#### 6 October 2015

# NORTH AMERICAN GAS OUTLOOK

### **OCEANIC NIÑO INDEX (ONI)**



#### Niño 3.4 Region anomaly





- The ONI (Oceanic Niño Index) is the tool NOAA uses to monitor El Niño and La Niña conditions. NOAA considers El Niño conditions to be present when the ONI is at least +0.5. In other words, El Niño conditions exist when the three-month average sea surface temperature in the Niño 3.4 region is at least 0.5°C warmer than average.
- The ONI shows that we are in a strong El Niño year.

### **ANALYZING STEO'S RESCOMM FORECAST**



- The EIA *is* calling for a much milder winter than the last two years, in line with NOAA's forecast of a strong El Nino.
- Offsetting this somewhat is increasing 'gas-intensity' – more Bcf are used per HDD.
  - We attribute most of this to the continued switch off of fuel oil in the Northeast.
- If this is wrong, using last year's intensity of 8.16Bcf/HDD, total heatingseason ResComm demand would drop by 166Bcf (1.1Bcfd).
- **Upside** is purely weatherdriven.
- Downside may be weatherdriven, or come from overly aggressive intensity assumptions.



EIA STEO ResComm gas demand over heating season\* against HDDs\*\*

Bcf of heating-season ResComm consumption per HDD



Source: Bloomberg New Energy Finance Note: \*1 Nov-31 Mar; \*\*National, gas-weighted HDDs

# WORKING GAS STORAGE FORECAST (BCF)



**Bloomberg** 

## HENRY HUB CASH PRICES (\$/MMBTU)



## HENRY HUB CASH PRICES (\$/MMBTU)





# NYMEX HENRY HUB FUTURES, NEXT 12 MONTHS (\$/MMBTU)



**Bloomberg** 

# PRODUCING REGION SALT STORAGE (BCF)



Source: Bloomberg New Energy Finance

### APPALACHIAN BASIN GAS "EXPORTS" (BCFD)

- Appalachia is already exporting:
  - 3.2Bcfd to the Gulf Coast (USGC)
  - 2.0Bcfd to the Midwest
  - 1.2Bcfd to the Southeast and Canada



**Bloomberg** 

# SUPPLY DEMAND FORECASTS – US VS. THE EIA (BCFD)



6 October 2015

Source: Bloomberg New Energy Finance

Bloomberg

**PRODUCTION** MORE BULLISH IN WINTER, MORE BEARISH COME SPRING

### ROCKIES EXPRESS UNUTILIZED CAPACITY AFTER IN-SERVICE DATE

- Currently, ~1.4Bcfd is flowing east to west (nearly 80% utilization rate). This leaves 400MMcfd in unutilized capacity.
- The constraint is upstream compression facilities are still being completed to allow production from gathering systems into REX receipt points.



#### **REX Zone 3 receipts (MMcfd)**

Bloombera

### SOUTHWEST PENNSYLVANIA AND EAST OHIO INFRASTRUCTURE AND PRODUCTION OUTLOOK

#### Bloomberg NEW ENERGY FINANCE



- Ohio Pipeline Energy Network (OPEN) will bring online 550MMcfd in two phases.
  - From existing TETCO Mainline (Zone M2) to Zone ELA (*online as of 18 September*).
  - From new pipeline, OH Extension (also M2) to ELA (*due online 1 November*).
- Gathering systems add compression in October (Regency Ohio River and Rice), which will help fill the pipelines).
- Dominion South/M2 spot market will loosen as takeaway outpaces production gains, then re-tighten.

# OH Extension (greenfield lateral from Kensington processor)

Shipper	MDQ							
Chesapeake	350							
Total	100							
Rice	50							
CNX	50							
TOTAL	550							

# TRANSCO LEIDY LINE RECEIPTS (MMCFD)



- Transco's Leidy Line was one of the earliest beneficiaries of Northeast Pennsylvania (NEPA) Marcellus production
- Starting 1 May 2015, maintenance reduced receipts they remain 700-800MMcfd down from pre-maintenance levels
- The Leidy Southeast expansion will help, but market demand is needed
- We think NEPA production will take on seasonality

# US DRY GAS PRODUCTION, YOY GROWTH (BCFD)

- Appalachia continues to lead the way
- The Permian and Eagle Ford begin to exhibit year-on-year declines
- The Haynesville declines mildly from its H1 2015 "comeback"
- Forecast uncertainty is mostly in "Other" less about the Big 5 and more about the "Little 50".





### THE "LITTLE 50"



- We (and others) actively observe the largest production areas, monitoring drilling and completion activity, well inventory/deferrals, and midstream infrastructure, when that is a binding constraint.
- We do **not** monitor every production area, however. And even if we did, production in many is not dictated by rig counts, type curves, or midstream constraints, so forecasting is less straightforward.
- The chart to the right shows two things:
  - Structurally, growth is coming from the large production areas (the grey line is trending upwards while the green line is trending downwards).
  - On a month-to-month basis, though, variance in total production is due almost exclusively to variance at smaller plays, which still account for ~17Bcfd of production, in aggregate.
- Hence, forecast uncertainty is dominated by production from the "Little 50" – all those production areas that analysts do not spend much time tracking (and listed in the notes below).



Source: Bloomberg New Energy Finance, EIA, LCI Energy Note: "Lesser" plays are defined as total L48 production less Marcellus, Utica, Rockies, Eagle Ford, Permian, Federal Gulf of Mexico, Haynesville, Barnett, Fayetteville and Woodford.

# NORTHEAST BASIS SHORT, BUT FOR DIFFERENT REASONS

## WHAT CAUSES ALGONQUIN PRICES TO SPIKE? PIPELINE MAP



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### WHAT CAUSES ALGONQUIN PRICES TO SPIKE? LOGIC MAP

High

demand





Constraints

on pipeline

network

High prices

(spikes)

Cold

temperatures

### ALGONQUIN S/D DYNAMICS, 2014/15 HEATING SEASON LOGIC MAP IN ACTION





"The price spike that shouldn't have been" – an LNG vessel – British Merchant – arrived outside Canaport on 22 February but was forced to wait until 26 February to unload due to poor weather. (It had loaded up at Point Fortin on 15 February.) The resulting drop in LNG sendout caused a severe price spike and a corresponding uptick in oil generation.

## **SPIKE TO WHERE?** DETERMINING LEVELS



- 2013/14 winter spikes needed to spike higher than 2014/15, as fuel oil was more expensive (crude oil prices started their drop in summer 2014).
- Currently, fuel oil prices are around \$11.50-12.00/MMBtu. Since many plant co-fire gas and fuel oil, they will have similar heat-rates, allowing for a direct price comparison between the fuels.



Algonquin citygate price (\$/MMBtu) ------ Fuel oil price (\$/MMBtu) ------ Oil generation (GWh/d)

## **ALGONQUIN BASIS OUTLOOK**



- The market is still pricing a lot of fear.
- New England is an LDC-driven market, where costs are passed through to consumers. Priority #1 is to meet consumer demand. Priority #2 is at least cost.
- Humans are natural auto-correlators: "The last two winters (in New England) were terrible! Therefore, this one will be, too."



### **NEW ENGLAND PIPELINE ADDITIONS**





Project Name	Pipeline	In-Service Date	Volume (MMcfd)
CT Expansion	TGP	Nov 2016	72.1
AIM	AGT	Nov 2016	342
Atlantic Bridge	AGT	Nov 2017	132.7
SONO and C2C	IGT and PNGTS	Nov 2017	300
NED	TGP	Nov 2018	1,300
Access Northeast	AGT	Nov 2018	900

- Pipelines are proposed from all directions – via Canada, New York, and Connecticut – to reach demand in central New England.
- The proposed pipelines will increase capacity by 70% (+3.0Bcfd) by winter 2018, including a 1.3Bcfd project (Northeast Energy Direct, NED) spearheaded by Kinder Morgan.

### **TRANSCO Z6 DYNAMICS**





- Lower NY Bay Lateral used to be 547MDth/d to Long Beach. It operated at those levels (ie, full) during winter.
- Rockaway Lateral is new build to a new point (Rockaway), for 647MDth/d.
- Lower NY Bay Lateral expanded by 100MDth/d. Gas sourced from Station 195.
- Net-net, the Rockaway Lateral will **NOT** add 647MDth/d of capacity into NY, but only 100MDth/d.
- Not only that, but National Grid was already buying gas at Station 195 last winter (50-60MDth/d a day).

# LONGER-TERM OUTLOOK

## **CHANGE IN PRODUCTION, 2014-2020**





## CHANGE IN DEMAND, 2014-2020





6 October 2015

## OUT OF APPALACHIA 18BCFD OF TAKEAWAY ONLINE OVER 2015-2018





### APP BASIN TAKEAWAY CAPACITY AND PRODUCTION FORECAST Bloomberg (BCFD)

- We think 20 major pipeline projects with combined incremental takeaway capacity of 17Bcfd will be built from Sept 2015-Nov 2018.
- Growth in takeaway capacity outpaces production growth basis should narrow substantially by 2017/18.



# GAS BREAKEVENS – *IN-BASIN PRICING* (IE, NO BASIS) (\$/MMBTU)

8 - 7 - 6 - 5 -	The cost of gas supply is as low as it has been for the past two decades – we think D&C has come down fairly permanently																																							
4 -																																								
3 -																																								
1 -	0.49	1.47	1.82	1.94	2.06	2.27	2.45	2.62	2.70	2.73	2.76	2.77	2.81	2.98	3.04	3.05	3.08	3.09	3.16	3.16	3.23	3.24	3.27	3.43	3.47	3.66	3.68	3.84	4.05	4.10	4.13	4.14	4.18	4.25	4.31	4.33	4.91	5.69	6.99	12.29
0 -	Utica condy	Utica wet	Jonah	NE Marcellus core	SW Marcellus super-rich	Utica dry	SCOOP Core Condy	Haynesville core choked	Fayetteville core	SW Marcellus dry	NE Marcellus fairway	Cana condy	Pinedale	Piceance Williams Fork Hz	Central Marcellus	Barnett liquids	Greater Natural Buttes	Haynesville core unrestricted	North Montney gassy	Hoadley Glauconite	Greater Sierra (Horn River & Liard Basin)	Wattenberg Hz high-GOR	Fayetteville Tier 2	SW Marcellus wet	Piceance Williams Fork Vt	Barnett high-EUR	Cotton Valley liquids	Barnett core	Vermillion Almond	PRB CBM	Granite Wash	Cana gassy	Kaybob Duvernay gassy	Arkoma Woodford	SCOOP Core Gas	Haynesville Tier 2	Hawkville (Eagle Ford)	Cleveland	Wattenberg Vt	Miss Lime Tier 2

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sales.bnef@bloomberg.net

Charles Blanchard cblanchard1@bloomberg.net

