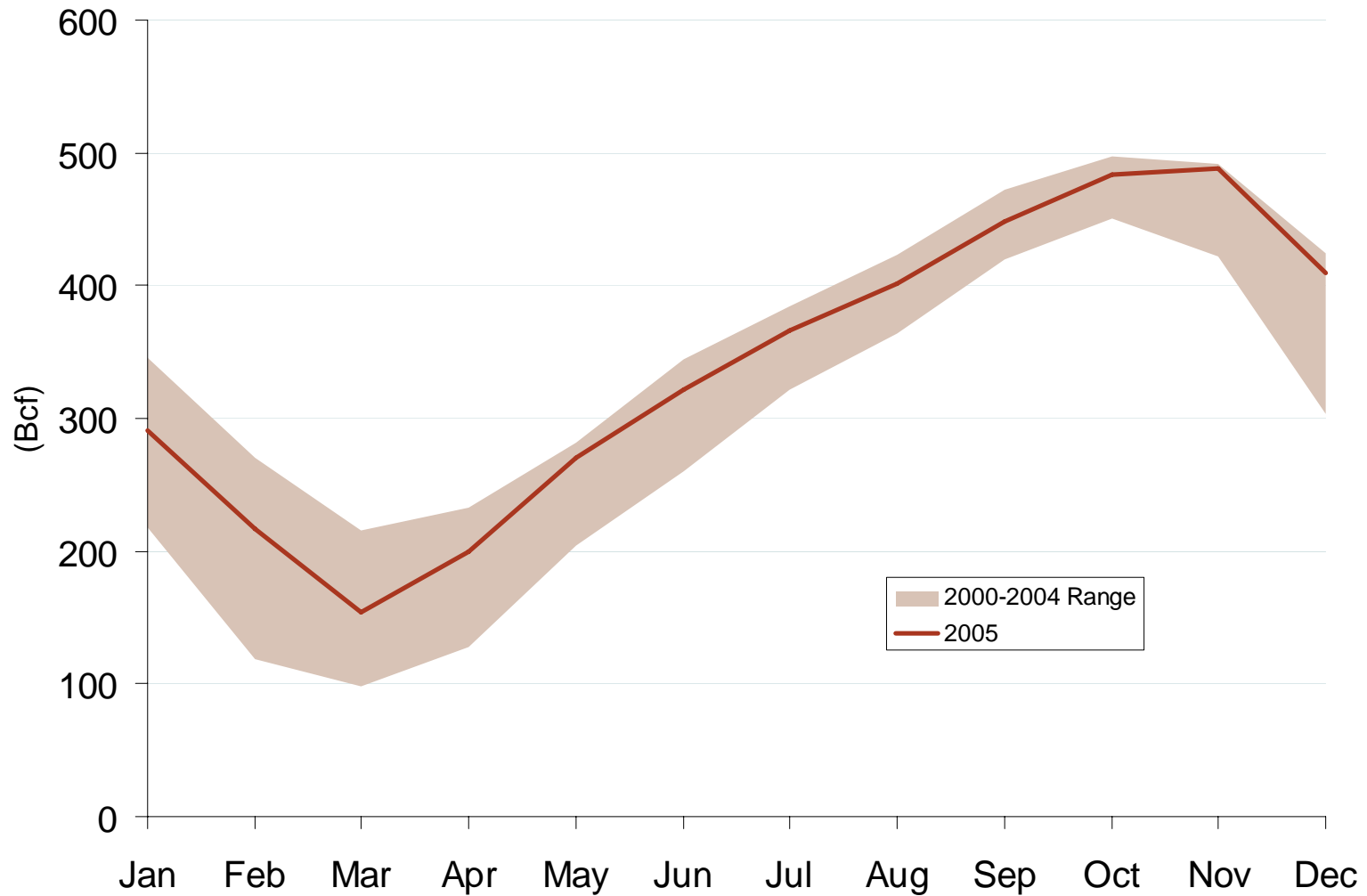
## Published and Traded Daily Spot Volumes at Algonquin



Source: Derived from *Platts* and *ICE* data.

Corrected May 7, 2007

## Northeast Regional Storage Inventory Levels



Source: Derived from EIA. Complete 2006 data not yet available.

Updated January 10, 2007

## Pipeline Projects

Pipeline Projects						
Company	Project Name	Capacity (MMcf/d)	Capital Cost (Millions)+	Status	Year Certified	From-To State
Columbia Gas Transmission Corporation	Hardy Storage Project	172	\$62.2	Under Construction	2005	MD-WV
Eastern Shore Natural Gas Company	Eastern Shore	15	\$9.0	In-Service 09/05 & 11/05	2005	PA-DE
Eastern Shore Natural Gas Company	Eastern Shore	7	\$18.0	In-Service 09/05 & 11/05	2005	PA-DE
Tennessee Gas Pipeline Company	Tewksbury-Andover Lateral	25	\$7.7	In-Service 10/05	2005	MA-MA
Transcontinental Gas Pipeline Corp.	Central New Jersey Expansion	105	\$13.0	In-Service 11/05	2005	NJ-NJ
Algonquin Gas Transmission	Cape Cod Project	28	\$16.0	Approved	2006	MA-MA
Dominion Transmission, Inc.		700	\$242.1	Approved	2006	NY-WV
Domionion Transmission, LLC		800	\$159.8	Approved	2006	MD-MD
Eastern Shore Natural Gas Company	2006-2008 System Expansion	47	\$33.6	Phase I In - Service 10/06	2006	PA-DE
Tennessee Gas Pipeline Company	Northeast ConneXion	136	\$110.0	Approved	2006	MA-PA
Tennessee Gas Pipeline Company	Essex-Middlesex Lateral	82	\$38.1	Approved	2006	MA-MA
Transcontinental Gas Pipeline Corp.	Leidy to Long Island Expansion	100	\$121.3	Approved	2006	NY-PA
<b>Total</b>		<b>2,217</b>	<b>\$830.8</b>			

+ Capital cost figures are estimates.

## Storage Projects

Storage Projects							
Company	Project Name	Capacity (Bcf)	Deliverability (MMcf/d)	Capital Cost (Millions)+	Status	Year Certificated	State
Dominion Transmission, Inc.	Northeast Storage Project	9.4	163	\$64.8	In-Service 04/06	2005	NY, PA, WV
Hardy Gas Storage, LLC	Hardy Storage	12.4	176	\$62.2	Under Construction	2005	WV
Central NY Oil and Gas Co, LLP	Stagecoach Phase II Expansion	13	0	N/A	Under Construction	2006	NY-PA
Tennessee Gas/National Fuel	Northeast ConneXion NY-NJ	0	114	\$39.10	Under Construction	2006	PA-NJ
Texas Eastern Transmission, LP	Accident Storage Enhancement	3	0	\$20.50	Under Construction	2006	MD
<b>Total</b>		<b>37.8</b>	<b>453</b>	<b>\$186.6</b>			

+ Capital cost figures are estimates.

## LNG Projects

LNG Projects						
Company	Project Name	Capacity (Bcf)	Send-out (Bcf/d)	Status	Year Certificated	State
Weaver's Cove Energy/Hess LNG	Weaver's Cove (Fall River, MA)	4.4	0.8	Approved	2005	MA
Dominion Cove Point LNG, LP	Cove Point Expansion	6.8	0.8	Under Construction	2006	MD
<b>Total</b>		<b>11.2</b>	<b>1.6</b>			

## Consumer by Market Segment (2005)

Sector	Residential	Commercial	Industrial	State Total	% of US	% of Region
Connecticut	475,221	52,572	3,437	531,230	1%	4%
District of Columbia	141,012	10,381	0	151,393	0%	1%
Delaware	137,115	12,070	179	149,364	0%	1%
Maine	18,633	8,178	69	26,880	0%	0%
Maryland	1,024,955	73,780	1,325	1,100,060	2%	8%
Massachusetts	1,297,508	120,167	12,019	1,429,694	2%	10%
New Hampshire	94,473	16,266	397	111,136	0%	1%
New Jersey	2,540,283	226,007	8,500	2,774,790	4%	19%
New York	4,229,396	378,889	2,925	4,611,210	7%	32%
Pennsylvania	2,600,574	233,132	5,576	2,839,282	4%	20%
Rhode Island	224,320	23,082	223	247,625	0%	2%
Vermont	33,015	4,781	41	37,837	0%	0%
West Virginia	374,301	36,535	145	410,981	1%	3%
<b>Regional Total</b>	<b>13,190,806</b>	<b>1,195,840</b>	<b>34,836</b>	<b>14,421,482</b>	<b>21%</b>	<b>100%</b>
<b>Total US</b>	<b>63,573,466</b>	<b>5,196,428</b>	<b>205,217</b>	<b>68,975,111</b>		
<b>% of US</b>	<b>21%</b>	<b>23%</b>	<b>17%</b>	<b>21%</b>		
<b>% of Region</b>	<b>91%</b>	<b>8%</b>	<b>0%</b>	<b>100%</b>		



## Natural Gas Demand by State (2005)

Sector	Residential	Commerical	Industrial	Vehicle Fuel	Electric Power	Other Fuel	State Total	% of US	% of Region
Connecticut	44,522	35,756	20,469	224	63,896	3,327	168,194	1%	5%
Delaware	10,339	8,383	15,257	68	12,875	40	46,962	0%	1%
District of Columbia	13,853	17,683	0	111	0	487	32,134	0%	1%
Maine	1,149	4,792	2,662	0	48,647	585	57,835	0%	2%
Maryland	85,768	69,718	23,772	281	20,478	2,173	202,190	1%	6%
Massachusetts	118,617	56,665	47,774	188	152,429	1,810	377,483	2%	10%
New Hampshire	7,793	9,844	6,889	1	45,926	22	70,475	0%	2%
New Jersey	231,065	169,857	74,857	448	125,098	1,234	602,559	3%	17%
New York	388,202	377,788	76,001	1,385	304,059	11,153	1,158,588	5%	32%
Pennsylvania	245,099	144,971	184,712	633	80,640	35,493	691,548	3%	19%
Rhode Island	19,088	11,043	5,892	59	43,912	695	80,689	0%	2%
Vermont	3,088	2,610	2,628	1	32	14	8,373	0%	0%
West Virginia	29,795	25,084	33,263	328	2,287	26,702	117,459	1%	3%
<b>Regional Total</b>	<b>1,198,378</b>	<b>934,194</b>	<b>494,176</b>	<b>3,727</b>	<b>900,279</b>	<b>83,735</b>	<b>3,614,489</b>	<b>16%</b>	<b>100%</b>
<b>US Total</b>	<b>4,806,136</b>	<b>3,101,526</b>	<b>6,745,835</b>	<b>22,265</b>	<b>5,869,145</b>	<b>1,696,296</b>	<b>22,401,203</b>		
<b>% of US</b>	<b>25%</b>	<b>30%</b>	<b>7%</b>	<b>17%</b>	<b>15%</b>	<b>5%</b>	<b>16%</b>		
<b>% of Region</b>	<b>33%</b>	<b>26%</b>	<b>14%</b>	<b>0%</b>	<b>25%</b>	<b>2%</b>	<b>100%</b>		

Source: Derived from EIA data.

Note: Units equal millions of cubic feet. Other Fuel consists of Lease Fuel, Plant Fuel, and Pipeline & Distribution use.

Updated January 12, 2007

## Natural Gas Production by State

Northeast Dry Production	2004	2005	Yearly Change	2005 % of Region	% of US
Maryland	34	46	35%	0%	0%
New York	46,050	55,180	20%	13%	0%
Pennsylvania	196,583	167,801	-15%	39%	1%
West Virginia	189,561	209,239	10%	48%	1%
<b>Regional Total</b>	<b>432,228</b>	<b>432,266</b>	<b>0%</b>	<b>100%</b>	<b>2%</b>
<b>US Total</b>	<b>18,757,477</b>	<b>18,074,237</b>	<b>-4%</b>		
<b>% of US</b>	<b>2%</b>	<b>2%</b>			

Source: Derived EIA data.

## Natural Gas Storage by Field Type (2005)

Field Type	Salt Dome		Aquifers		Depleted		Total		% of US Capacity	% of Region	Dry Proved Reserves
	Fields	Capacity	Capacity	Capacity	Fields	Capacity	Fields	Capacity			
New York	1	2,000	0	0	22	202,000	23	205,000	2%	14%	349,000
Pennsylvania	0	0	0	0	49	749,000	49	749,000	9%	51%	2,782,000
West Virginia	0	0	0	0	31	512,000	31	512,000	6%	35%	4,459,000
<b>Northeast Total</b>	<b>1</b>	<b>2,000</b>	<b>0</b>	<b>0</b>	<b>102</b>	<b>1,463,000</b>	<b>103</b>	<b>1,466,000</b>	<b>18%</b>		<b>7,590,000</b>
<b>US Total</b>	<b>30</b>	<b>250,532</b>	<b>44</b>	<b>1,350,689</b>	<b>320</b>	<b>6,667,222</b>	<b>394</b>	<b>8,268,443</b>			<b>204,385,000</b>
% of US	3%	1%	0%	0%	32%	22%	26%	18%			4%
% of Region	1%	0.1%	0%	0%	99%						

Source: Derived EIA data.

Note: Capacity units are measured in Millions of Cubic Feet.

Updated January 12, 2007