Challenges in Appraising Pipelines

Pickett & Co., Inc.

Anthony E. (Tony) Bell, RPA

Robert (Bob) Lehn, PE, RPA

Transforming Assessment:
RISING TO MEET NEW CHALLENGES

PICKETT

& COMPANY, INC.

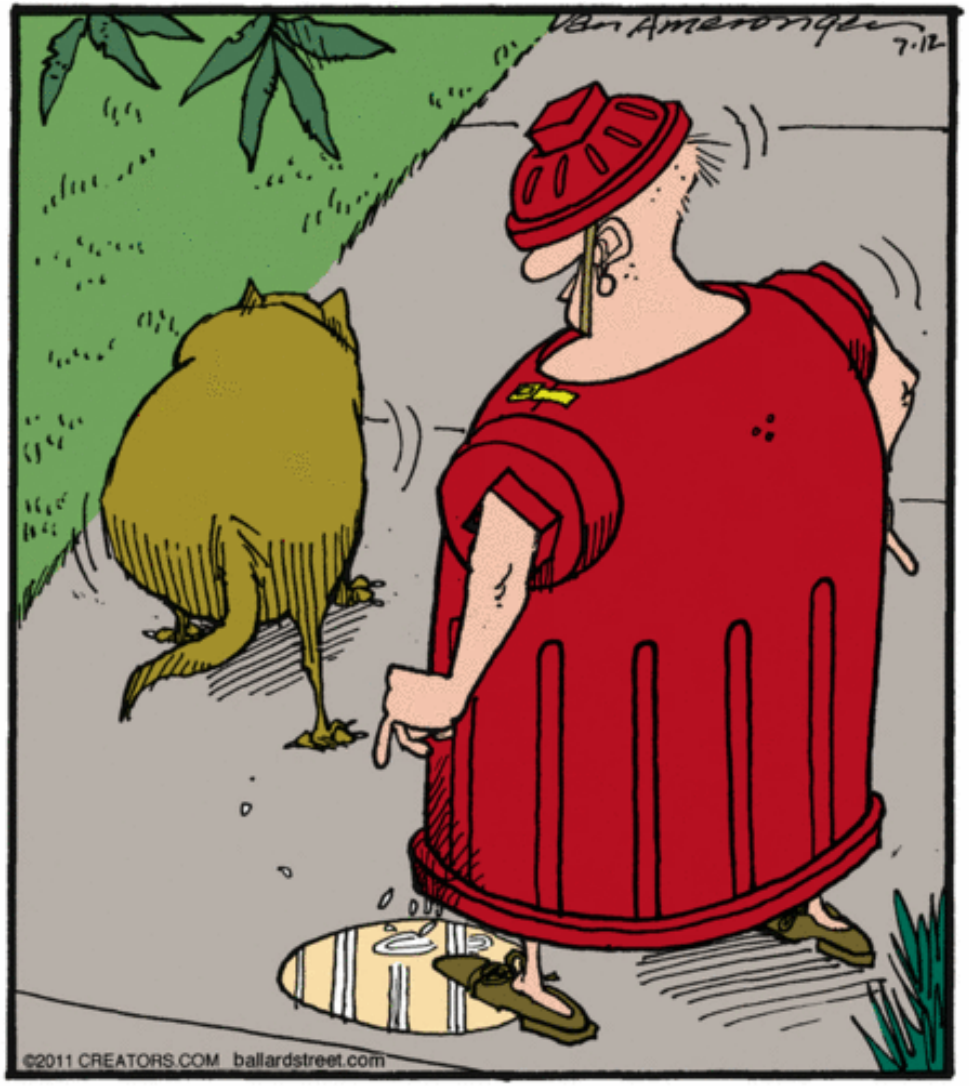
Dallas, Texas

Corpus Christi, Texas

972.387.4944

TonyB@typco.com

BobL@typco.com



It's the last time Bob goes anywhere dressed as a fire hydrant.

Topics

- Unitary valuation (often state or centrally assessed) vs. Industrial valuation (often locally assessed)
- Obsolescence indications
- Industrial methods for non-unitary appraisals of Gas Gathering through Processing Plants
- Developments in shale oil and gas plays
- Real vs. Personal Property

Unitary vs. Industrial

- Unitary valuation methods
  - often state or centrally assessed
- Industrial valuation methods
  - often locally assessed

Unitary

- Unitary valuation methods

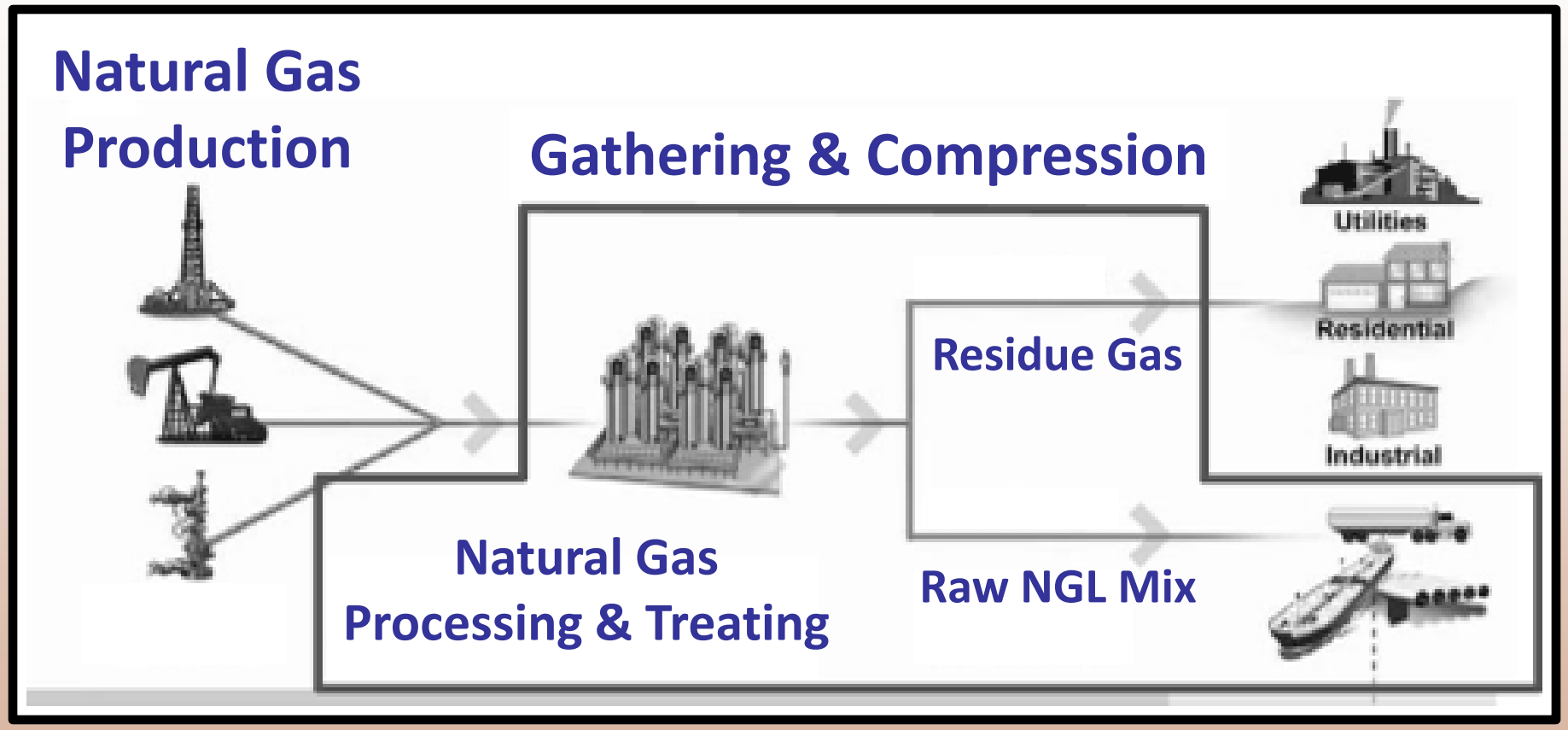
Industrial

- Industrial valuation methods

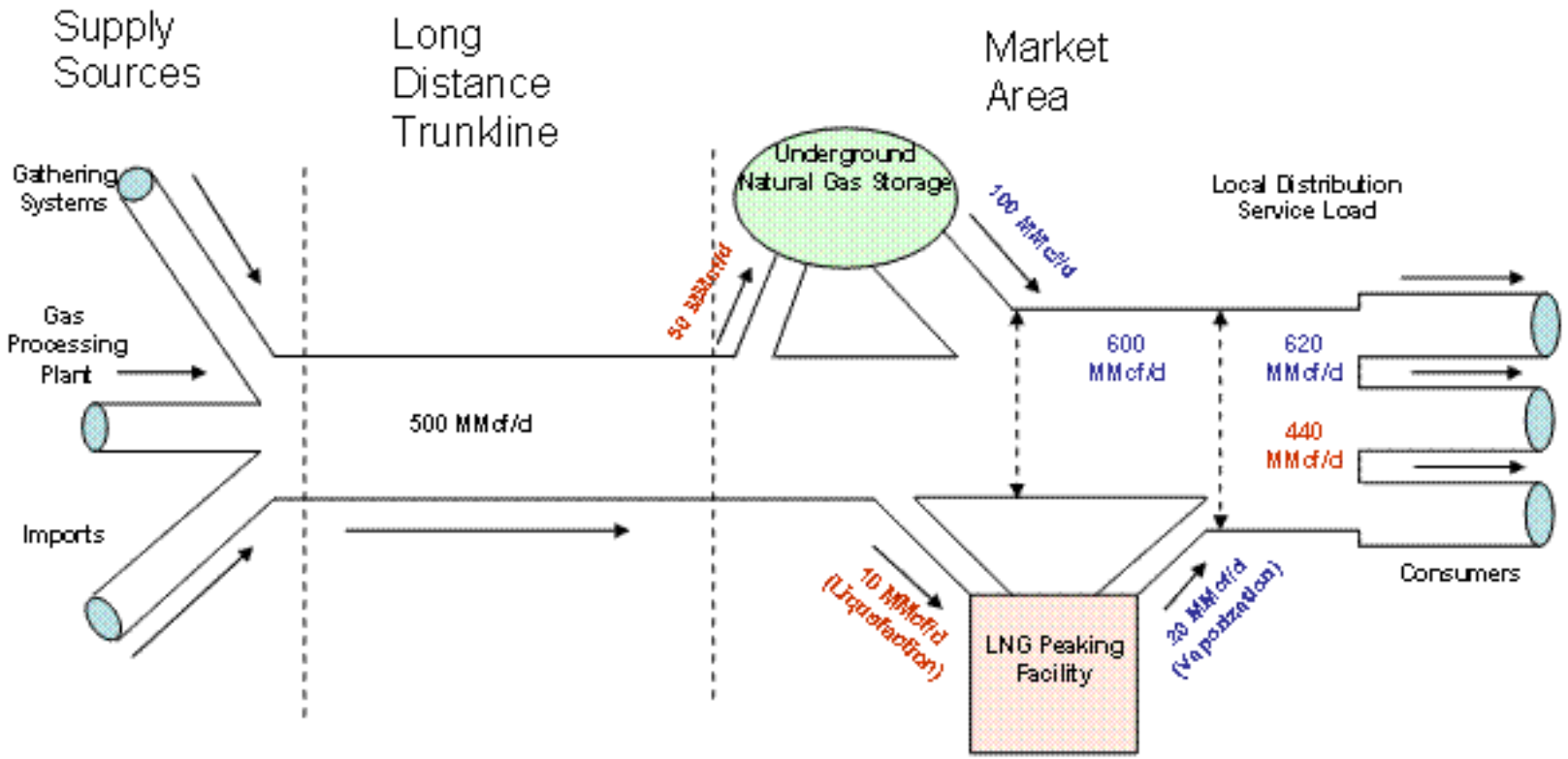
Industrial methods

- Non-unitary appraisals of Gas Gathering through Processing Plants

Natural Gas Gathering and Processing

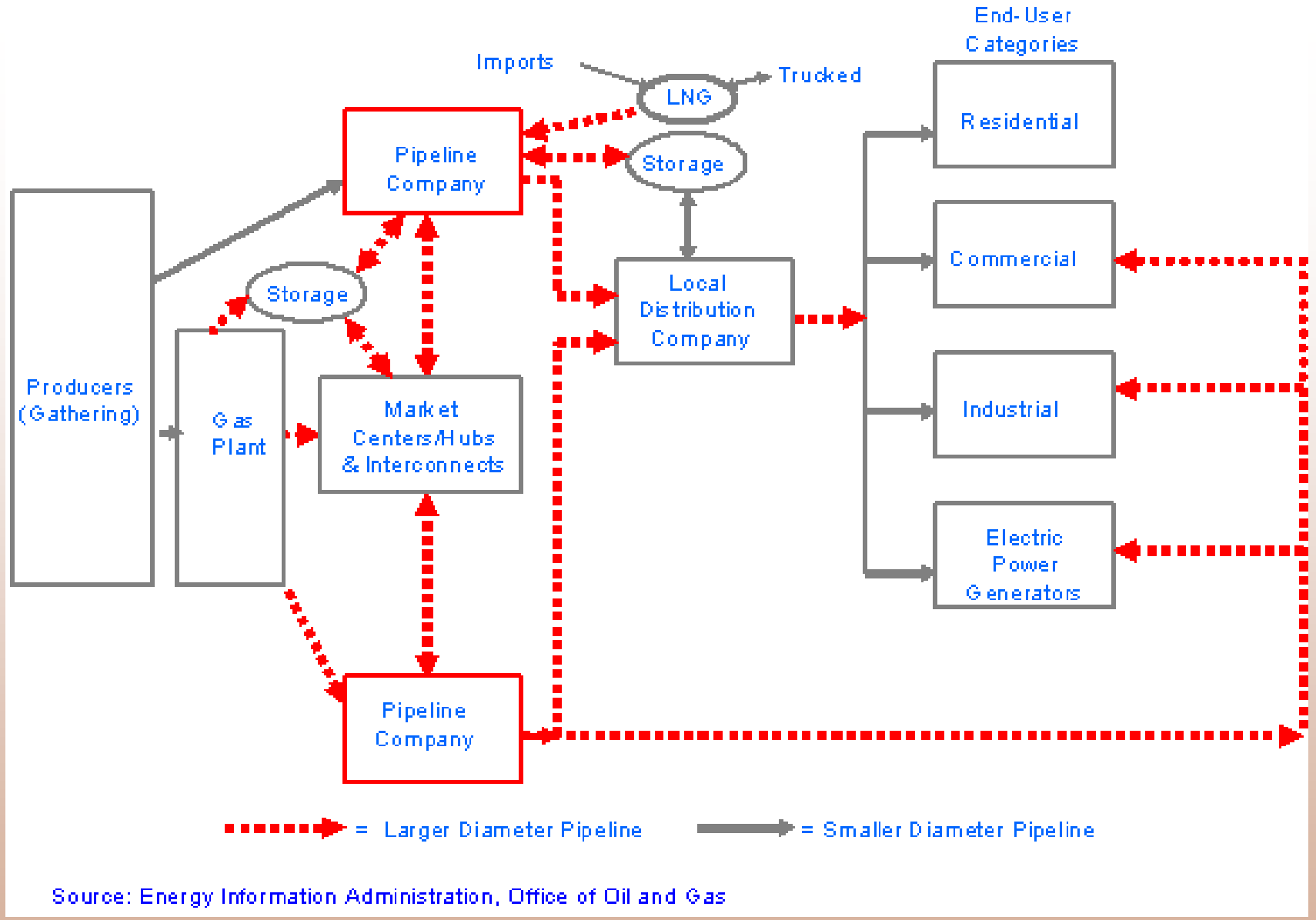


Targa Resources LP. SEC Form 8K, September 9, 2010.



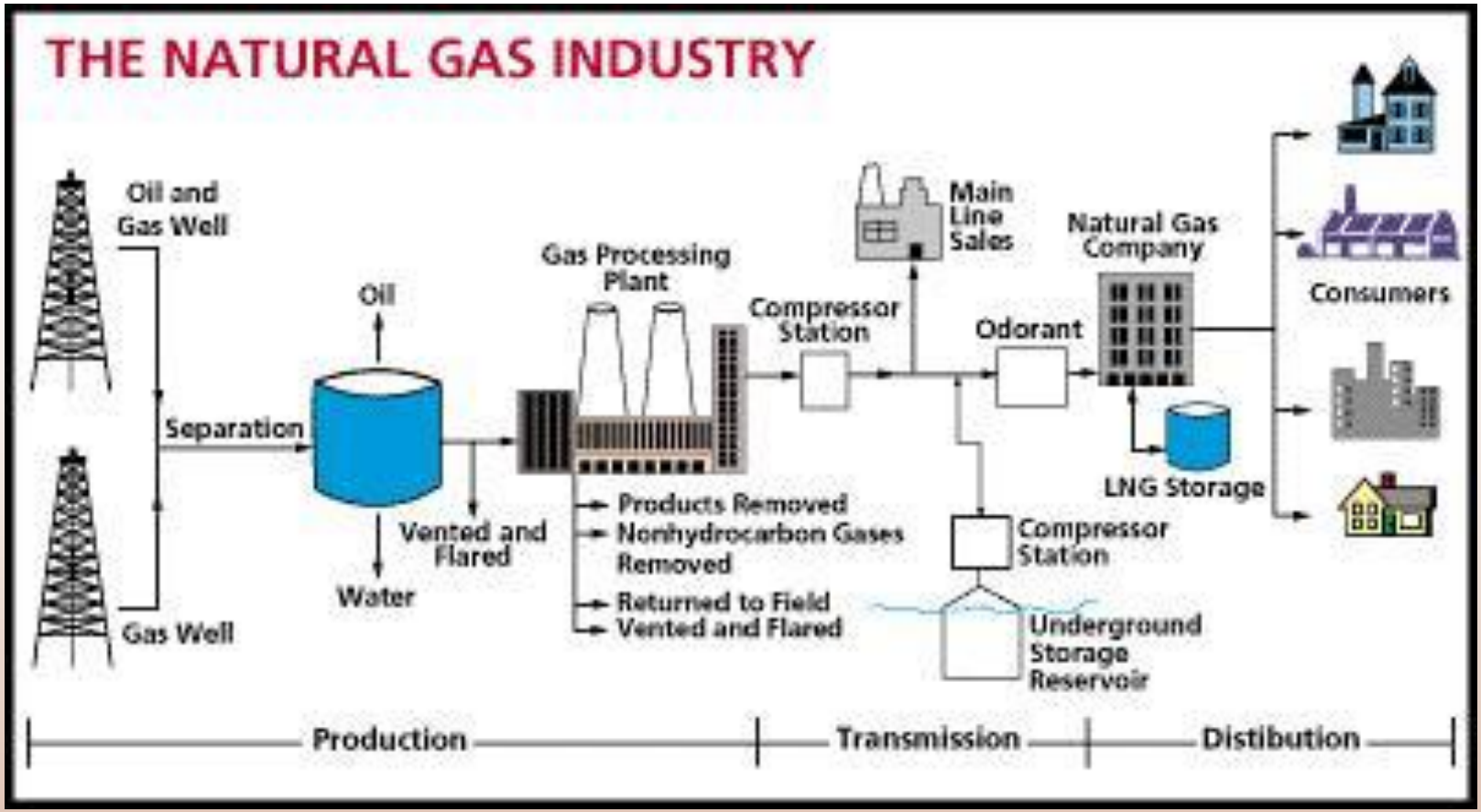
Note: MMcf/d = million cubic feet per day. Areas shown are not proportional to capacity volumes indicated. Other natural gas transmission pipelines may interconnect with and supplement the supplies of the mainline transmission or local distribution company in the market area to meet peak period demands.
Source: Energy Information Administration, Office of Oil and Gas

http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/FlowDiagram.html

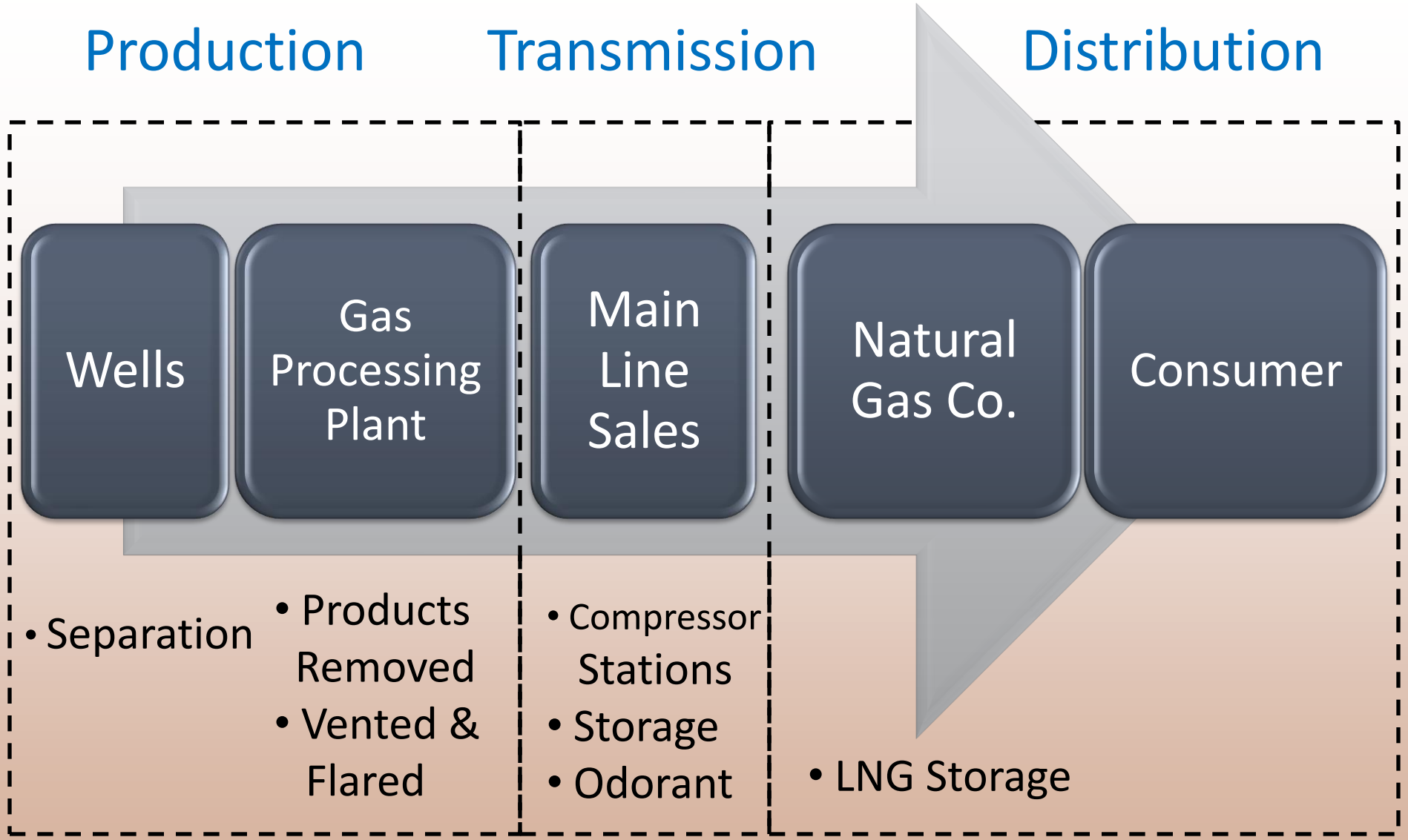


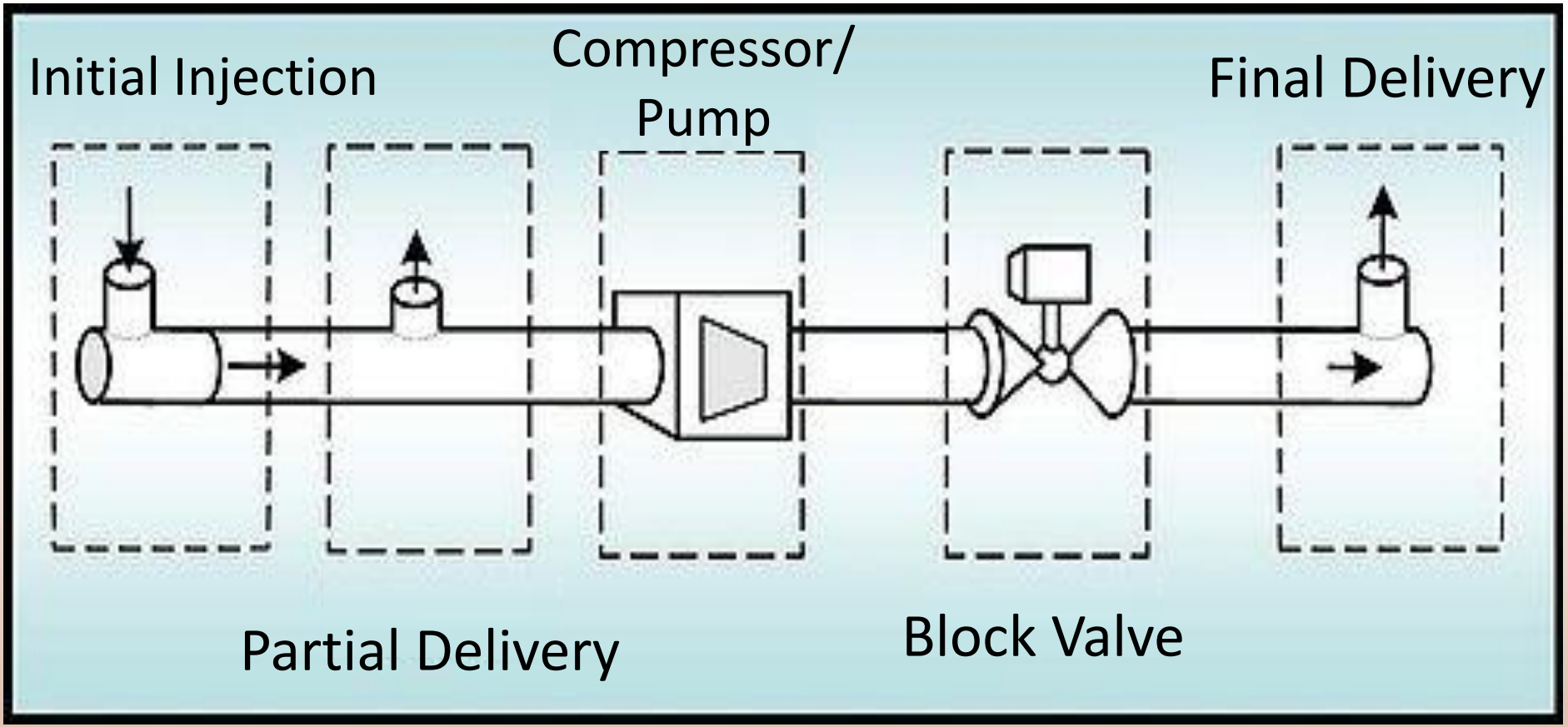
Source: Energy Information Administration, Office of Oil and Gas

http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/transpath_fig.html



http://www.edinformatics.com/math_science/alternative_energy/fossil_fuel/natural_gas_basics.htm


Production
Transmission
Distribution
Wells
Gas Processing Plant
Main Line Sales
Natural Gas Co.
Consumer
• Separation
• Products Removed
• Vented & Flared
• Compressor Stations
• Storage
• Odorant
• LNG Storage



http://www.google.com/search?as_q=pipeline+schematic&hl=en&rls=com.microsoft%3Aen-us%3AIE-SearchBox&biw=2003&bih=927&tbm=isch&btnG=Google+Search&as_epq=&as_oq=&as_eq=&imgtype=&imgsz=&imgw=&imgh=&imgar=&as_filetype=&imgc=&as_sitesearch=&as_rights=&safe=active&as_st=y

Obsolescence

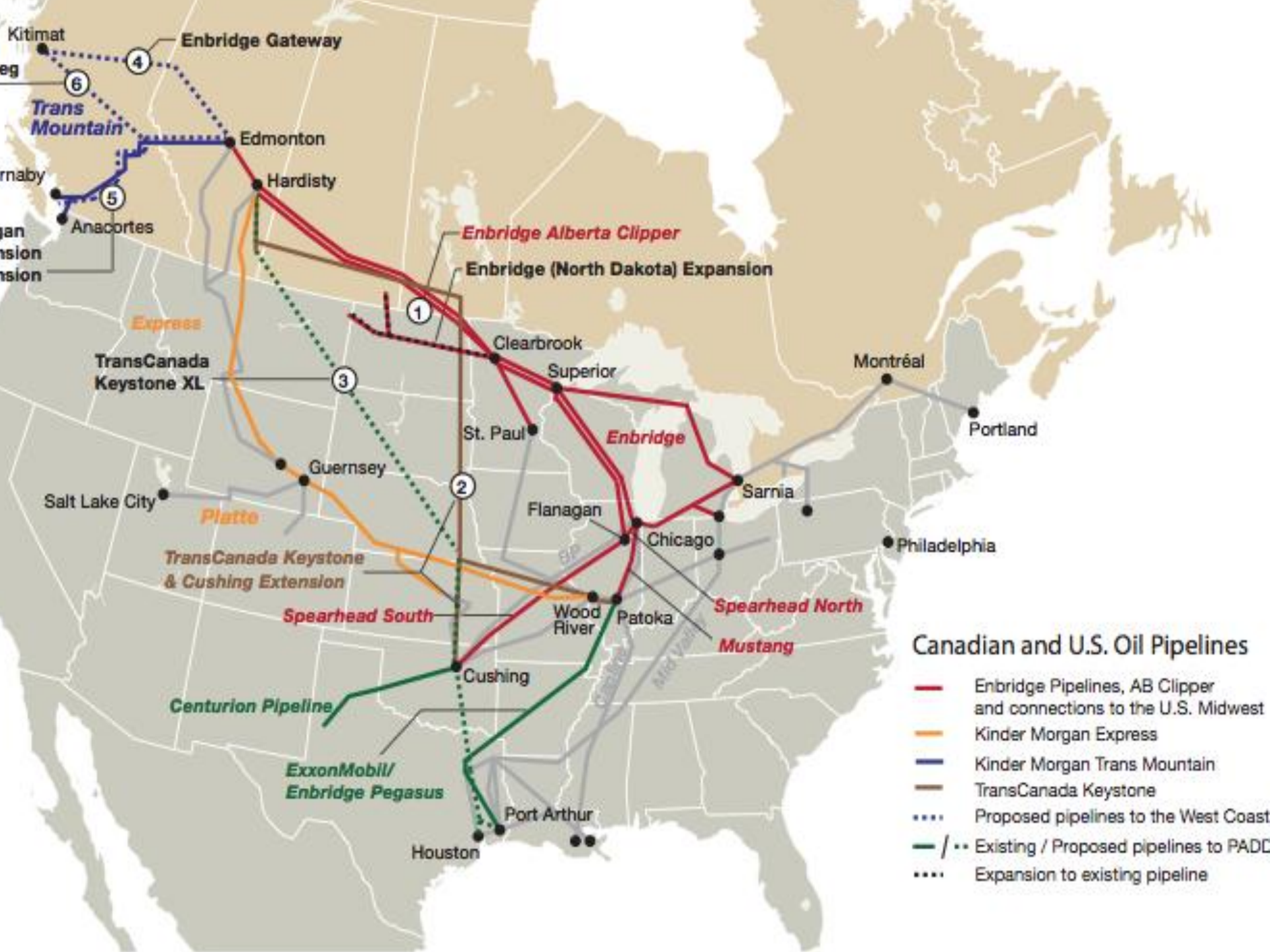
- Is throughput an adequate measure of economic obsolescence?

Obsolescence Indications

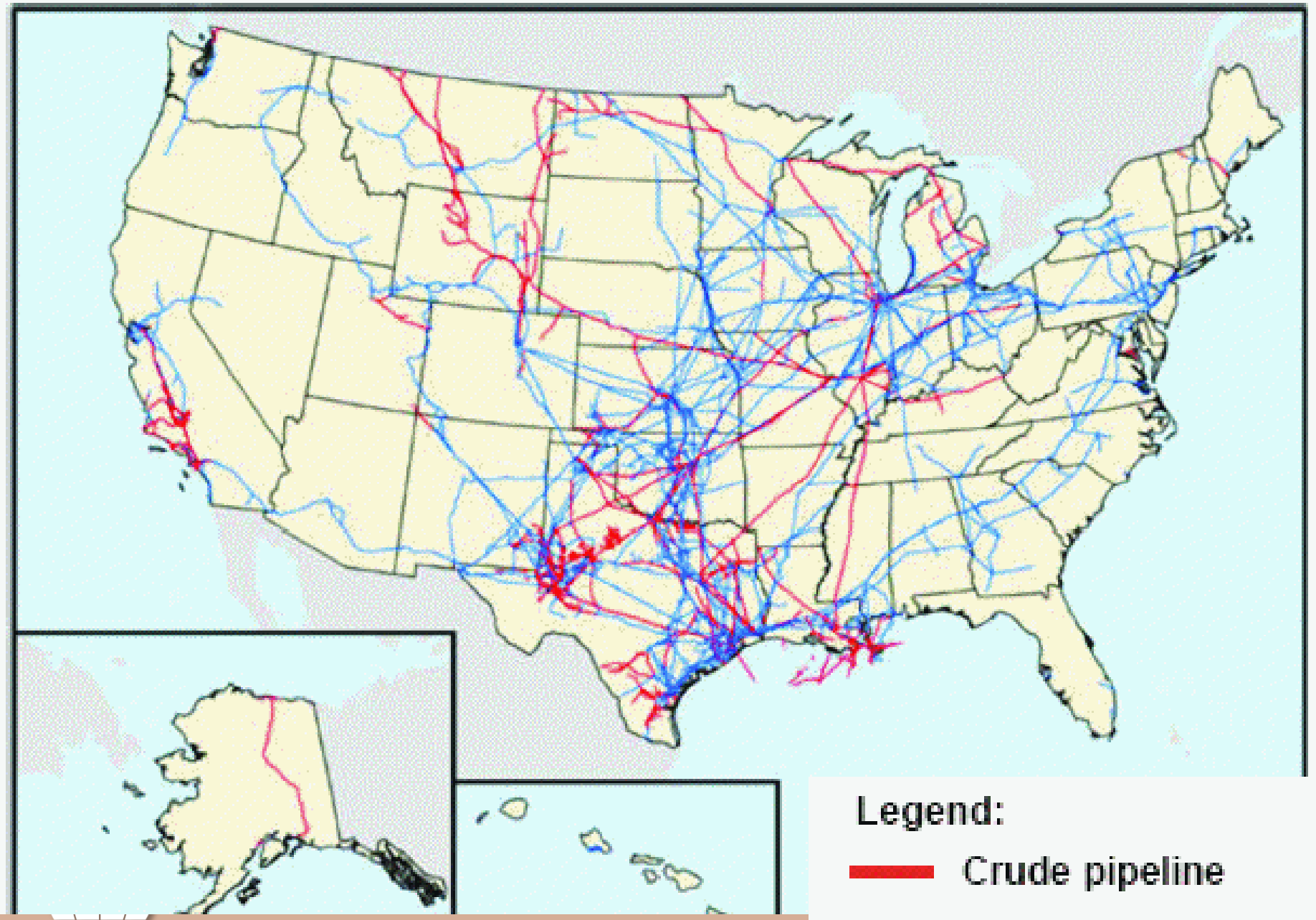
- Examples

Types of pipeline services:

- Liquids - NGLS and crude oil, water, other products
- Gases - natural gas, ethane- propane mix, CO_2
- Slurries - mixtures or quarried rocks


Kitimat
Enbridge Gateway
4
6
Trans Mountain
Edmonton
Hardisty
5
Anacortes
Enbridge Alberta Clipper
Enbridge (North Dakota) Expansion
1
Express
TransCanada Keystone XL
3
Clearbrook
Superior
Montréal
Portland
St. Paul
Enbridge
Guernsey
Salt Lake City
2
Sarnia
Flanagan
Platte
Chicago
Philadelphia
TransCanada Keystone & Cushing Extension
Spearhead South
Wood River
Patoka
Spearhead North
Mustang
Cushing
Centurion Pipeline
ExxonMobil/ Enbridge Pegasus
Port Arthur
Houston
Canadian and U.S. Oil Pipelines
Enbridge Pipelines, AB Clipper and connections to the U.S. Midwest
Kinder Morgan Express
Kinder Morgan Trans Mountain
TransCanada Keystone
Proposed pipelines to the West Coast
Existing / Proposed pipelines to PADD
Expansion to existing pipeline

The U.S. Crude Oil and Product Pipeline System



LEGEND:

- Oil pipeline
- Oil pipeline (planne
- Gas pipeline
- Gas pipeline (plann
- Products pipeline
- Products pipeline (p

http://www.theodora.com/pipelines/united_states_pipelines.html

Pipe Material

- Carbon steel, stainless steel and alloys
- Plastic, like HDPE, PVC, fiberglass
- Concrete

HDPE

Stainless Steel

Corrosive Carriers

- Sour crudes and gas

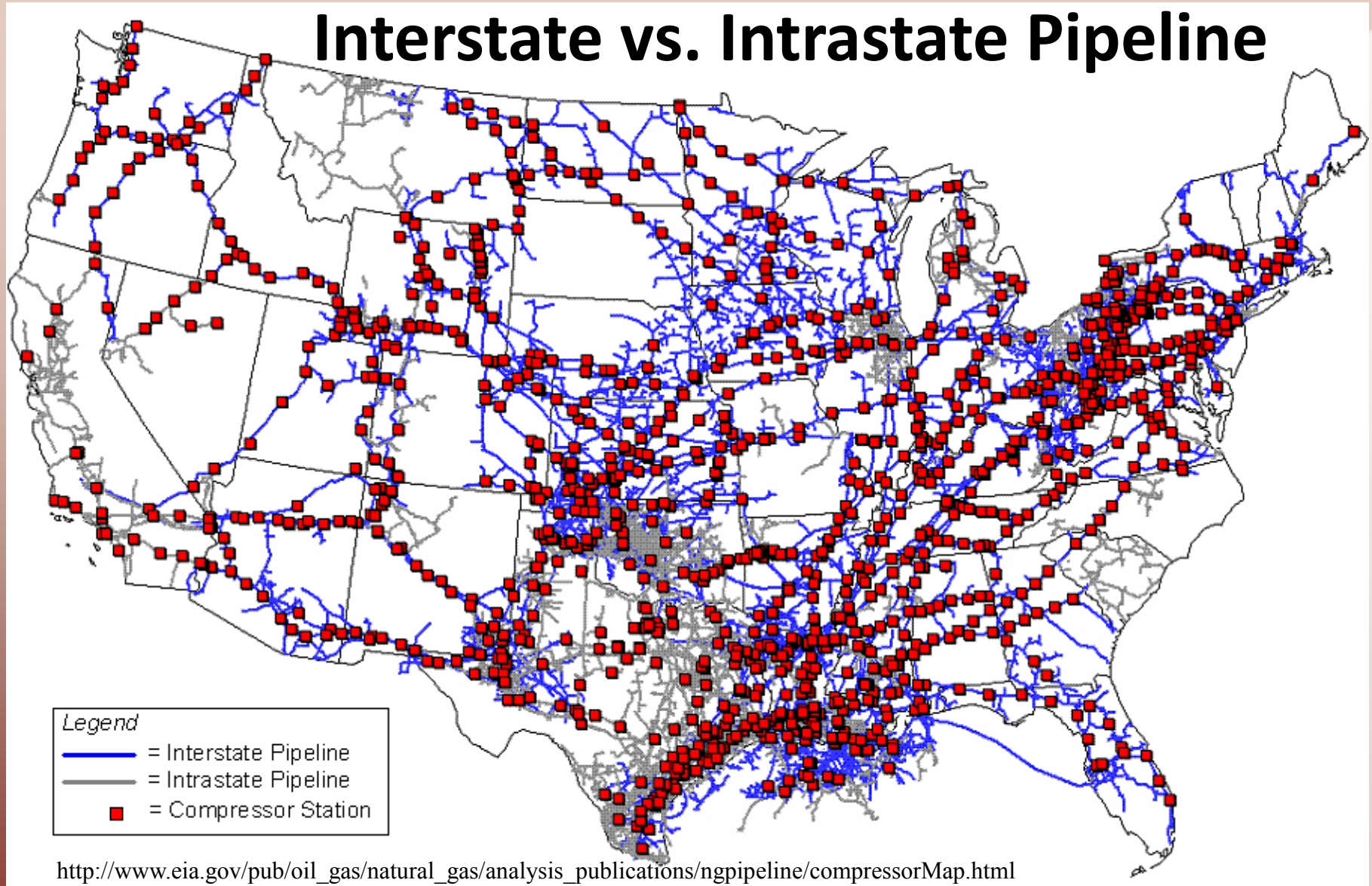

107
BP
PIPELINE
CP 173

Who assesses?

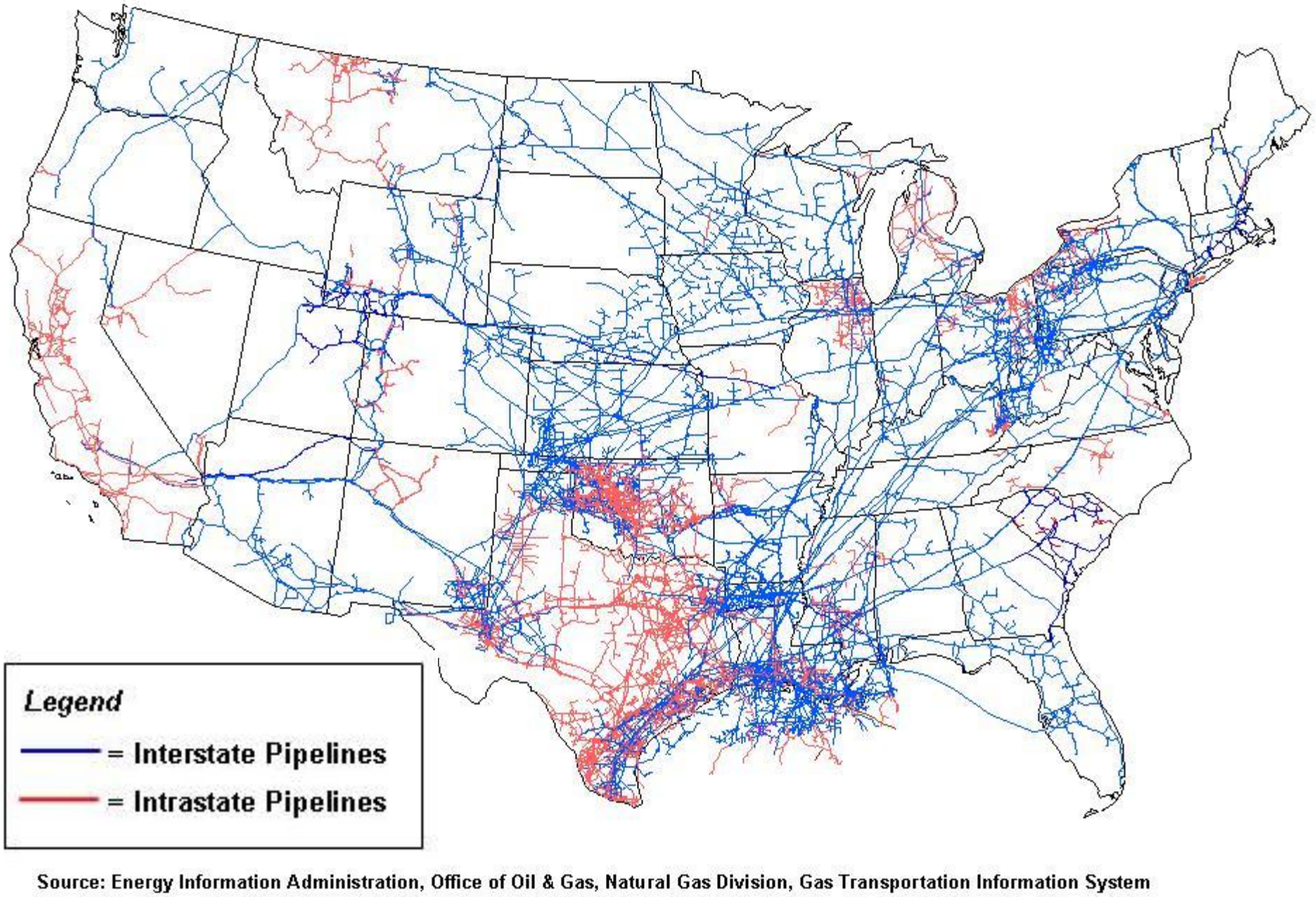
- Local?
- State?

Intrastate vs. Interstate

Interstate vs. Intrastate Pipeline



http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/compressorMap.html

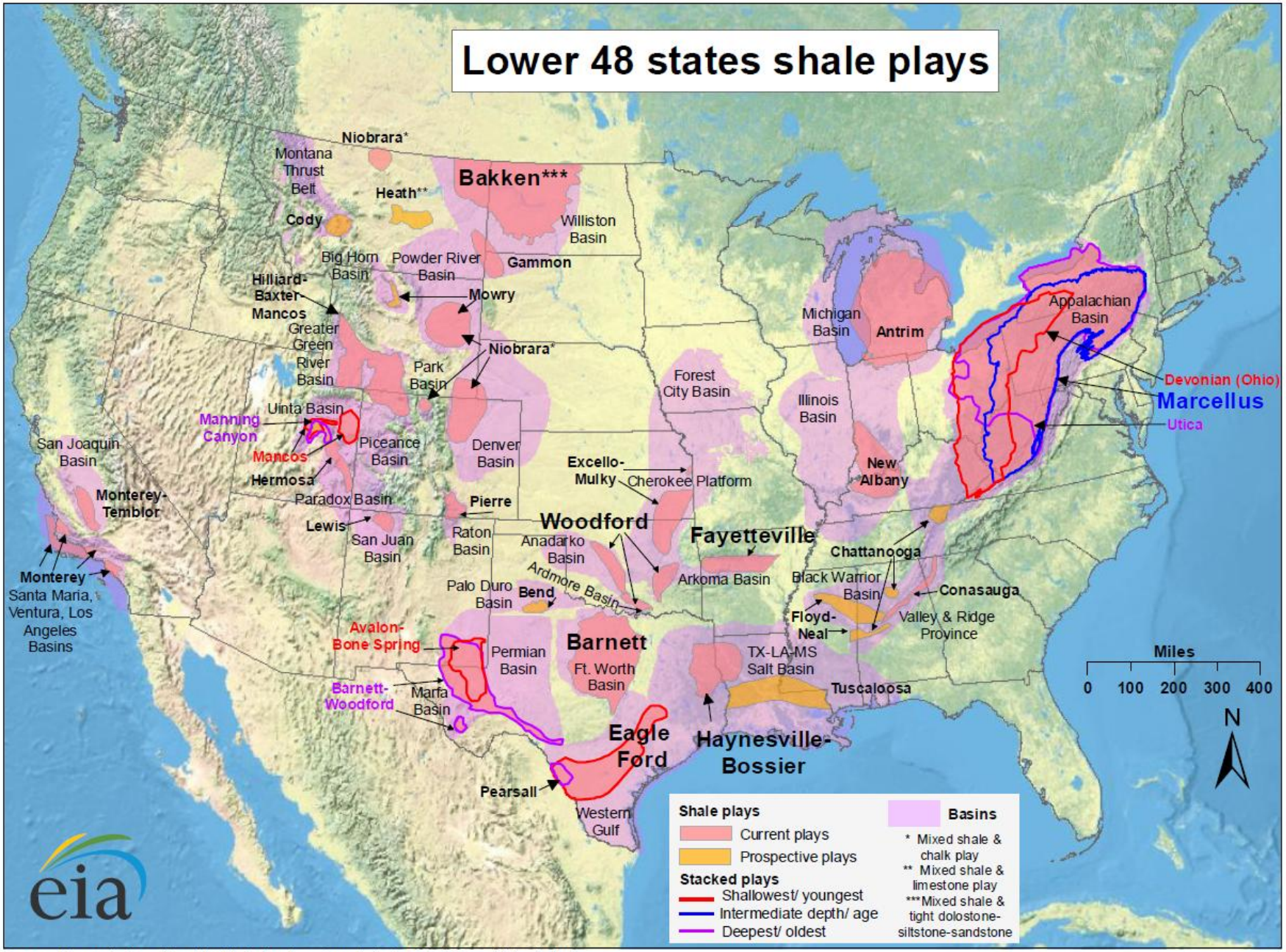


Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/ngpipelines_map.html

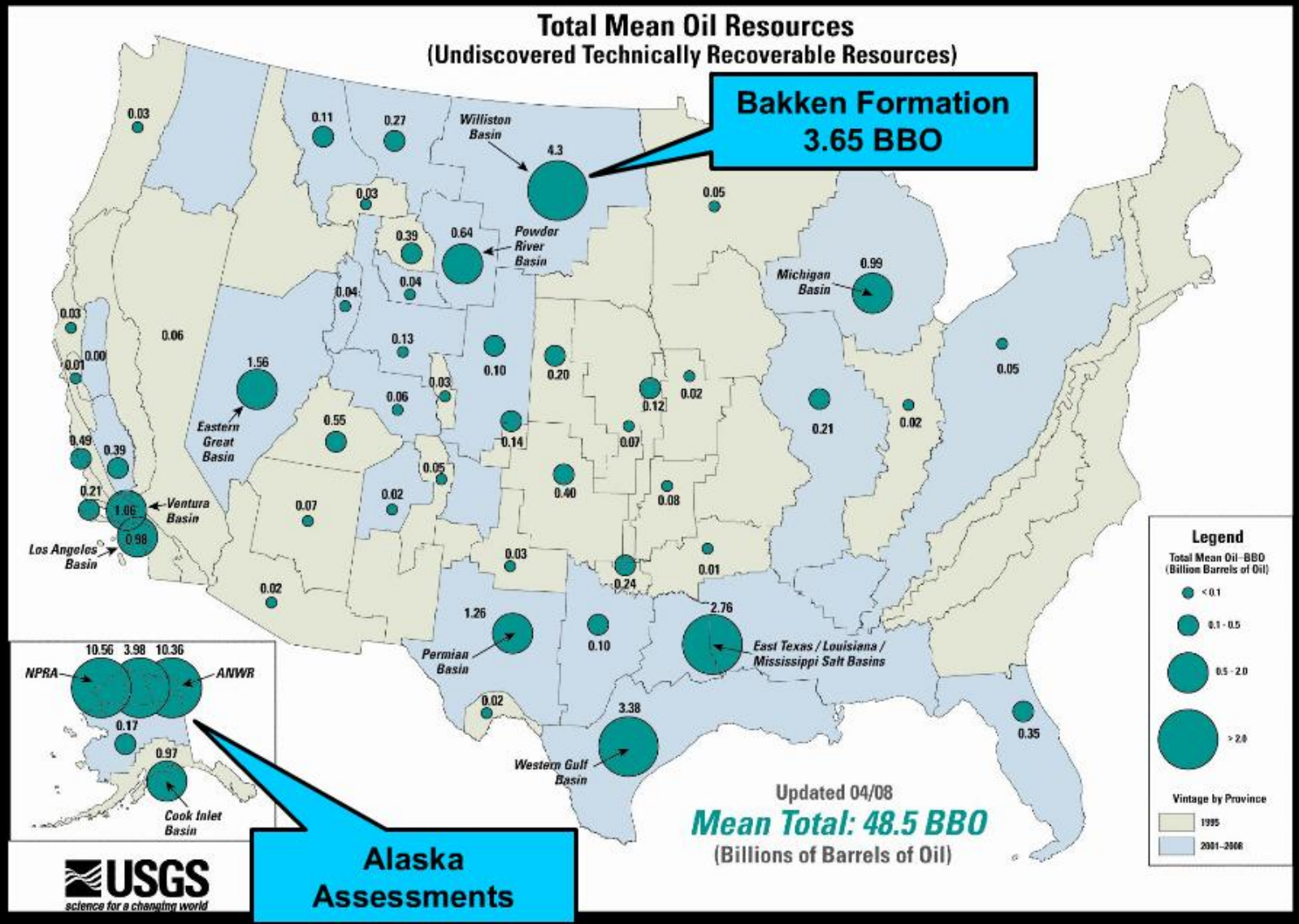
Developments in North America

- Shale Oil & Gas Plays
  - Bakken
  - Barnett
  - Eagle Ford
  - Niobrara

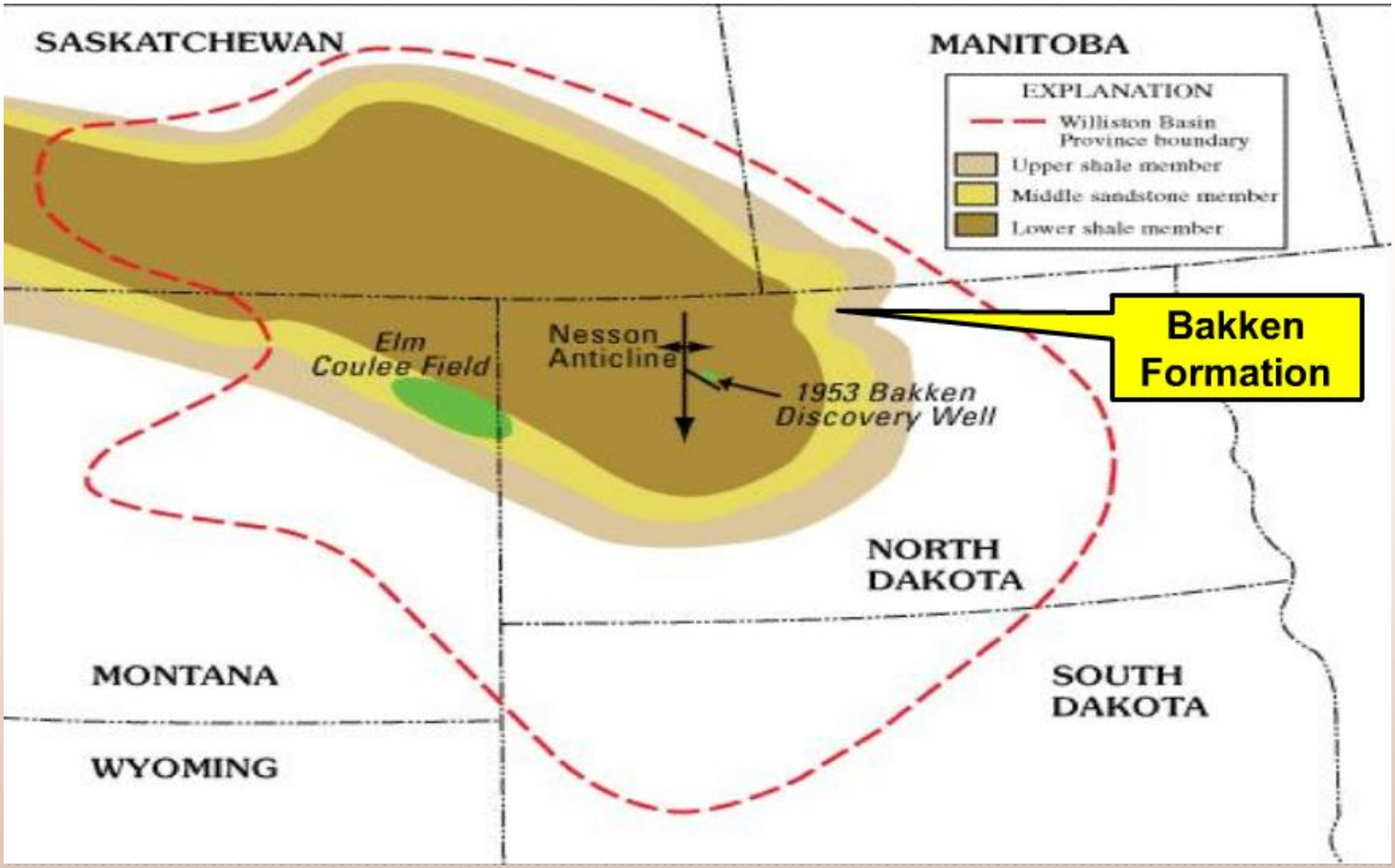


Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

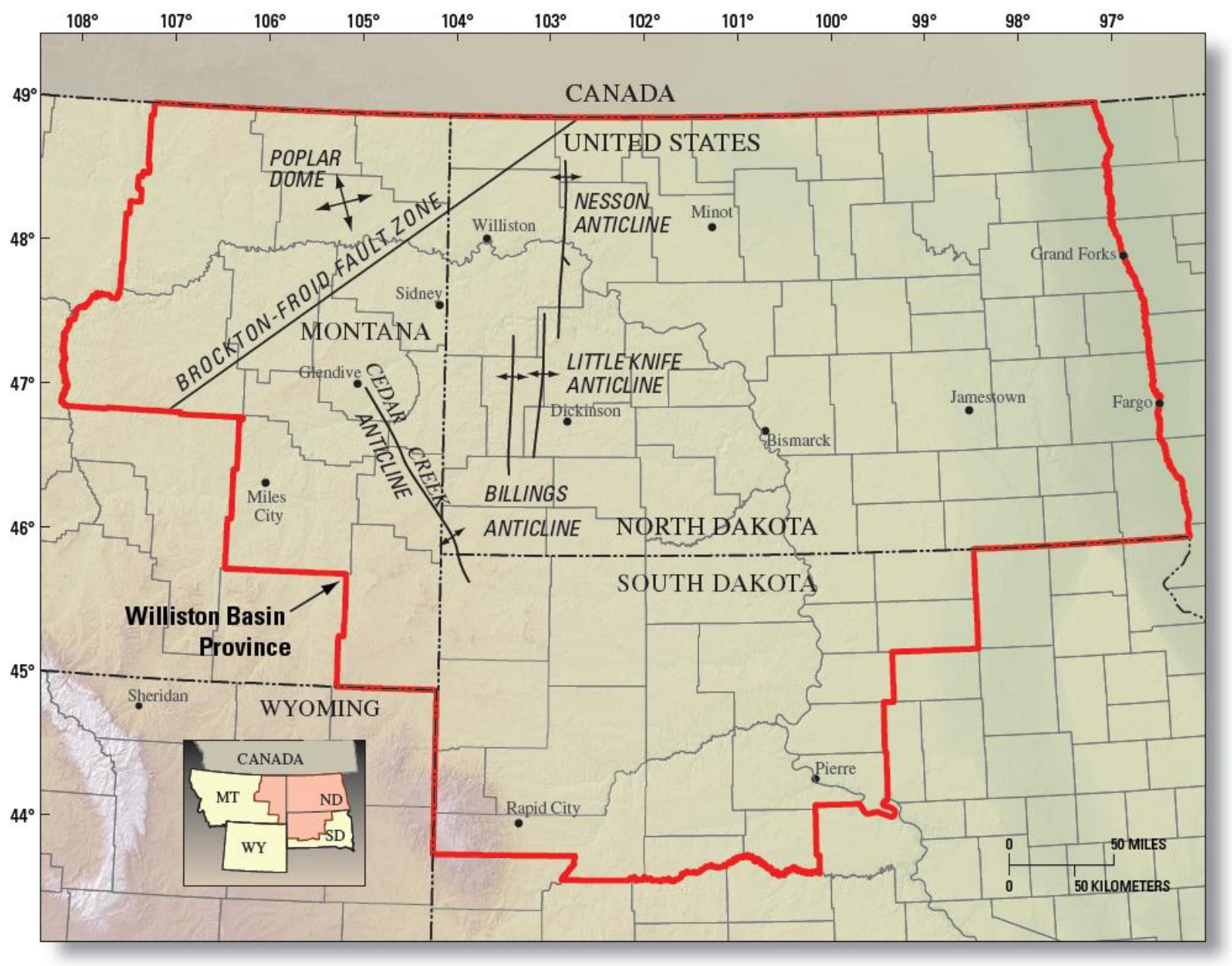
The Bakken Formation is the Largest Oil Accumulation Assessed by USGS in the Lower 48



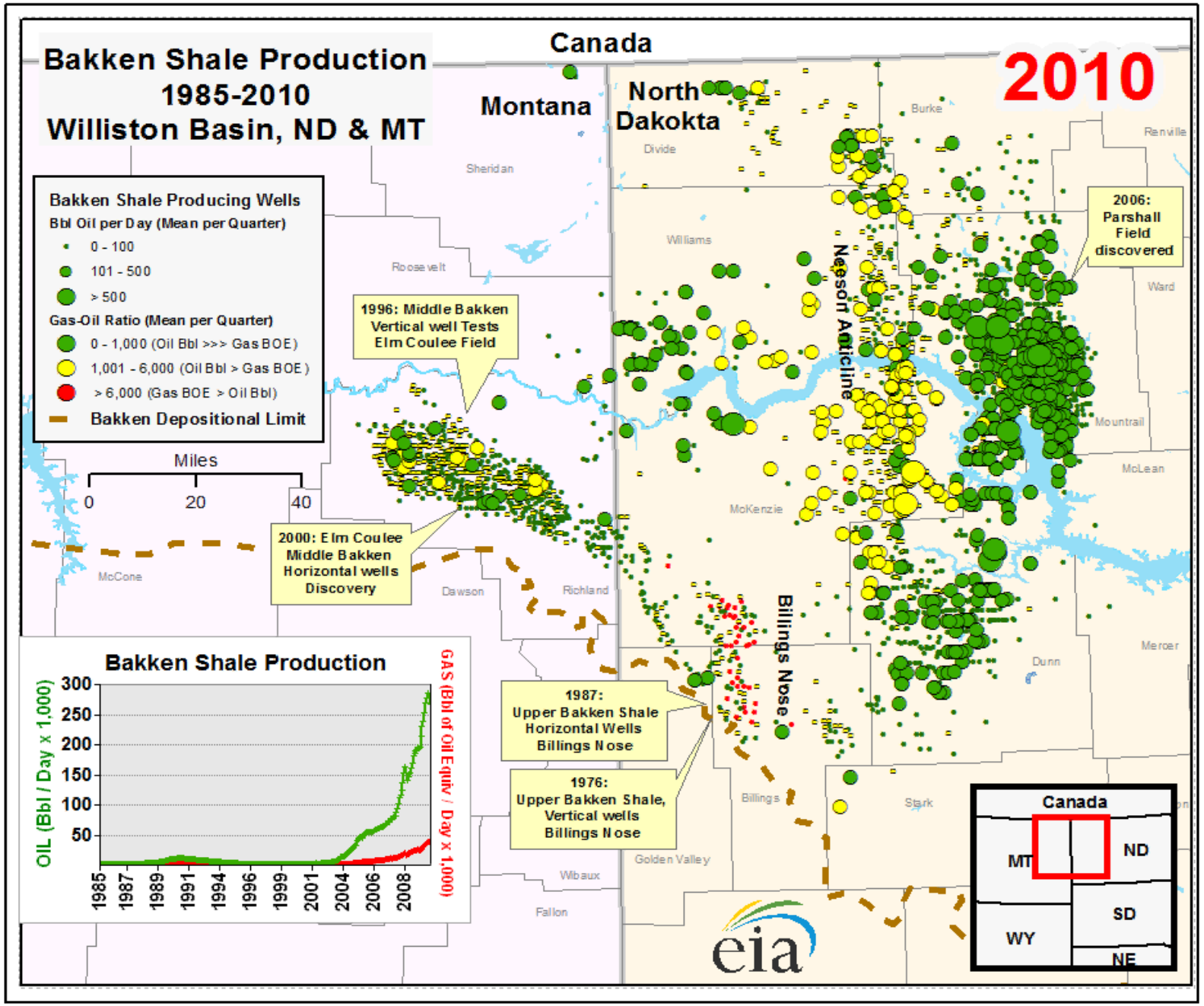
USGS



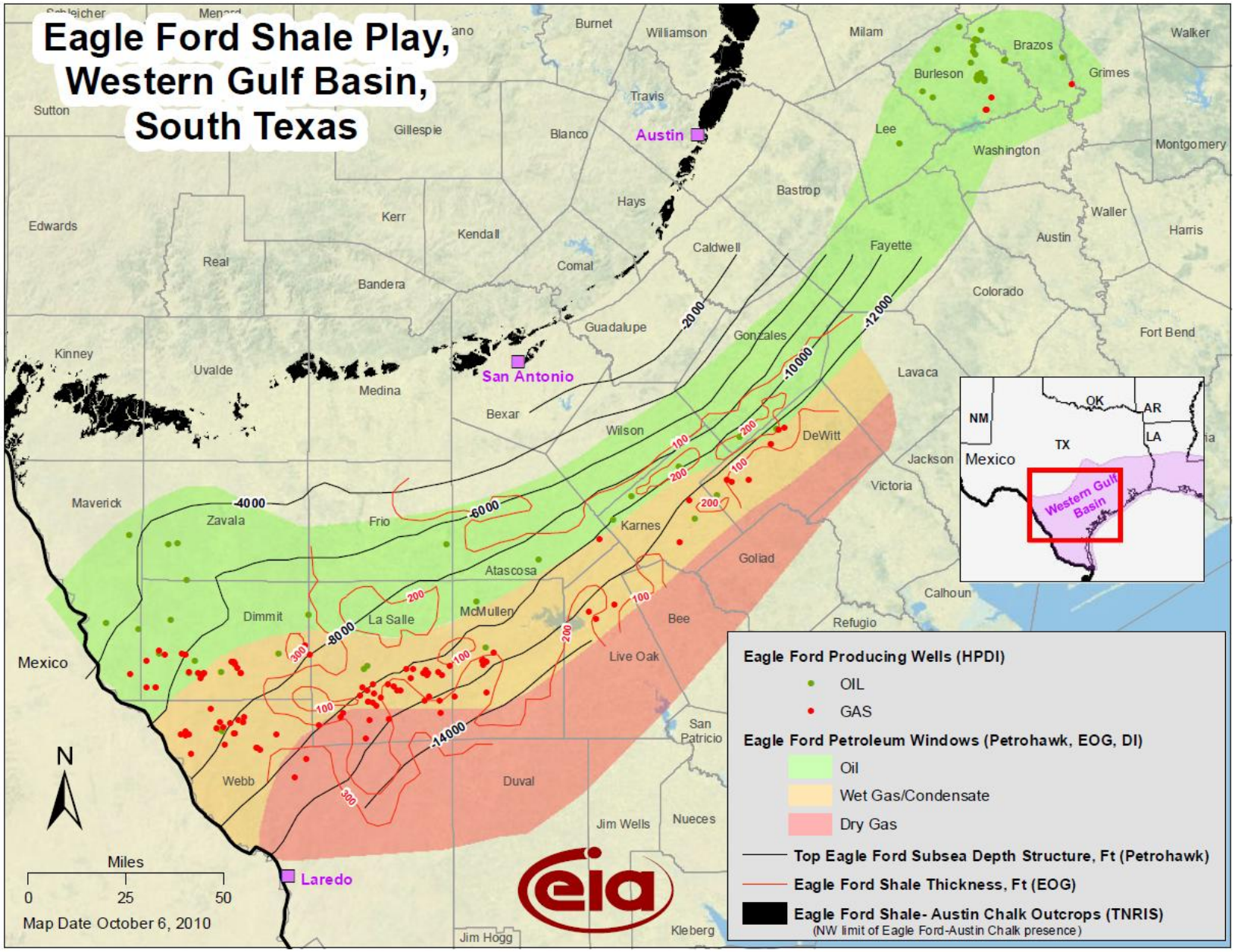
The USGS estimated means of
3,844 million barrels of oil (MMBO)
3,705 billion cubic feet of gas (BCFG)
202 million barrels of total natural gas liquids (MMBNGL)
for undiscovered continuous and conventional resources
in the Williston Basin Province (Bakken)



http://pubs.usgs.gov/fs/2008/3092/pdf/FS08-3092_508.pdf



http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/maps/maps.htm#field



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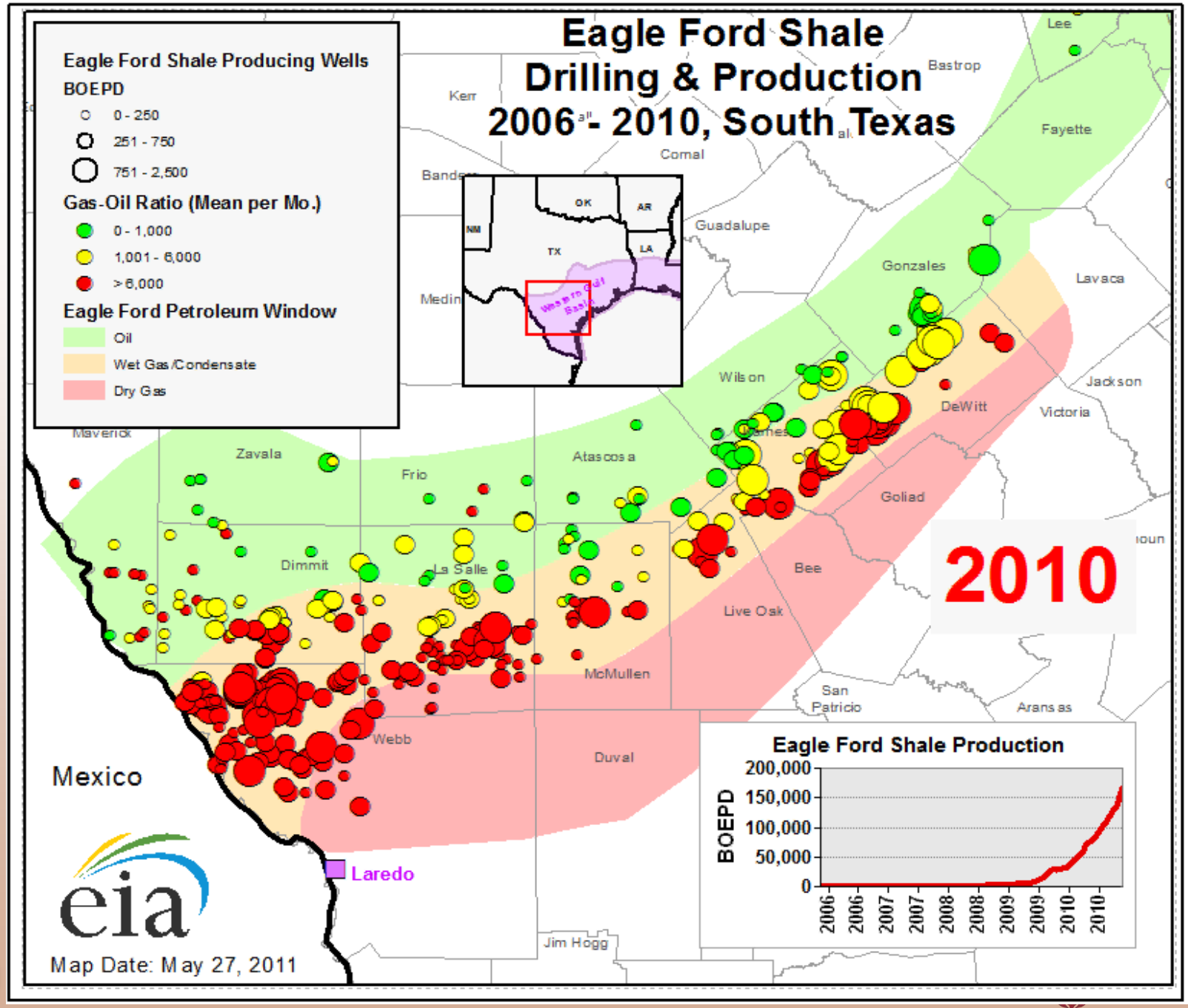
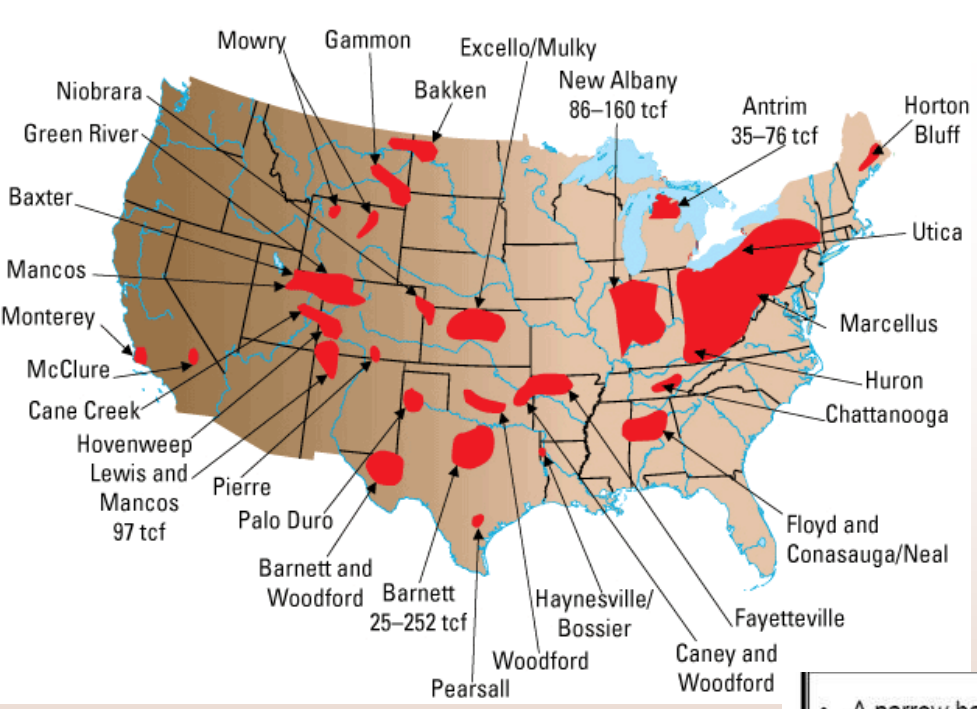
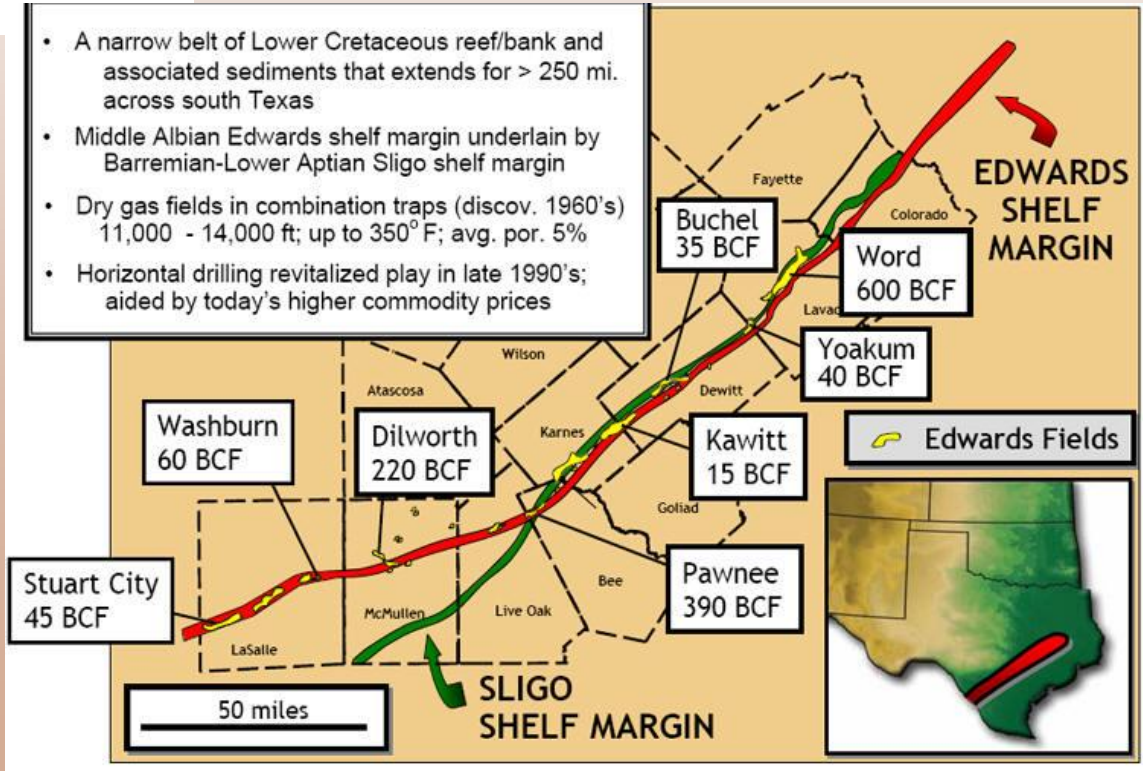
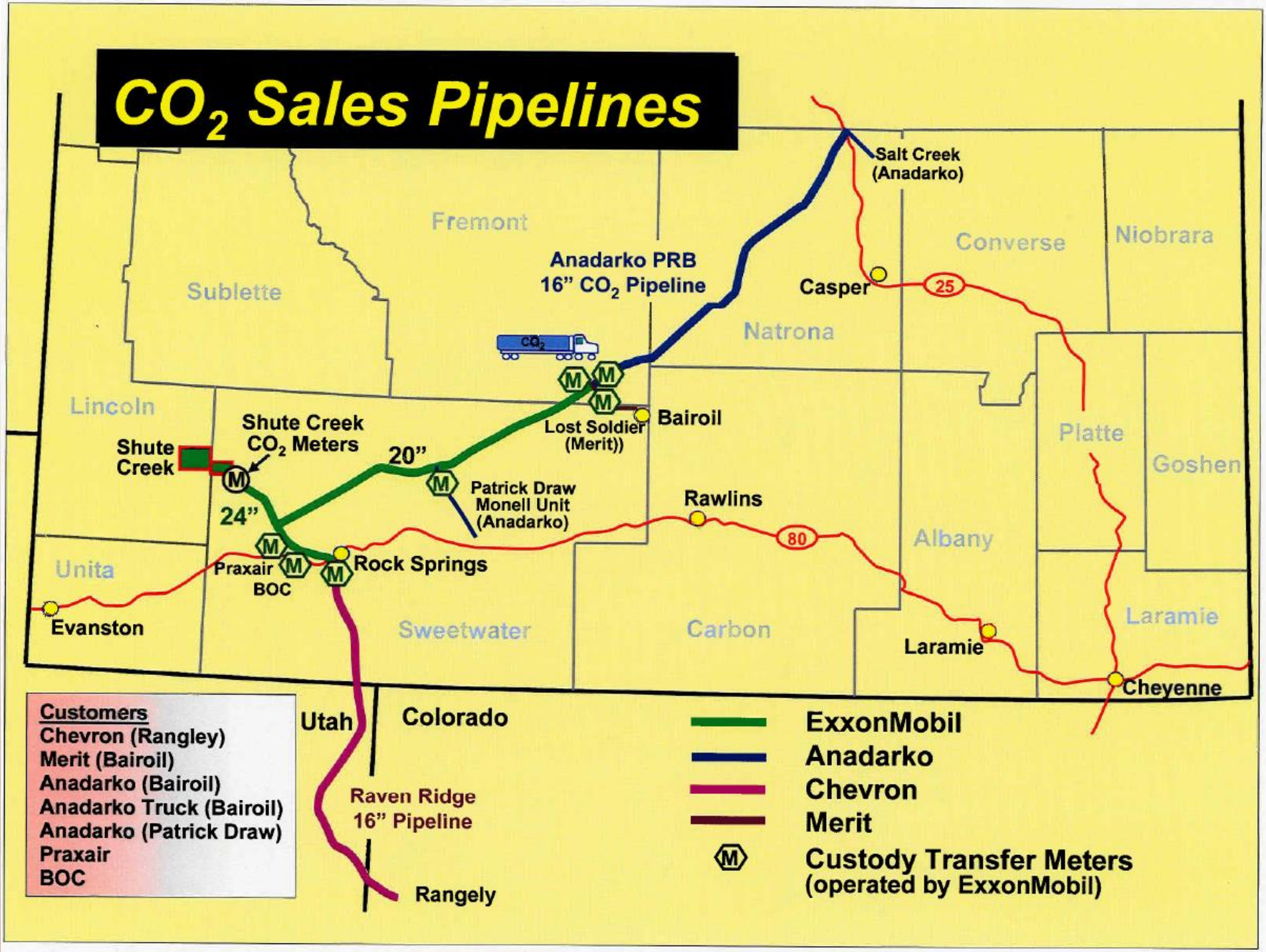


http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/maps/maps.htm#field

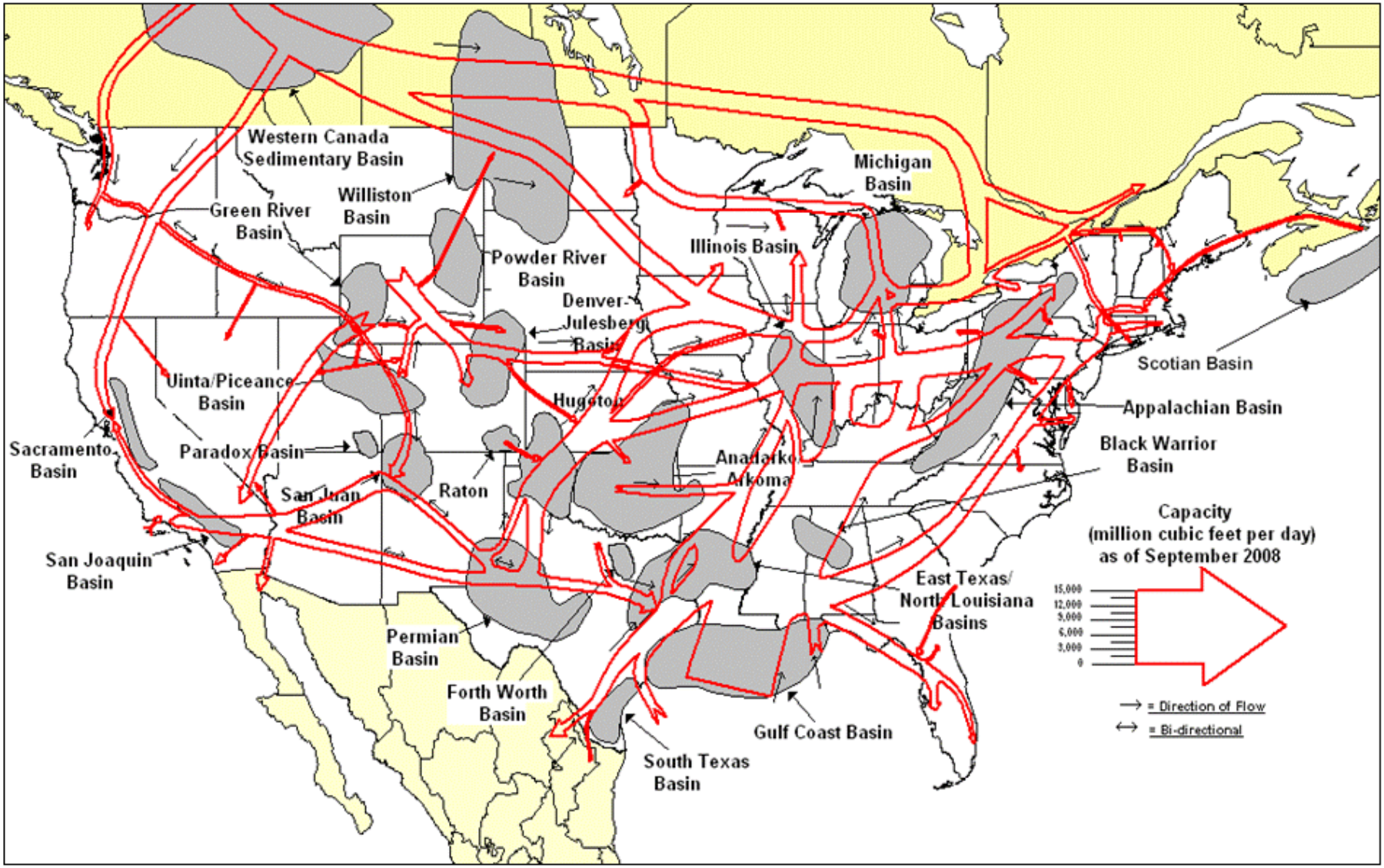


http://www.energyindustryphotos.com/eagle_ford_shale__formation_of_s.htm




CO_2 Sales Pipelines
Salt Creek (Anadarko)
Fremont
Converse
Niobrara
Anadarko PRB 16" CO_2 Pipeline
Casper
25
Sublette
Natrona
CO_2
Lincoln
Shute Creek CO_2 Meters
Shute Creek
20"
Lost Soldier (Merit))
Bairoil
Platte
Goshen
Patrick Draw Monell Unit (Anadarko)
24"
Rawlins
80
Albany
Unita
Praxair
BOC
Rock Springs
Evanston
Sweetwater
Carbon
Laramie
Laramie
Cheyenne
Customers
Chevron (Rangley)
Merit (Bairoil)
Anadarko (Bairoil)
Anadarko Truck (Bairoil)
Anadarko (Patrick Draw)
Praxair
BOC
Utah
Colorado
Raven Ridge 16" Pipeline
Rangely
ExxonMobil
Anadarko
Chevron
Merit
Custody Transfer Meters (operated by ExxonMobil)

Major Natural Gas Supply Basins Relative to Natural Gas Pipeline Transportation Corridors

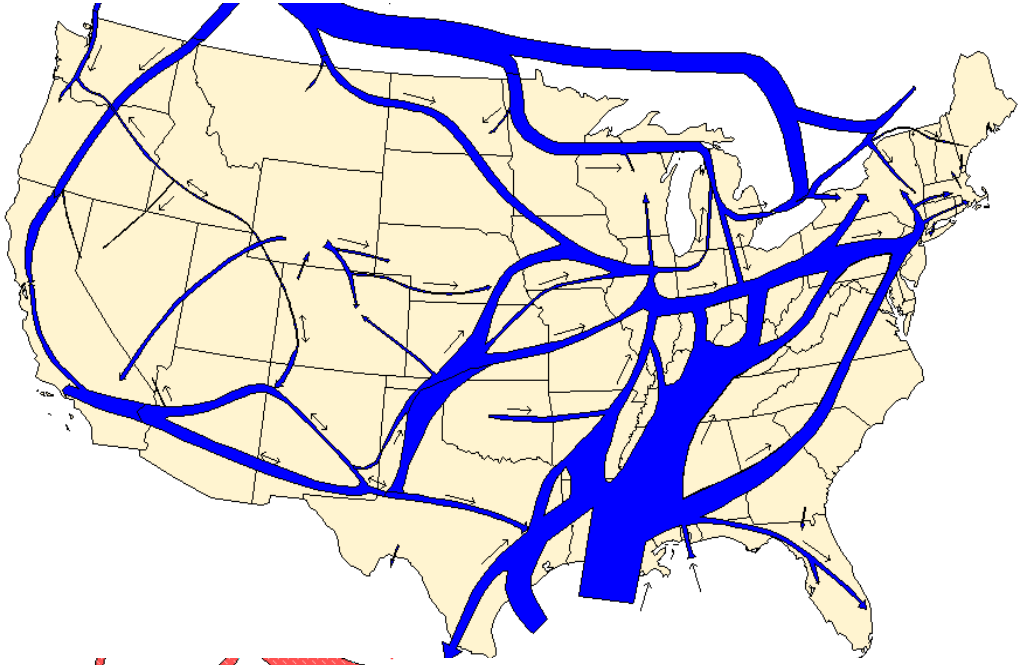


Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division, GasTran Gas Transportation Information System.

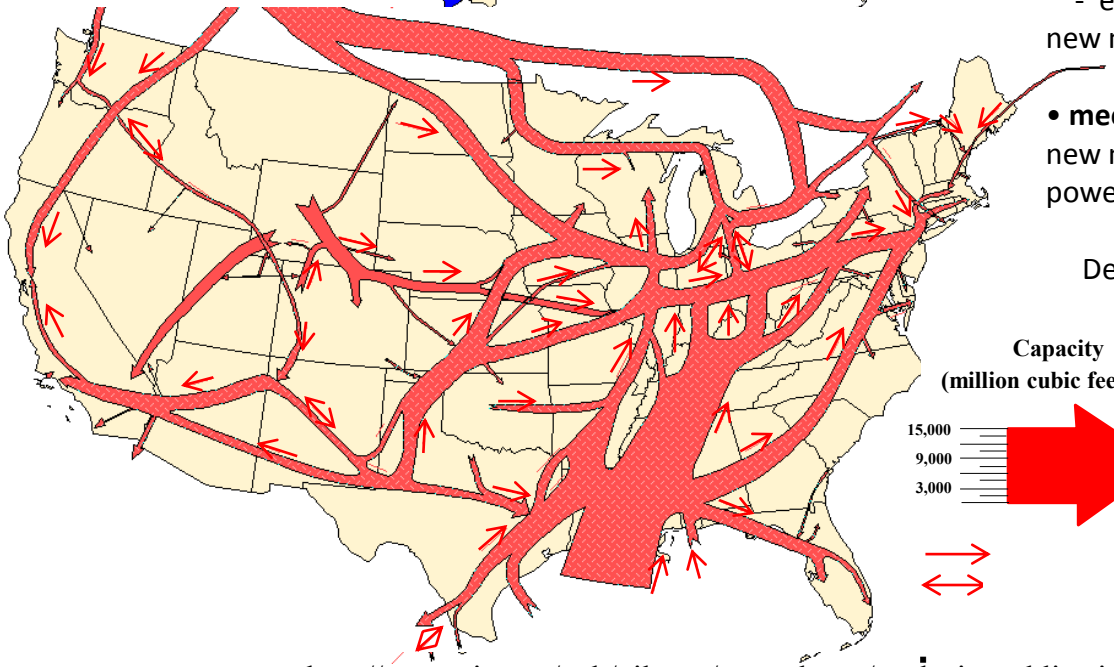
http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/TransportationCorridors.html

U.S. Natural Gas Pipeline Additions 1998-2008

1998



2008



More than **20,000 miles of new natural gas transmission pipeline,** representing more than 97 billion cubic feet per day of capacity, were placed in service in the United States over the past 10 years.

Much of that growth was driven by the need to:

- **access new supply sources** such as:
  - imports from Canada
  - expanding production from new natural gas fields
- **meet increased demand** from new natural-gas-fired electric power plants.

Details on next slides…

http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/develop.html

Additions to Natural Gas Transportation Capacity 98- 08

Wyoming – *Expansion of the intrastate pipeline systems in the Green River and Powder River basins and an increase in interstate pipeline capacity towards Midwest and Western markets.*

Canadian Border Import Growth – *Completion of Alliance Pipeline and expansion of the Northern Border Pipeline system.*

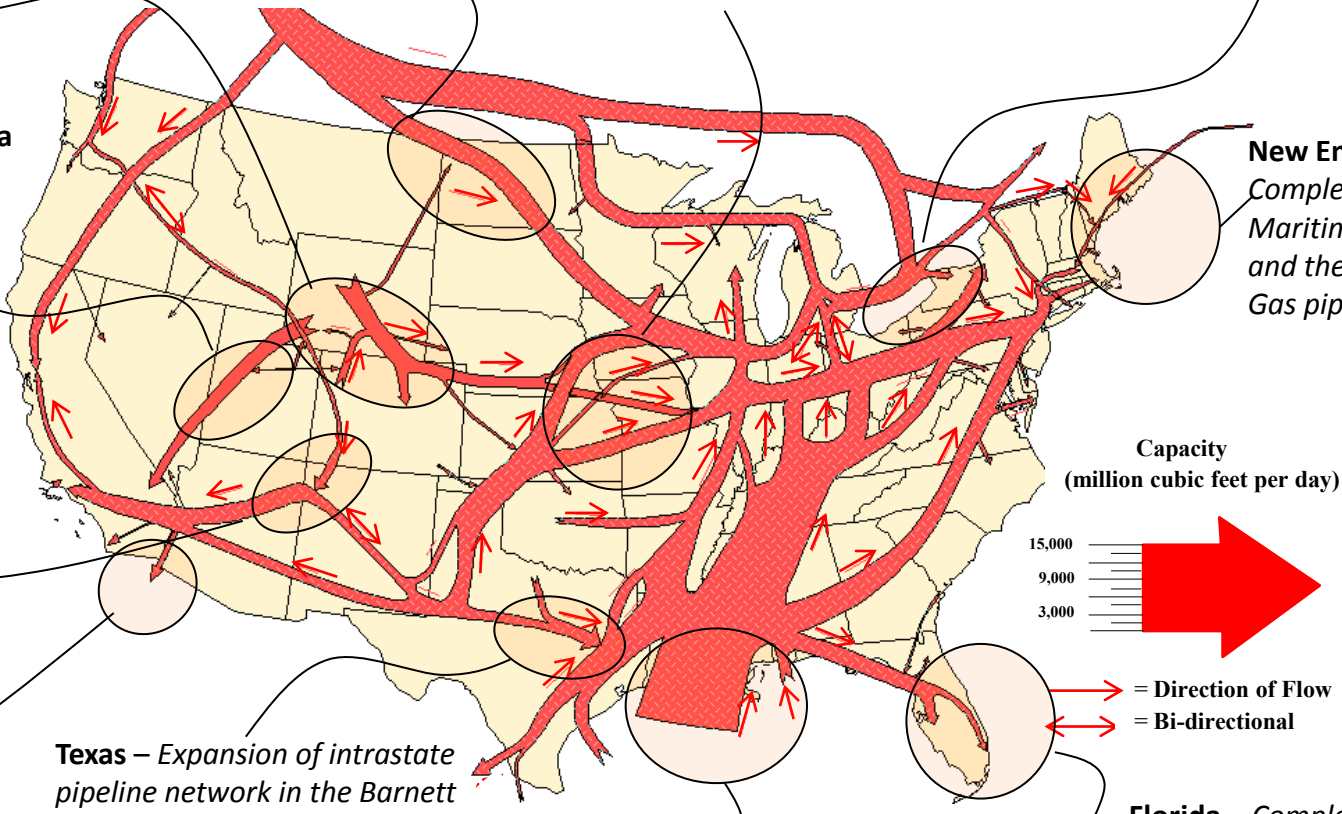
Midwest – *Completion of Cheyenne Plains and Rockies Express Pipelines to transport Wyoming/Colorado production to the Midwest.*

Canadian Border Export – *Completion of the Vector Pipeline system designed to transport supplies back to Canada.*

Wyoming/Utah/Nevada *Doubling of capacity on the Kern River system.*

New England – *Completion of the Maritimes & Northeast and the Portland Natural Gas pipeline systems.*

New Mexico/Arizona – *Expansion of the Transwestern, El Paso Natural Gas, and Questar systems.*



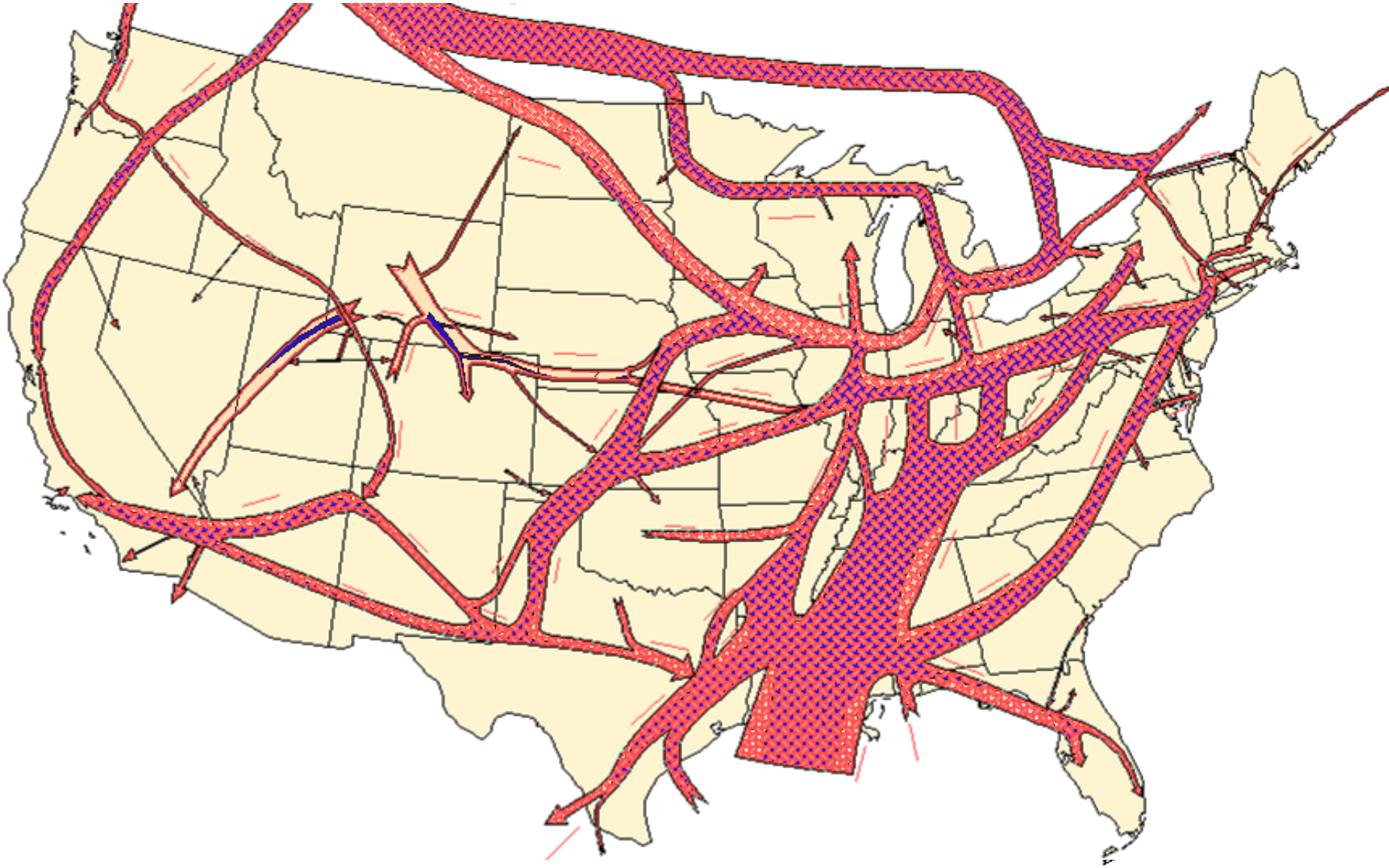
California – Completion of the North Baja Pipeline adding export capacity to Mexico.

Texas – *Expansion of intrastate pipeline network in the Barnett Shale formation area and to interstate pipelines for transport to midwestern and eastern natural gas markets.*

Louisiana – *Capacity to accommodate new deepwater production.*

Florida – *Completion of the Gulfstream Pipeline system and expansion of Florida Gas Transmission system.*

U.S. Natural Gas Pipeline Additions 1998-2008



Real vs. Personal

- Real Property
- Personal Property


B2
P2

http://drillingsantafe.blogspot.com/2011/02/texas-natural-gas-plant-ablaze.html

Kripple Kreek Gathering/Plant Complex
Fort Worth, TX

Holly 3 & 6 Treating Facilities
Shreveport , LA

http://www.kahunaventures.com/our-proje

Stanley Gathering/Plant Complex
Stanley, ND

http://www.kahunaventures.com/our-projects.html

http://eaglefordshalemineralleases.com/


562

Valuing the pipe of Pipeline Co. using Trended Cost

Pipe to be Appraised

Size Diam (in.)		Length	Vintage		Installed Cost
4	Steel	22.5	1999	$	1,797,350
6	Poly	31.2	1999	$	2,119,600
				$	-
8	Steel	38.2	1999	$	5,661,160
				$	-
12	Steel	31.9	1999	$	7,399,360
				$	-
30	Steel	35.2	1999	$	28,101,430
		159.0		$	45,078,900

Pipeline Schedule

	RCN*	Replacement Cost New Less Depreciation*			
Service Date	2011	2000	1999	1998	1997
Age	0	11	12	13	14
Size					
4	112,810		77,990		
6	158,370		109,500		
8	209,360		144,750		
12	327,550		226,460		
30	1,127,400		779,490		

Note* Adjustments are required for poly pipe, sour gas ……

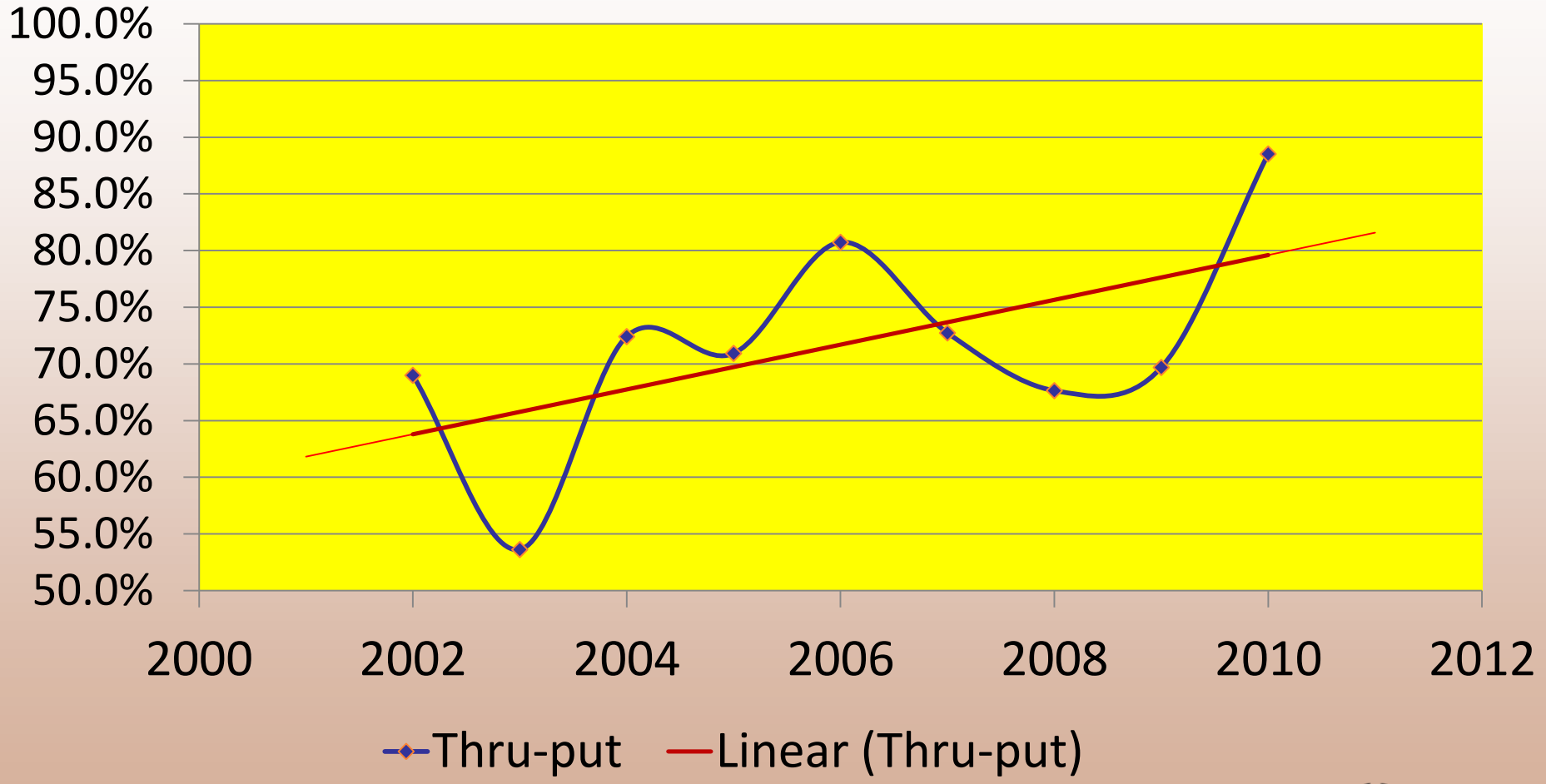
Cost Approach
Using Mass Appraisal Tables
By pipe size, segment and Vintage

Size Diam (in)	Length	Vintage	2011 RCNLD per Mile	2011 FMV
4	22.5	1999	$ 77,990	$ 1,754,780
6	31.2	1999	$ 65,700	$ 2,049,840
8	38.2	1999	$ 109,500	$ 4,182,900
12	31.9	1999	$ 226,460	$ 7,224,070
30	35.2	1999	$ 779,490	$ 27,438,050
	159.0			$ 42,649,640

Analysis of Thru-puts

	Net Operating Income	NOI as % of Plant	Gas Prices $/mmbtu	Thru-put
2002	$ 2,000,000	3.7%	3.221	69.0%
2003	$ 2,600,000	4.7%	5.388	53.6%
2004	$ 4,000,000	7.3%	6.138	72.4%
2005	$ 5,500,000	10.0%	8.616	70.9%
2006	$ 5,250,000	9.6%	7.226	80.7%
2007	$ 4,500,000	8.2%	6.875	72.7%
2008	$ 5,500,000	10.0%	9.035	67.6%
2009	$ 2,500,000	4.6%	3.986	69.7%
2010	$ 3,500,000	6.4%	4.393	88.5%

Thru-put


100.0%
95.0%
90.0%
85.0%
80.0%
75.0%
70.0%
65.0%
60.0%
55.0%
50.0%
2000
2002
2004
2006
2008
2010
2012
Thru-put
Linear (Thru-put)

Analysis of Thru-puts

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2007	$	4,500,000	8.2%	6.875	72.7%
2008	$	5,500,000	10.0%	9.035	67.6%
2009	$	2,500,000	4.6%	3.986	69.7%
2010	$	3,500,000	6.4%	4.393	88.5%

9 Year avg	71.7%
9 Year Regression	79.6%

6 tenths rule

9 Year avg	81.9%
9 Year Regression	87.2%
Prior year	92.9%

Adjustments to RCNLD based on Thru-put

	Thru-put	Adjusted Value
9 Year avg	71.7%	$ 30,577,440
9 Year Regression	79.6%	$ 33,949,740
Prior Year	88.5%	$ 37,755,450

	Thru-put using *6 tenth rule*	Adjusted Value
9 Year avg	81.9%	$ 34,930,060
9 Year Regression	87.2%	$ 37,190,490
Prior Year	92.9%	$ 39,621,520

Valuing the Pipe of a Pipeline Co. using the Unit Method

Final Value - System

Historical Cost less Depreciation	$ 37,727,189
Historical Cost less Depreciation & Obsolescence	$ 32,558,140
DCF - Five Years to Achieve Required ROR	$ 43,742,978
DCF - 2010 Projected NOI plus Growth @1.0%	$ 45,395,432
Final Value - System	Say $ 44,000,000

Cost Approach - System

Historical Cost

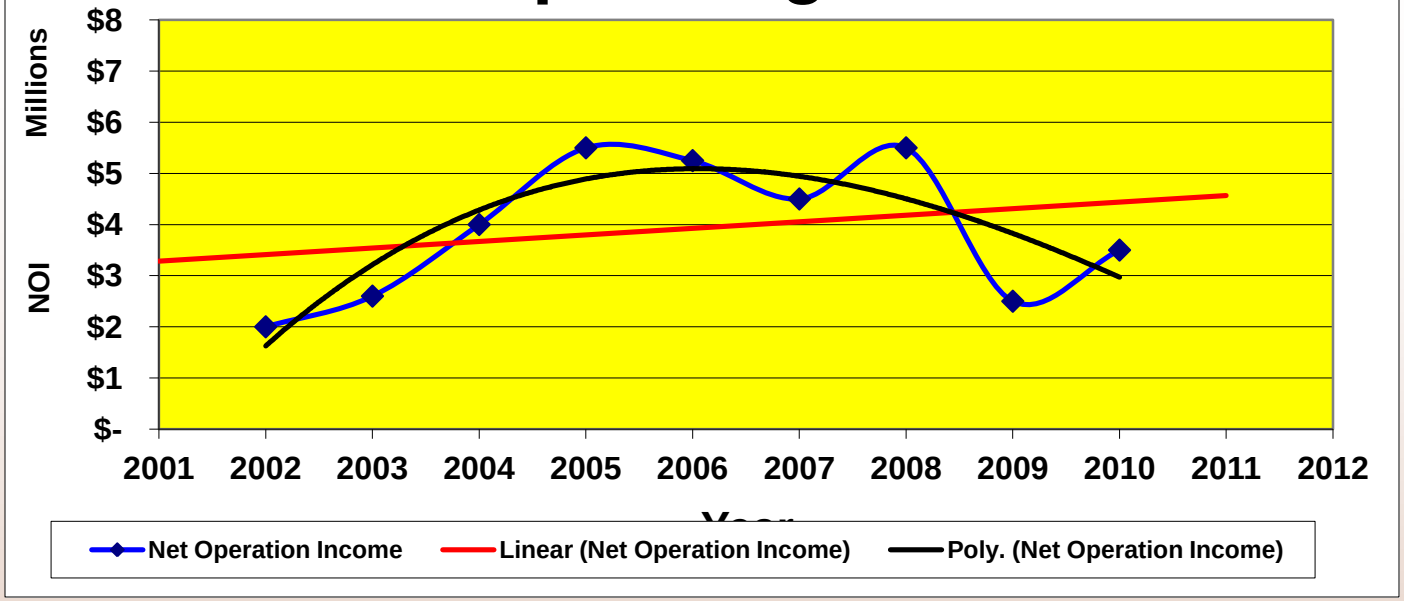
Transmission & Gathering Lines	$ 45,078,900
Compression & Station Equipment	$ 8,921,100
Buildings	$ 400,000
Vehicles, Computers,& Equipment	$ 350,000
Furniture & Fixtures	$ 10,000
Total Installed Original Cost	$ 54,760,000
Accumulated Depreciation	$ 17,032,811
Net Book	$ 37,727,189

Obsolescence

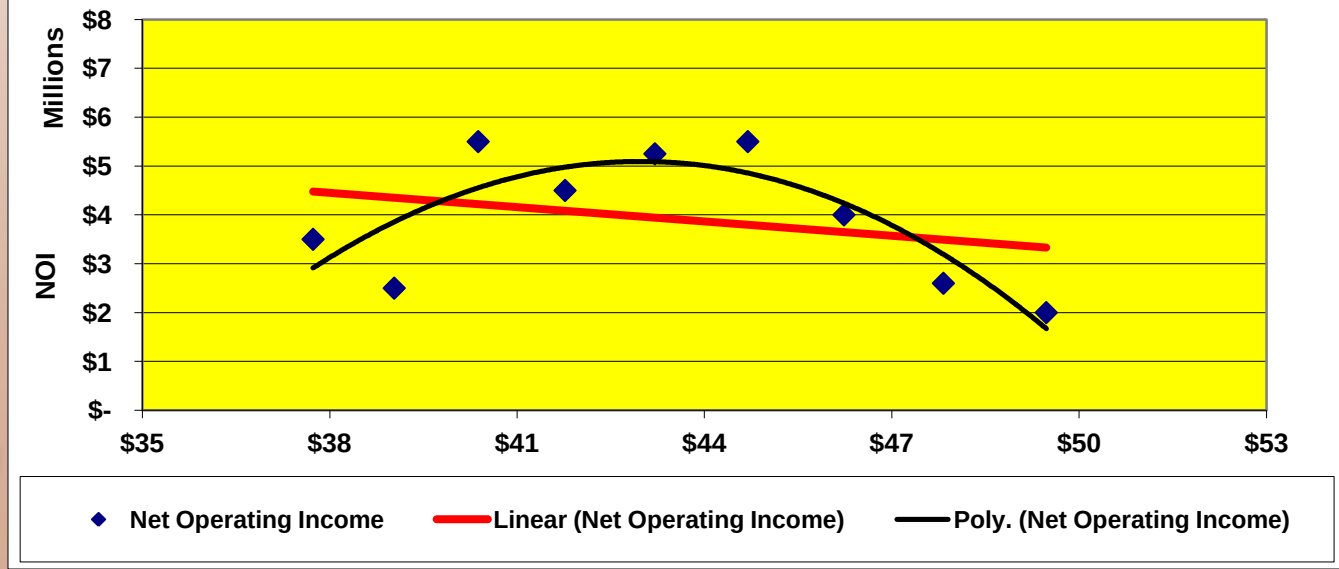
Achieved Return NOI	$ 3,500,000
Net Book	$ 37,727,189
Achieved Return %	9.28%
Required Return	10.75%
Loss of Earnings	1.47%
Percent Obsolescence	13.70%
Obsolescence	$ 5,169,049

Year	NOI	Total Plant	Net Plant
2002	$ 2,000,000	$ 54,765,000	$ 49,474,139
2003	$ 2,600,000	$ 54,765,000	$ 47,826,650
2004	$ 4,000,000	$ 54,765,000	$ 46,234,023
2005	$ 5,500,000	$ 54,765,000	$ 44,694,430
2006	$ 5,250,000	$ 54,765,000	$ 43,206,106
2007	$ 4,500,000	$ 54,765,000	$ 41,767,342
2008	$ 5,500,000	$ 54,765,000	$ 40,376,490
2009	$ 2,500,000	$ 54,765,000	$ 39,031,953
2010	$ 3,500,000	$ 54,765,000	$ 37,732,189
9 Year Regression	$ 4,441,111		$ 4,478,903

Net Operating Income



NOI to Net Plant



COST OF CAPITAL
TYPICAL RETURN

	CAPITAL STRUCTURE	RETURN	WEIGHTED COST
DEBT	30%	6.54%	1.96%
EQUITY	70%	12.53%	8.77%
			10.73%
		Say	**10.75%**

Obsolescence

Achieved Return NOI	$ 3,500,000
Net Book	$ 37,727,189
Achieved Return %	9.28%
Required Return	10.75%
Loss of Earnings	1.47%
Percent Obsolescence	13.70%
Obsolescence	$ 5,169,049

Cost Approach - System

Historical Cost

Transmission & Gathering Lines	$ 45,078,900
Compression & Station Equipment	$ 8,921,100
Buildings	$ 400,000
Vehicles, Computers,& Equipment	$ 350,000
Furniture & Fixtures	$ 10,000
Total Installed Original Cost	$ 54,760,000
Accumulated Depreciation **	$ 17,032,811
Net Book	$ 37,727,189
Obsolescence (see below)	$ 5,169,049
Cost Approach	$ 32,558,140

Obsolescence

Achieved Return NOI	$ 3,500,000
Net Book	$ 37,727,189
Achieved Return %	9.28%
Required Return	10.75%
Loss of Earnings	1.47%
Percent Obsolescence	13.70%
Obsolescence	$ 5,169,049

** Declining balance -- 30 year life

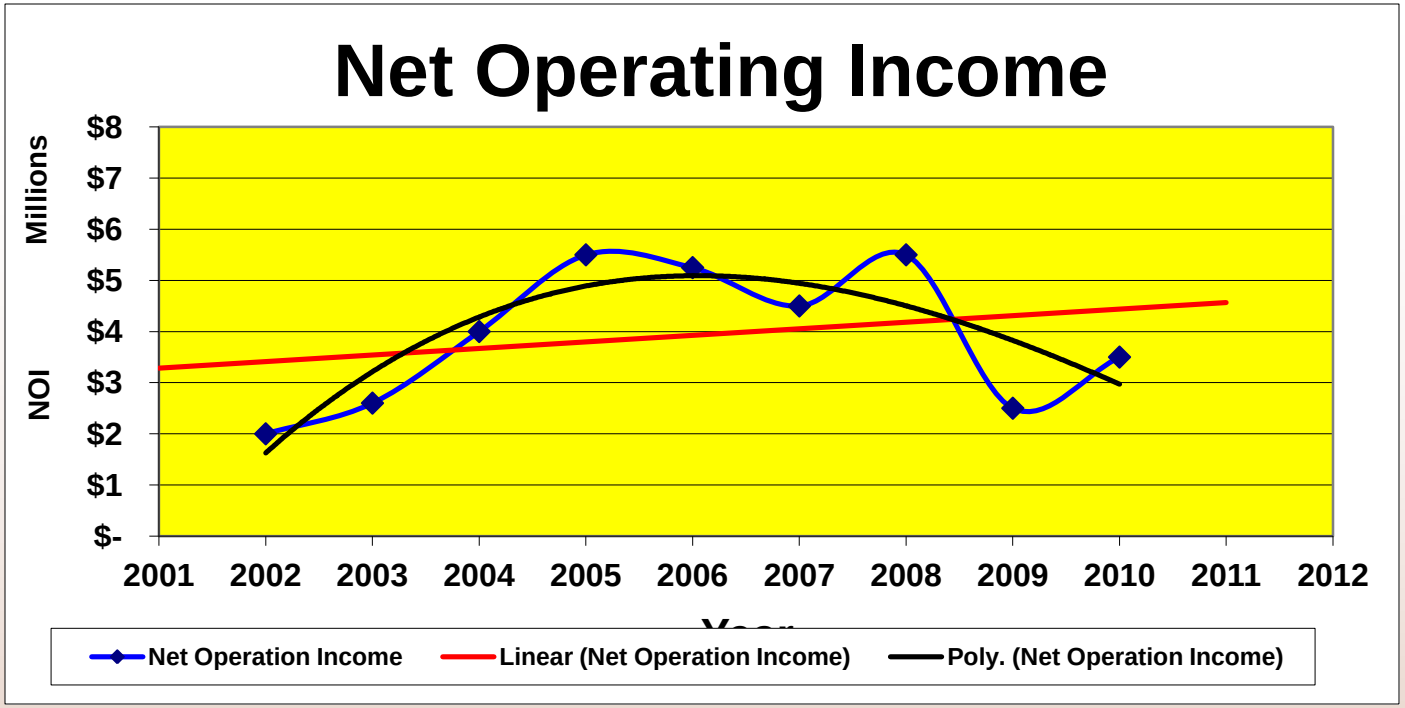
INCOME APPROACH - System

Plant	$ 54,760,000
Expected Return	10.75%
Anticipated Income	$ 5,886,700
2010 Income	$ 3,500,000
Assume 2015 Income	$ 5,886,700
Annual Increase	$ 477,340
Growth Rate 2016-2030	0.0%

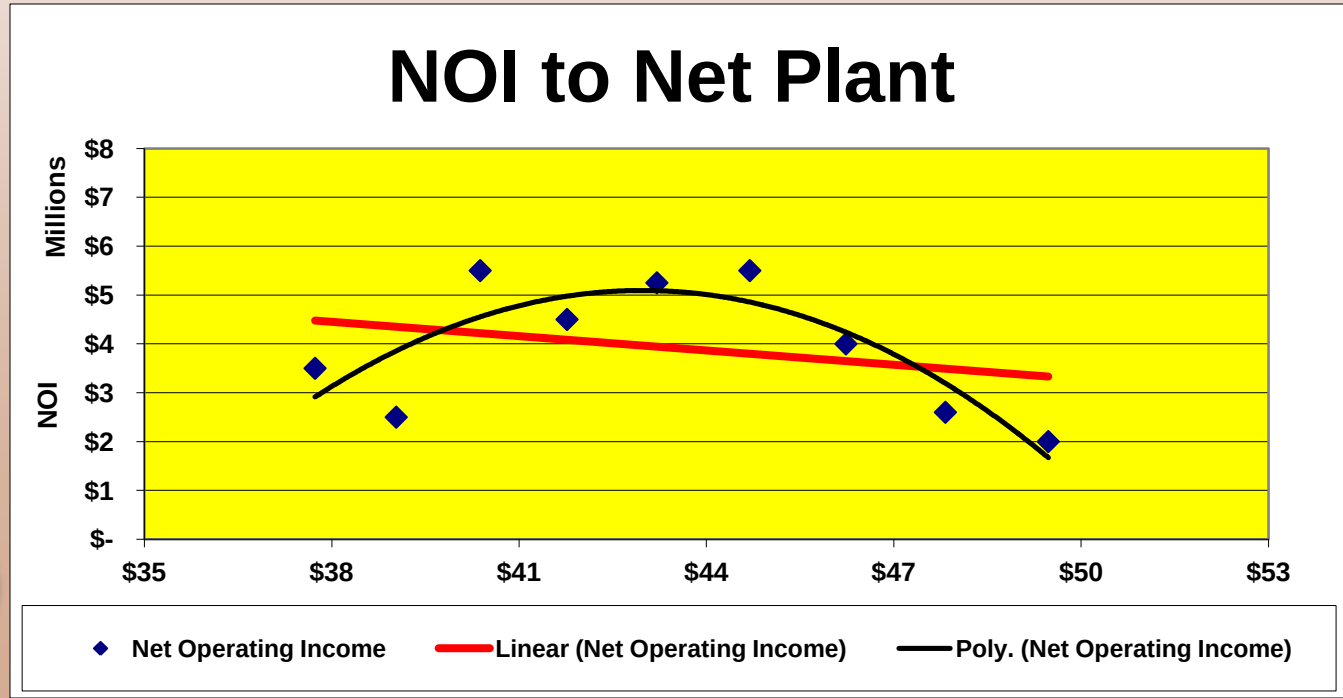
Sum of Discounted flows $ 43,742,978

Year	NOI	Total Plant	Net Plant
2002	$ 2,000,000	$ 54,765,000	$ 49,474,139
2003	$ 2,600,000	$ 54,765,000	$ 47,826,650
2004	$ 4,000,000	$ 54,765,000	$ 46,234,023
2005	$ 5,500,000	$ 54,765,000	$ 44,694,430
2006	$ 5,250,000	$ 54,765,000	$ 43,206,106
2007	$ 4,500,000	$ 54,765,000	$ 41,767,342
2008	$ 5,500,000	$ 54,765,000	$ 40,376,490
2009	$ 2,500,000	$ 54,765,000	$ 39,031,953
2010	$ 3,500,000	$ 54,765,000	$ 37,732,189
9 Year Regression	$ 4,441,111		$ 4,478,903

Net Operating Income



NOI to Net Plant



Sum of Discounted flows	$43,742,978

Year	Income	PW Factor	PW of Future Income
2010	$ -	1.0000	$ -
2011	$ 3,977,340	0.9029	$ 3,591,278
2012	$ 4,454,680	0.8153	$ 3,631,860
2013	$ 4,932,020	0.7362	$ 3,630,727
2014	$ 5,409,360	0.6647	$ 3,595,596
2015	$ 5,886,700	0.6002	$ 3,533,078
2016	$ 5,886,700	0.5419	$ 3,190,138
2017	$ 5,886,700	0.4893	$ 2,880,486
2018	$ 5,886,700	0.4418	$ 2,600,890
2019	$ 5,886,700	0.3989	$ 2,348,434
2020	$ 5,886,700	0.3602	$ 2,120,482
2021	$ 5,886,700	0.3253	$ 1,914,656

INCOME APPROACH - System

Plant	$ 54,760,000
Expected Return	10.75%
Anticipated Income	$ 5,886,700
2010 Income	$ 3,500,000
Assume 2015 Income	$ 5,886,700
Annual Increase	$ 477,340
Growth Rate 2016-2030	1.0%

Sum of Discounted flows	$ 45,395,432

Year	Income	PW Factor	PW of Future Income
2010	$ -	1.0000	$ -
2011	$ 3,977,340	0.9029	$ 3,591,278
2012	$ 4,454,680	0.8153	$ 3,631,860
2013	$ 4,932,020	0.7362	$ 3,630,727
2014	$ 5,409,360	0.6647	$ 3,595,596
2015	$ 5,886,700	0.6002	$ 3,533,078
2016	$ 5,945,567	0.5419	$ 3,222,040
2017	$ 6,005,023	0.4893	$ 2,938,384
2018	$ 6,065,073	0.4418	$ 2,679,700
2019	$ 6,125,724	0.3989	$ 2,443,789
2020	$ 6,186,981	0.3602	$ 2,228,648
2021	$ 6,248,851	0.3253	$ 2,032,446
2022	$ 6,311,339	0.2937	$ 1,853,518
2023	$ 6,374,453	0.2652	$ 1,690,341
2024	$ 6,438,197	0.2394	$ 1,541,530

Final Value - System

Historical Cost less Depreciation	$ 37,727,189
Historical Cost less Depreciation & Obsolescence	$ 32,558,140
DCF - Five Years to Achieve Required ROR	$ 43,742,978
DCF - 2010 Projected NOI plus Growth @1.0%	$ 45,395,432
Final Value - System	Say $ 44,000,000

Allocation to Tax District

Value as a Percent Cost

	System Value	System Cost	Percent
Total Installed Original Cost	$ 44,000,000	$ 54,760,000	80.4%
Net Book Cost	$ 44,000,000	$ 37,727,189	116.6%

	Tax District Cost	Percent Cost	Tax District Value
Total Installed Original Cost	$ 54,760,000	80.4%	$ 44,000,000
Net Book Cost	$ 37,727,189	116.6%	$ 44,000,000
		Avg	$ 44,000,000

Allocation to Pipe

Total Installed Original Cost of Pipe	$	45,078,900
Value as a Percent of Cost		80.4%
Value of Pipe	**$**	**36,221,176**
Value of Pipe using the 2011 Pipeline Schedule	**$**	**42,649,640**
Economic factor to be applied 2011 Pipeline Schedule		**84.9%**

Pipe to be Appraised

Size Diam (in.)		Length	Vintage		Installed Cost
4	Steel	22.5	1999	$	1,797,350
6	Poly	31.2	1999	$	2,119,600
				$	-
8	Steel	38.2	1999	$	5,661,160
				$	-
12	Steel	31.9	1999	$	7,399,360
				$	-
30	Steel	35.2	1999	$	28,101,430
		159.0		$	45,078,900

Cost Approach
Using Mass Appraisal Tables
By pipe size, segment and Vintage

Size Diam (in)	Length	Vintage	2011 RCNLD per Mile	2011 FMV
4	22.5	1999	$ 77,990	$ 1,754,780
6	31.2	1999	$ 65,700	$ 2,049,840
8	38.2	1999	$ 109,500	$ 4,182,900
12	31.9	1999	$ 226,460	$ 7,224,070
30	35.2	1999	$ 779,490	$ 27,438,050
	159.0			$ 42,649,640

PICKETT

& COMPANY, INC.

Robert T. Lehn

972.387.4944
BobL@TYPCO.com
4464 Sigma Rd
Dallas, TX 75244

- B.A., M. Ch.E. from Rice University
- 30 years experience in engineering and appraisals
- Worked in Chicago, London, Texas and 13 other states
- P.E., R.P.A., TX
- Executive VP in Dallas of Thomas Y. Pickett & Co., Inc.

Anthony Bell

972.387.4944
TonyB@TYPCO.com
4464 Sigma Rd
Dallas, TX 75244

- B.S. I.E. from Newark College of Engineering
- 37 years at AT&T
- Over 50 years' appraisal experience
- National expert in unit valuations
- R.P.A., TX
- VP in Dallas of Thomas Y. Pickett & Co., Inc.

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