Paying for Pipelines

Who is likely to pay for additional capacity?

Energy in the Northeast, LSI Conference

Matthew O'Loughlin, Michael Tolleth,
Evan Klein

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THE Brattle GROUP

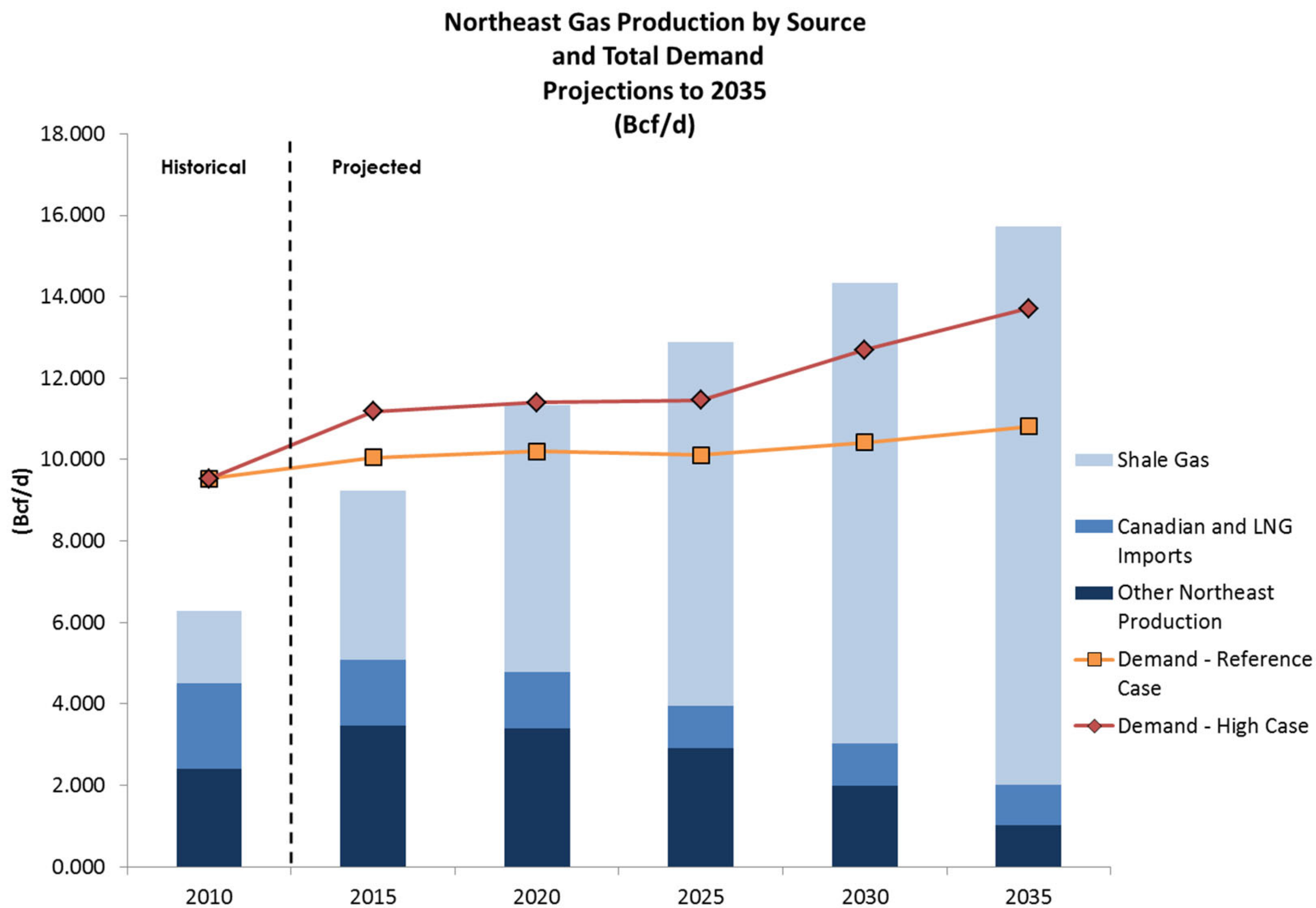
Agenda

Shifting Northeast Gas Flows Affect Capacity Demand

Pipeline Projects: Case Studies in Capacity Additions

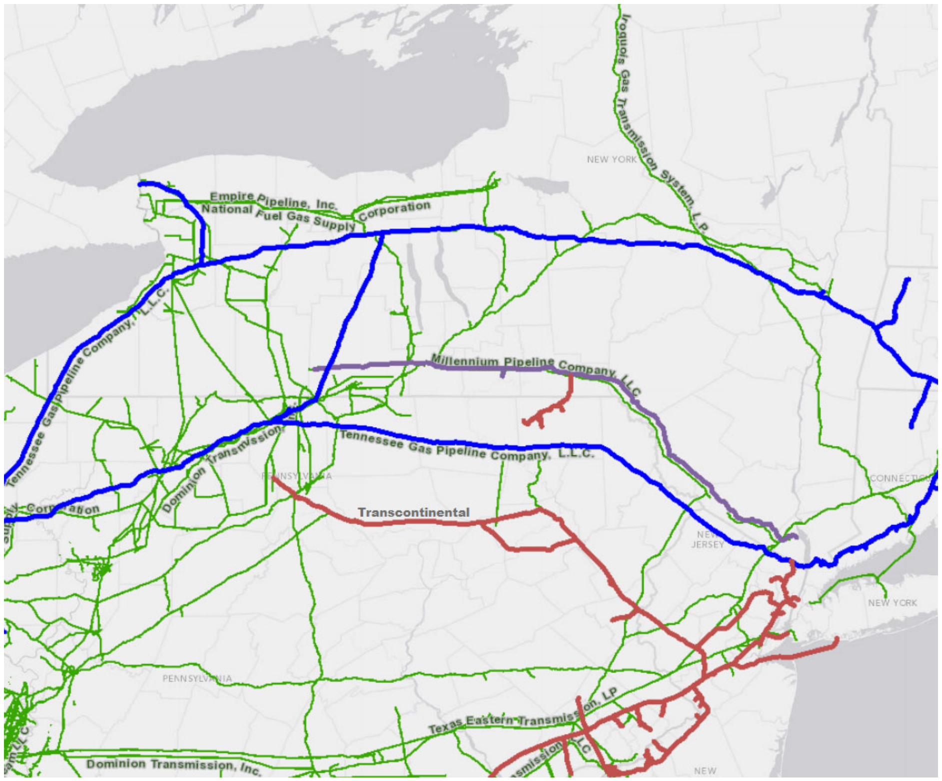
Recovery of Stranded Pipeline Costs

Northeast Natural Gas Production Increases by 150%+ through 2035

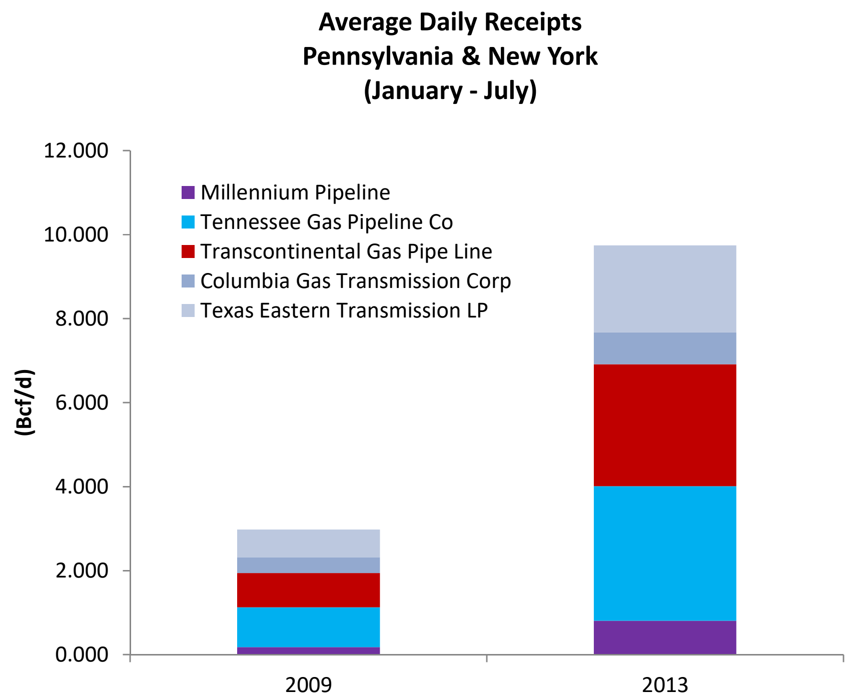


Source: Annual Energy Outlook 2012, EIA and Office of Fossil Energy.

In Just Four Years, Gas Receipts in PA and NY on Five Major Pipelines Have Seen a 3x Increase



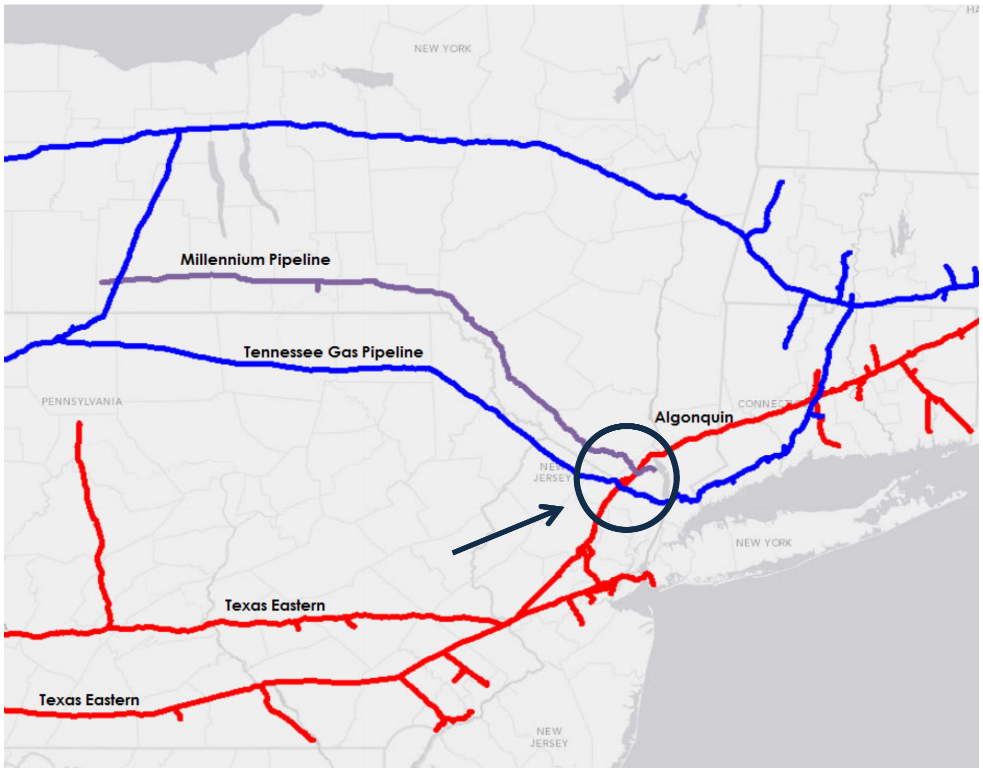
Source: SNL Maps.



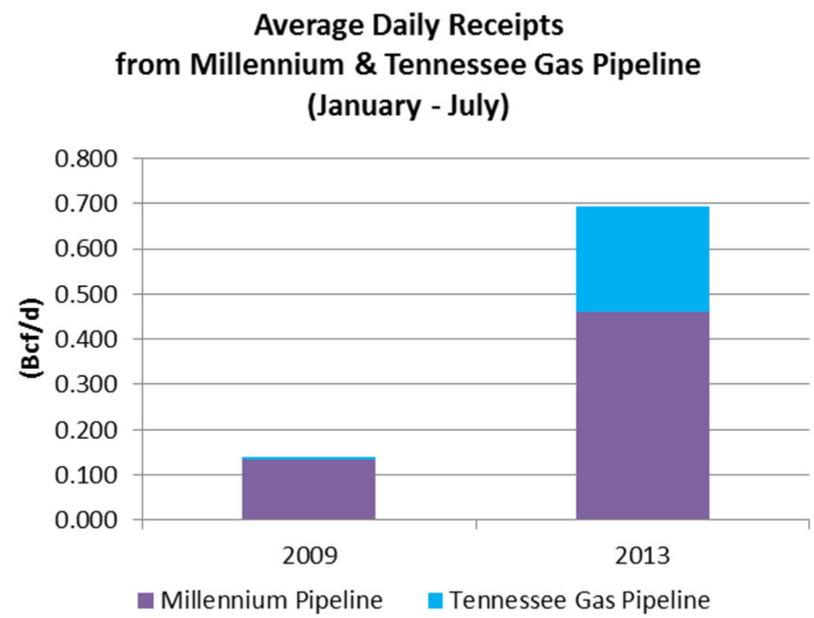
Source: Ventyx.

Marcellus production has caused a shift in pipeline flows and the need for additional capacity.

Marcellus Feeding Increased Gas Flows into Algonquin



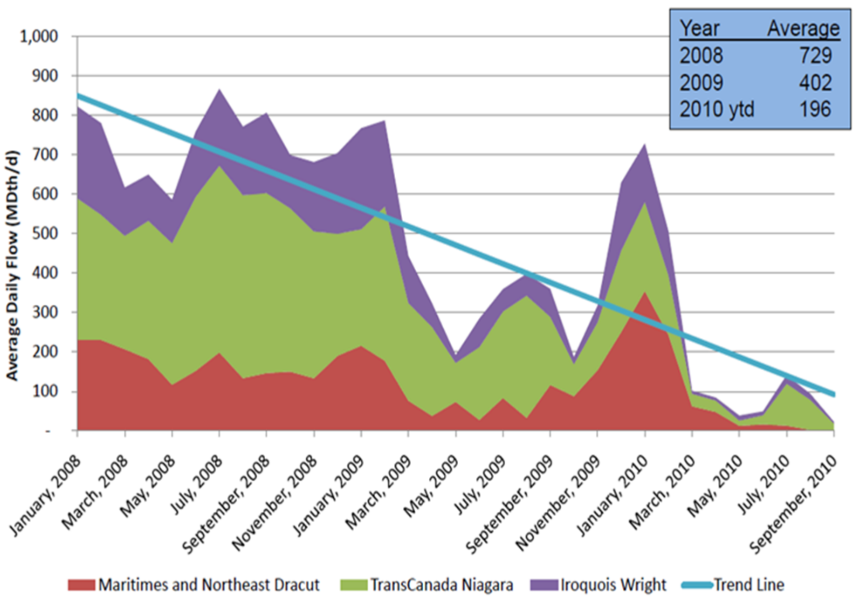
Source: SNL Maps.



Source: Ventyx.

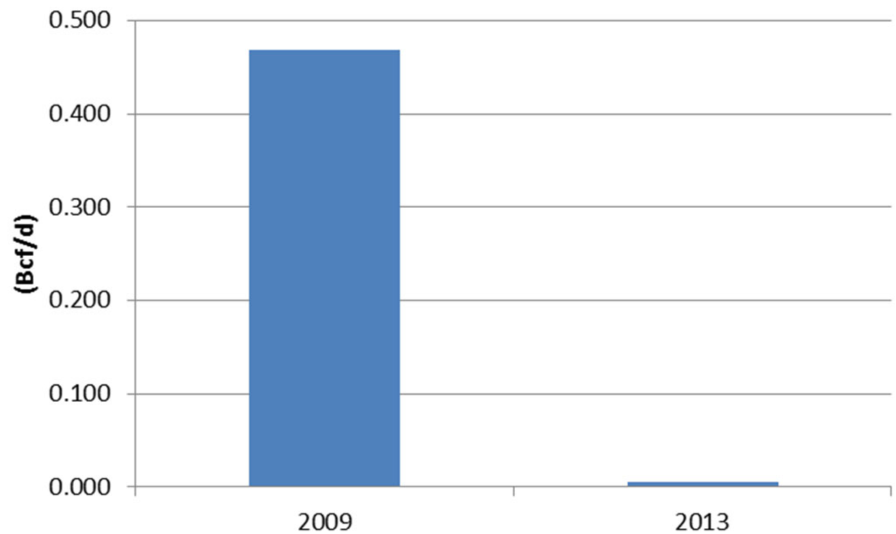
Marcellus Has Displaced Canadian and Gulf Coast in the Northeast

January 2008-September 2010 Scheduled Volume



Source: TGP 2011 Rate Case, Statement P.

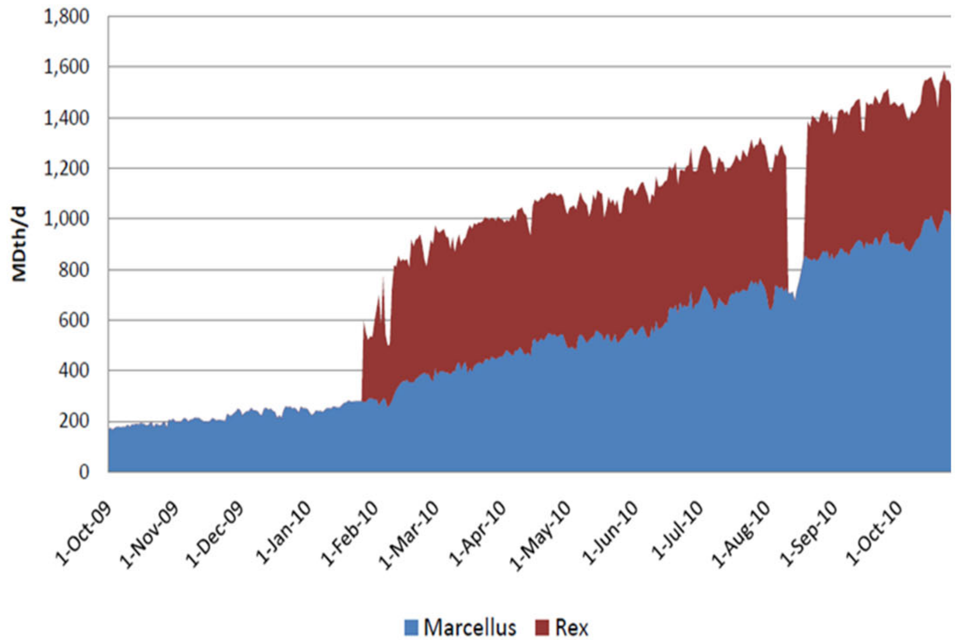
Average Daily Receipts from TransCanada (January - July)



Source: Ventyx.

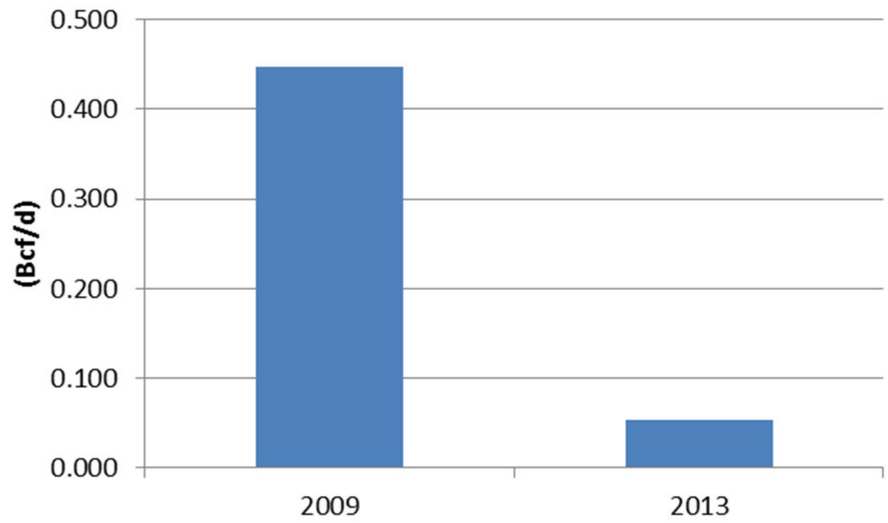
Marcellus Has Displaced Rockies Supply

Daily Receipts into TGP
10/01/09-10/31/10



Source: TGP 2011 Rate Case, Statement P.

Average Daily Receipts
from Rockies Express
(January - July)



Source: Ventyx.

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Shifting Northeast Gas Flows Affect Capacity Demand

Pipeline Projects: Case Studies in Capacity Additions

Recovery of Stranded Pipeline Costs

Pipeline Projects: Northeast Case Studies

- Tennessee's Marcellus Pooling Project (MPP)
  - 240,000 Dth/day
  - Marcellus supply region west to pooling areas in western PA
- Texas Eastern and Algonquin's NY/NJ Expansion Project
  - 800,000 Dth/day
  - Infrastructure allowing expanded gas deliveries in northern NJ and Manhattan
- Tennessee Gas Pipeline's Northeast Upgrade Project
  - 636,000 Dth/day
  - Marcellus supply region to Mahwah, NJ

Pipeline Projects – Overview

Certificate of Public Convenience

- Application to FERC for expansion (and new) projects
- FERC's "threshold test" for judging applications is "whether the project can succeed without subsidies from … existing customers".
  - Foster competitive markets and optimal construction levels while protecting captive customers and allowing efficient choice

Open Seasons

- Pipelines conduct binding and/or non-binding Open Seasons to solicit bids for firm transport capacity on expansion projects.
  - FERC's goal: provide open access to all potential shippers
  - Pipeline's goal: use it to gauge demand

Source: 88 FERC ¶ 61,227 Statement of Policy Issued September 15, 1999

Pipeline Projects – Overview

Rolled-in vs. Incremental Rates

- Incremental pricing presumed to meet FERC's threshold test
  - New shippers pay incremental cost of service ("COS") associated with new facilities, not system-wide COS
- "System" rate pricing done if roll-in of project costs into system cost of service will reduce system rates

Precedent Agreements

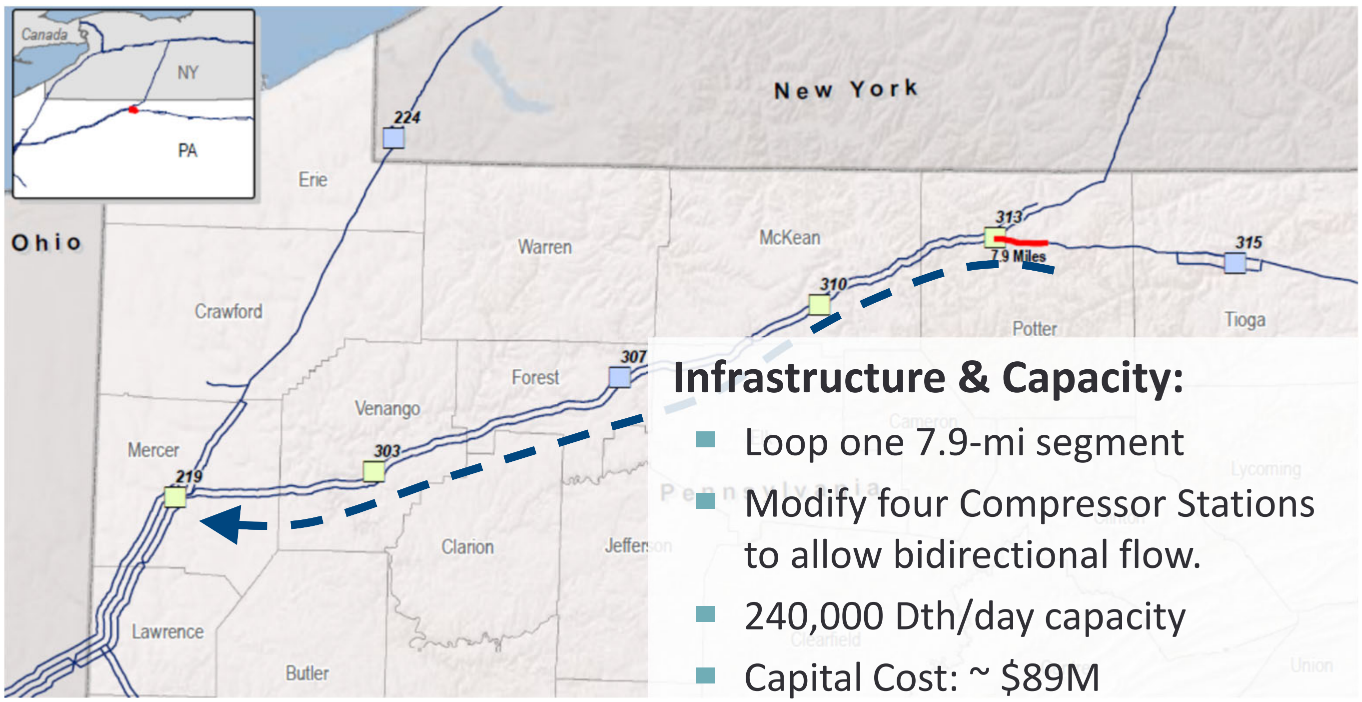
- Binding long-term contracts with "Anchor Shippers" and others
  - FERC: proof of public need,
  - Pipeline: Shifts cost recovery risk to shipper
- Shippers and Pipelines often agree on negotiated rates
  - cost of service "recourse" rates must be available

Case Studies - Lessons

- Gas producers are anchoring projects to move Marcellus Shale gas to market any way they can, including
  - supply outlets going both east (Northeast Upgrade) and west (MPP)
  - market area expansions serving constrained regions (NY/NJ)
  - Interconnected / interrelated projects
- Pipelines use open seasons in different ways. Two mainstays:
  - Anchor Shippers
  - Negotiated rates
- Incremental and rolled-in pricing are being used in different situations.

Tennessee's Marcellus Pooling Project (MPP)

- Expand upstream capacity
  - Marcellus supply area receipts
  - Deliveries to Station 219 and upstream (Zones 4, 2, and 1)



Infrastructure & Capacity:

- Loop one 7.9-mi segment
- Modify four Compressor Stations to allow bidirectional flow.
- 240,000 Dth/day capacity
- Capital Cost: ~ $89M

Source: Tennessee's Certificate Application (Docket CP12-28)

Marcellus Pooling Project – Open Seasons

Anchor Shippers

- Fully subscribed by Chesapeake (160,000 Dth) and Southwestern (100,000 Dth) via precedent agreements

Open Seasons

- Non-binding open season
  - Received 7 non-binding bids based on estimated reservation rates “between $0.18 and $0.23 per day”
- Binding open-season conducted *after* executing binding agreements with the Anchor Shippers for 100% of firm capacity
  - 20% of capacity available for bids that matched precedents
  - Maximum applicable recourse rate or discounted rate offered
  - No bids were received

Marcellus Pooling Project - Rates

Rolled-in Rate Treatment

- Chesapeake received a "discounted rate"

$$\text{minimum}\left(applicable\ c.o.s.rate, \frac{\$.36}{Dth}\right)$$

  reflecting shipments to Zones 1,2 and 4
- Southwestern received a "discounted rate"

$$\text{minimum}\left(applicable\ c.o.s.rate, \frac{\$0.25}{Dth}\right)$$

  reflecting shipments only to Zone 4
- These are discounted rates relative to maximum applicable "system" recourse rates

Marcellus Pooling Project – Rates cont'd

Rate Treatment

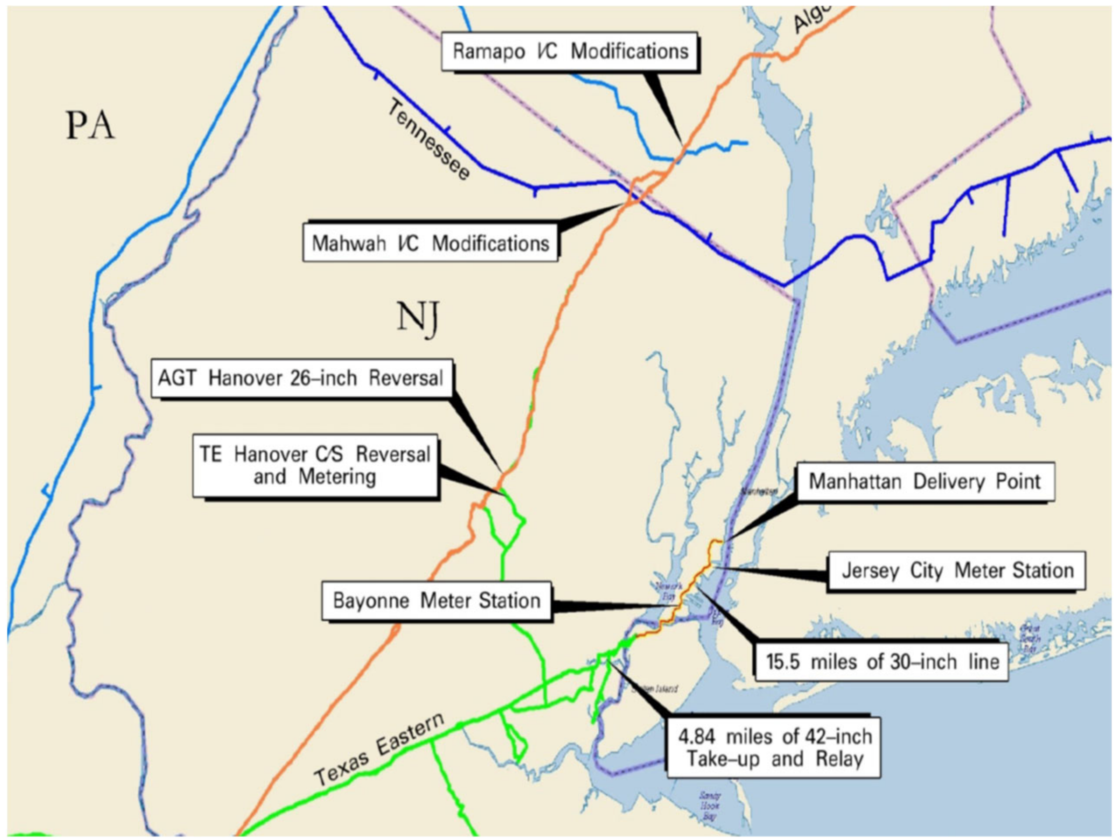
- FERC granted Tennessee a "presumption of rolled-in rate treatment for the costs of the MPP project" under its "inexpensive expansibility" doctrine
- Tennessee estimates first-year transportation revenues of $24.7M under the discounted "system" rates
  - This exceeds the first-year incremental cost of service of $15.5M
  - Revenues would likewise exceed costs using the maximum applicable system-wide cost-of-service rate

Texas Eastern & Algonquin: NY/NJ Project

Connect NY/NJ metropolitan region to "upstream" receipt points (Millenium and Tennessee into Algonquin)

Infrastructure (highlights) & Capacity:

- Extensive expansion of both systems
- 15.5 mi new pipe from Staten Island to Manhattan
- 800,000 Dth capacity
- Capital Cost: $857.0 M



Source: Certificate Application (Docket CP11-56)

NY/NJ Project – Open Season

Anchor Shippers:

- Fully subscribed by Chesapeake, Statoil, and Consolidated Edison via precedent agreements prior to open season

Shipper Contract Volumes for CP11-56 and CP11-161

Project	NY/NJ Expansion		Northeast Upgrade	
Shipper	**Capacity (Dth)**	**Term (Years)**	**Capacity (Dth)**	**Term (Years)**
Chesapeake	425,250	20	429,300	20
Statoil	204,750	20	206,700	20
Con Edison	170,000	15	0	n/a

Source: Applications for Certification (Dockets CP11-56 and CP-11-161)

Open Season:

- A single binding open season in Jan 2010; a 150,000+ Dth/d commitment would lead to PA-equivalent terms
  - No additional bids
- Incremental negotiated rate and incremental recourse rate offered

Source: SNL Maps

NY/NJ Project – Rates

Incremental Rate Treatment:

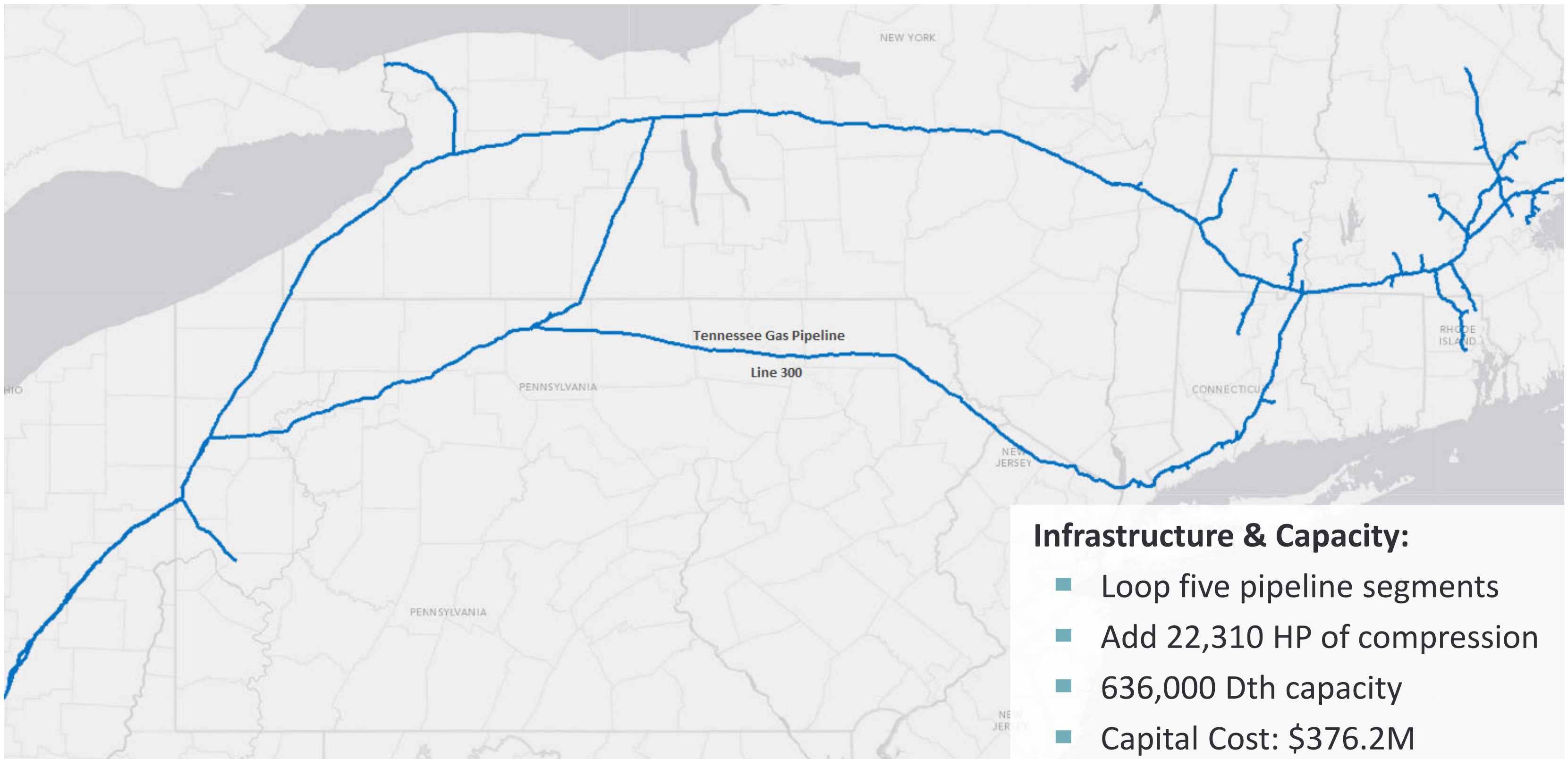
- Project Shippers have agreed to negotiated incremental rates (confidential) subject to adjustment for actual construction costs
- Project Shippers have recourse to incremental C.O.S. reservation rate ($18.66/Dth monthly)
- Texas Eastern used incremental rates to eliminate any cross-subsidization concerns
  - It reserves the right to apply for roll-in in a future rate case

Intercompany Lease

- Algonquin to recover its incremental capital and operating costs via a lease payment from Texas Eastern

Tennessee's Northeast Upgrade Project

- Expand capacity along Tennessee's Line 300 System
  - Marcellus Supply area receipts
  - Mahwah NJ deliveries



Infrastructure & Capacity:

- Loop five pipeline segments
- Add 22,310 HP of compression
- 636,000 Dth capacity
- Capital Cost: $376.2M

Source: SNL Maps

Northeast Upgrade Project - Open Season

Anchor Shippers

- Fully subscribed by Chesapeake (429,300 Dth) and Statoil (206,700 Dth) via precedent agreements prior to the open season

Open Season

- Single binding open season in Feb-Mar 2010, offering terms equivalent to those in the precedent agreements
  - No additional bids
- Incremental negotiated rate and Incremental recourse rate offered

Northeast Upgrade Project - Rates

Incremental Rate Treatment – with a twist

- Chesapeake and Statoil agree to pay a *negotiated incremental reservation rate* of $13.43/Dth monthly, fixed for the 20-yr term
- TGP proposed cost-of-service recourse rate of $14.91/Dth monthly, based on incremental treatment of the project *in conjunction* with the recently completed 300 Line Project Market Component
- System Zone 4 to 5 rate is $7.93/Dth monthly (Resvn + Commodity rate)

Incremental Recourse Rates for Tennessee's Expansion Projects

		Annual Cost of Service (USD)	Design Capacity (Dth/day)	Monthly Reservation Rate ($/Dth)
		[A]	[B]	[C]
Northeast Upgrade Project	[1]	$71,053,000	636,000	$9.31
300 Line Project Market Component	[2]	$105,345,000	350,000	$25.08
Combined	[3]	$176,398,000	986,000	$14.91

Notes:
[3]: [1] + [2]
[A]: *139 FERC ¶ 61,161 Order Issuing Certificate and Approving Abandonment*
[B]: *139 FERC ¶ 61,161 Order Issuing Certificate and Approving Abandonment*
[C]: [A] / (12 x [B])

Northeast Upgrade Project

- FERC rejected Tennessee's proposal *at this time*
  - 300 Line Project Market Component already in service
  - Did not preclude combined incremental rate in a future limited section 4 rate proceeding
- Tennessee was required to offer a purely incremental recourse rate
- System roll-in seems unlikely since incremental rate exceeds system rate.

Incremental Recourse Rates for Tennessee's Expansion Projects

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Recovery of Stranded Pipeline Costs

Some Existing Pipelines are At Risk from Unloading / “Stranding”

Drivers

- Redistribution of Lower 48 supply from declining production areas to expanding basins
- Demand is stable and/or growing

Types

- Uneconomic segments
- Full length of pipe less utilized

How Are These Costs Recovered?

Cost Allocation and Rate Design

- Absent intervention, P/L ratemaking is fluid and redistributes costs to remaining billing determinants

Mitigation

- Asset redeployment, cost reduction, load growth

Cost Sharing

- Gray area of policy

Cost Allocation and Rate Design

Single, system-wide COS is fluid, goes where billing determinants are (absent intervention)

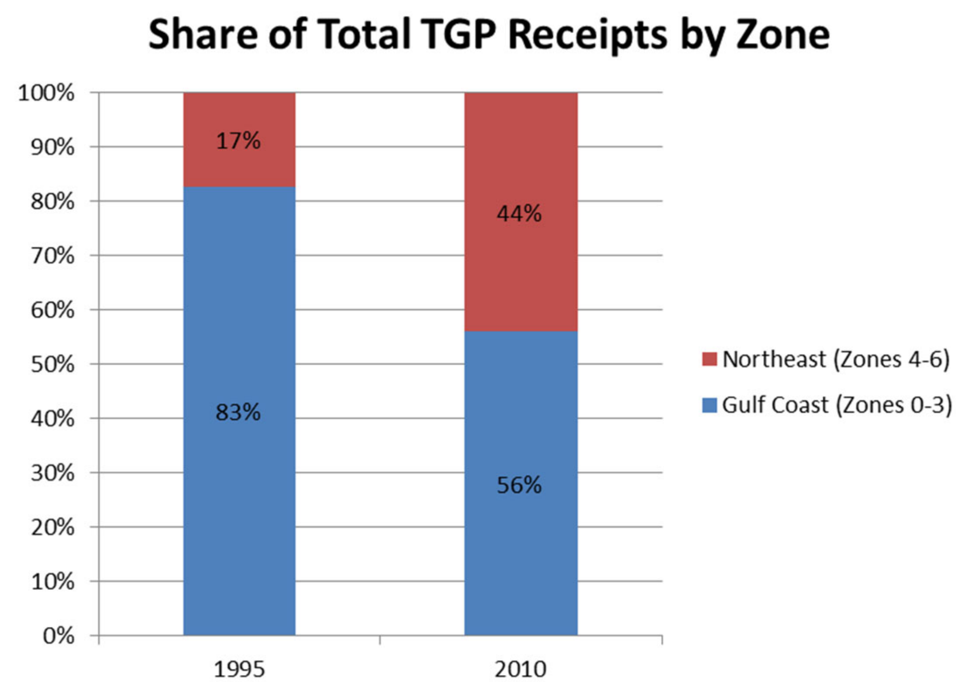
$$\frac{\text{Non-distance COS}}{\text{Non-distance BDs}} + \frac{\text{Distance COS}}{\text{Distance BDs}} = \text{Rate}$$

Stylized comparison of Tennessee Gas Pipeline 1995 vs. 2010 provides illustration.

Regional Shifts in Capacity Reservations

Marcellus production boom has shifted flows away from long-haul shipping

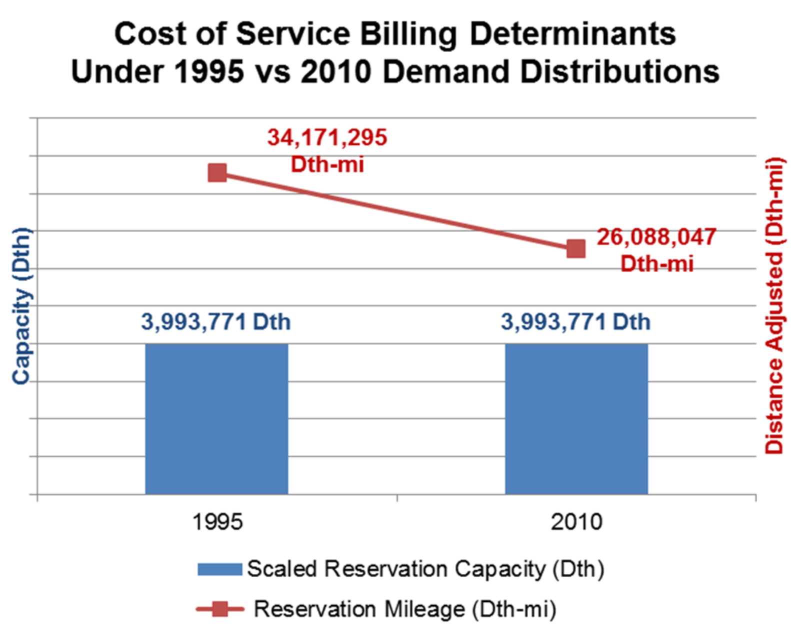
- Northeast deliveries increasingly originate *in* the Northeast rather than the gulf
- *e.g.*, Tennessee Gas Pipeline's proportion of contract with Northeast origins has gone from ~1/5 to ~1/2 between its 1995 and 2011 rate cases
- This has consequences for ratemaking…

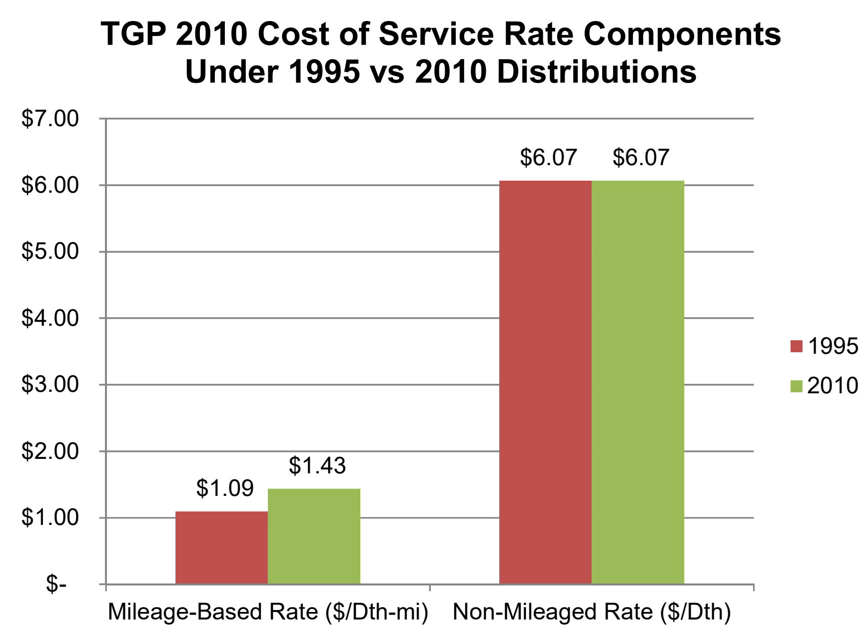


Billing Determinants of Reservation Rates

Cost of Service Rates incorporate mileage and non-mileage components

- As capacity reservations shift toward shorter hauls, mileage-based costs are spread over fewer Dth-miles of firm transportation

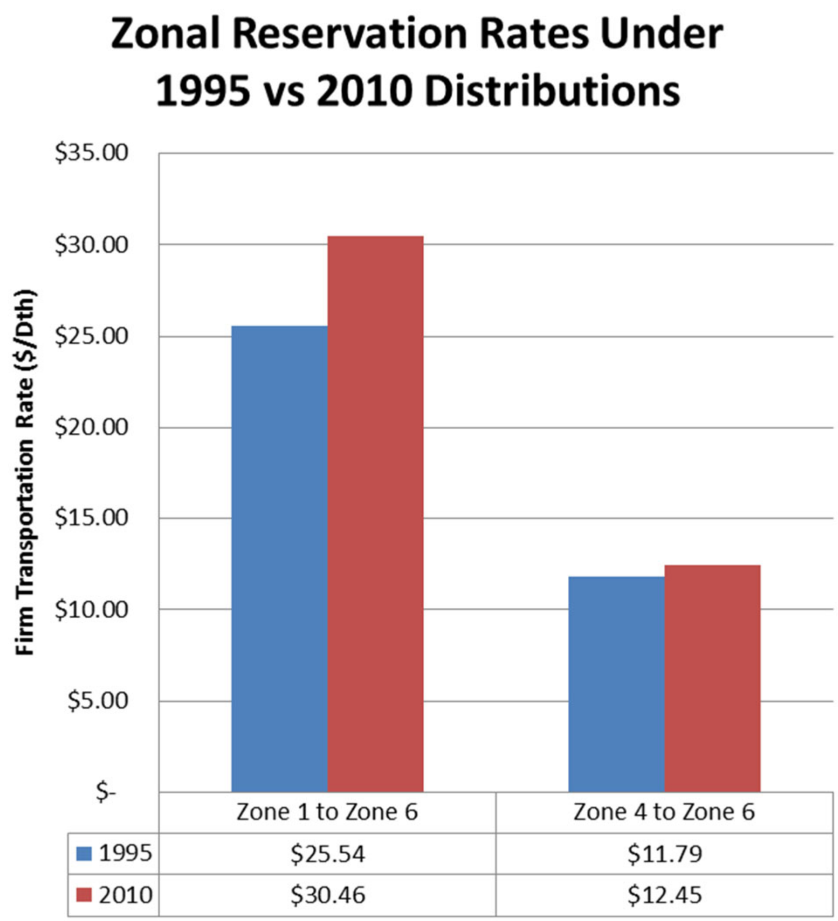




Regional Rate Shifts in Tariffs

"Stranded" costs from underutilized pipe are re-spread throughout system

- Long-haul sees bigger hikes, but on smaller volumes
  - Gulf gas gets even *more* expensive relative to Shale
- Short-haul shippers see rate increases too (on flows from the Marcellus region)
- Strong incentive to move to postage stamp rates to avoid death spiral on long-hauls



Mitigation – Asset Redeployment

Sample of Gas Pipeline (and other) Conversions
Proposed, In-Construction and Completed

Pipeline Name	Owner	Conversion Type	Pipeline Length (miles)	Volume ('000s b/d)	Proposed/Completed In-Service Date	Origin/Destination
[1]	[2]	[3]	[4]	[5]	[6]	[7]
Pony Express	Tallgrass Energy	Gas to Crude	260	230-320	2014	Wyoming to Oklahoma
Trunkline - Project 1	CMS Energy	Gas to Refined Products	720	200	2002	Gulf Coast to Midwest
Trunkline - Project 2	Enbridge Inc. / Energy Transfer Partners	Gas to Crude	700	420-660	2015	Western Canada and North Dakota to Gulf Coast
Energy East Pipeline	TransCanada Corporation	Gas to Crude	2,800	1,100	2018	Alberta to Eastern Canada
Keystone Pipeline	TransCanada Corporation	Gas to Crude	1,842	435	2009	Alberta to Midwest
Freedom Pipeline	Kinder Morgan Energy Partners	Gas to Crude	740	277	Cancelled	West Texas to Southern California
Longhorn Pipeline	Magellan Midstream Partners	Refined Products to Crude	700	135	2013	El Paso to Houston
Southern Hills	DCP Midstream / Spectra Energy / Phillips 66	Refined Products to NGL	800	175	2013	Permian Basin/Eagle Ford to Texas Gulf Coast

Sources:

Company websites and press releases.

Mitigation – Other

Cost reduction

- Challenging in face of pipeline integrity costs

Load Growth

- El Paso Natural Gas, post 1995 – East of California growth including Arizona gas-fired power plants

Cost Sharing

What Is it?

- Pipeline equity holders bear risk of some of the “stranding” shortfall

How is it done?

- Typically done in settlement context through risk-sharing provisions
- Evidence unclear as to whether p/l actually bears stranded costs

Why it is done via settlement?

- FERC and NEB precedent for assigning stranded costs to pipelines unclear
  - Presumption of regulatory compact