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"North American Shale/Tight Oil Outlook"

Third IEA – IEF – OPEC Symposium on Energy Outlooks
IEF Secretariat | Riyadh, Saudi Arabia
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by

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Key Questions

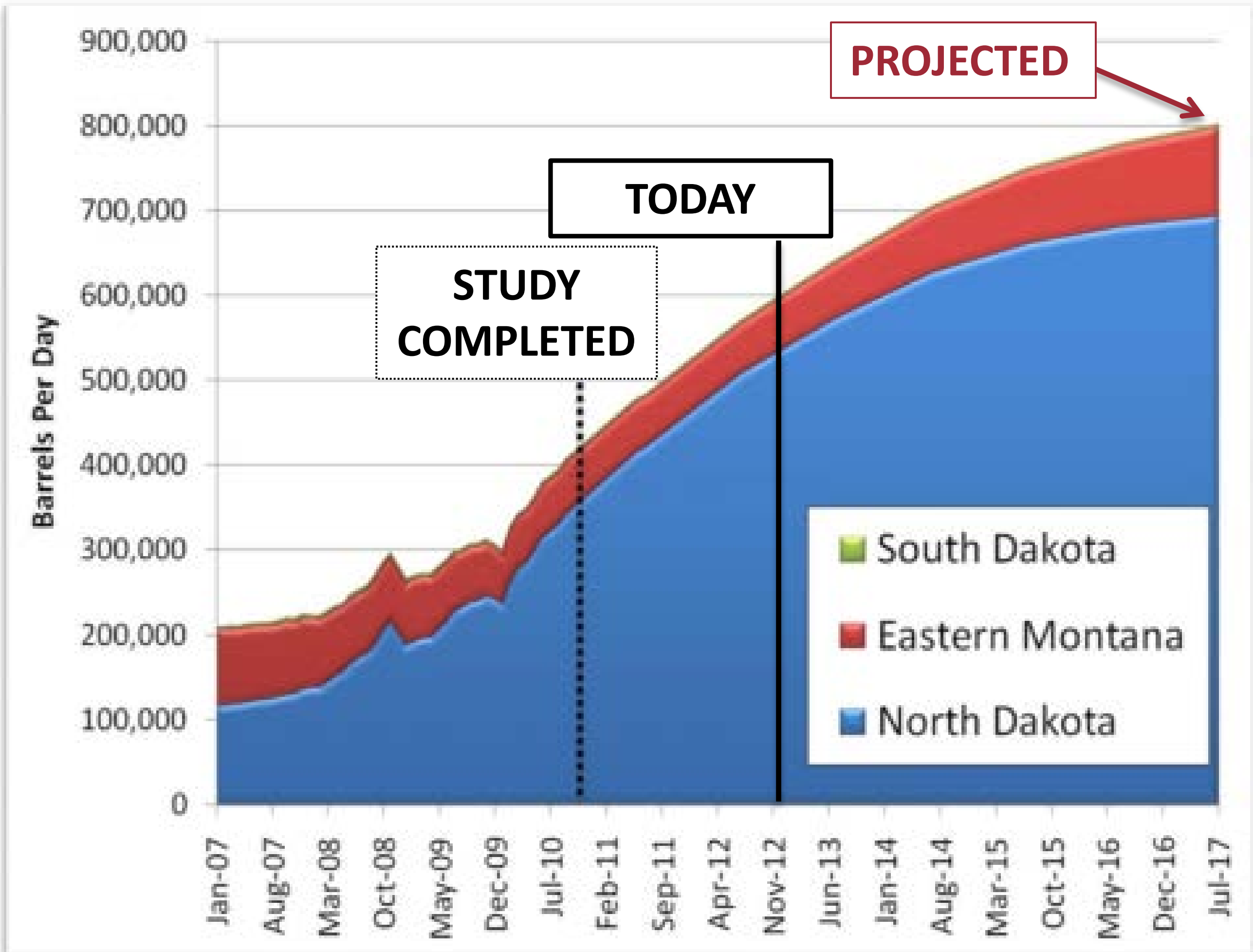
- Is N.A. shale/tight oil expansion sustainable?
- What are the main challenges to N.A. shale/tight oil expansion?
- What has been the evolution of N.A. shale/tight oil production?
- What are the collateral effects of N.A. shale/tight oil production?
- Is N.A.'s shale/tight oil experience replicable abroad?

Drivers for NA Liquids

- Price differential between WTI crude oil and Henry Hub natural gas remains elevated.
- Independents moving rigs to "oiler plays;" majors continue drilling dry gas plays.
- Prices for the NGL basket held up until last year.
- Success of the Bakken/Three Forks play.

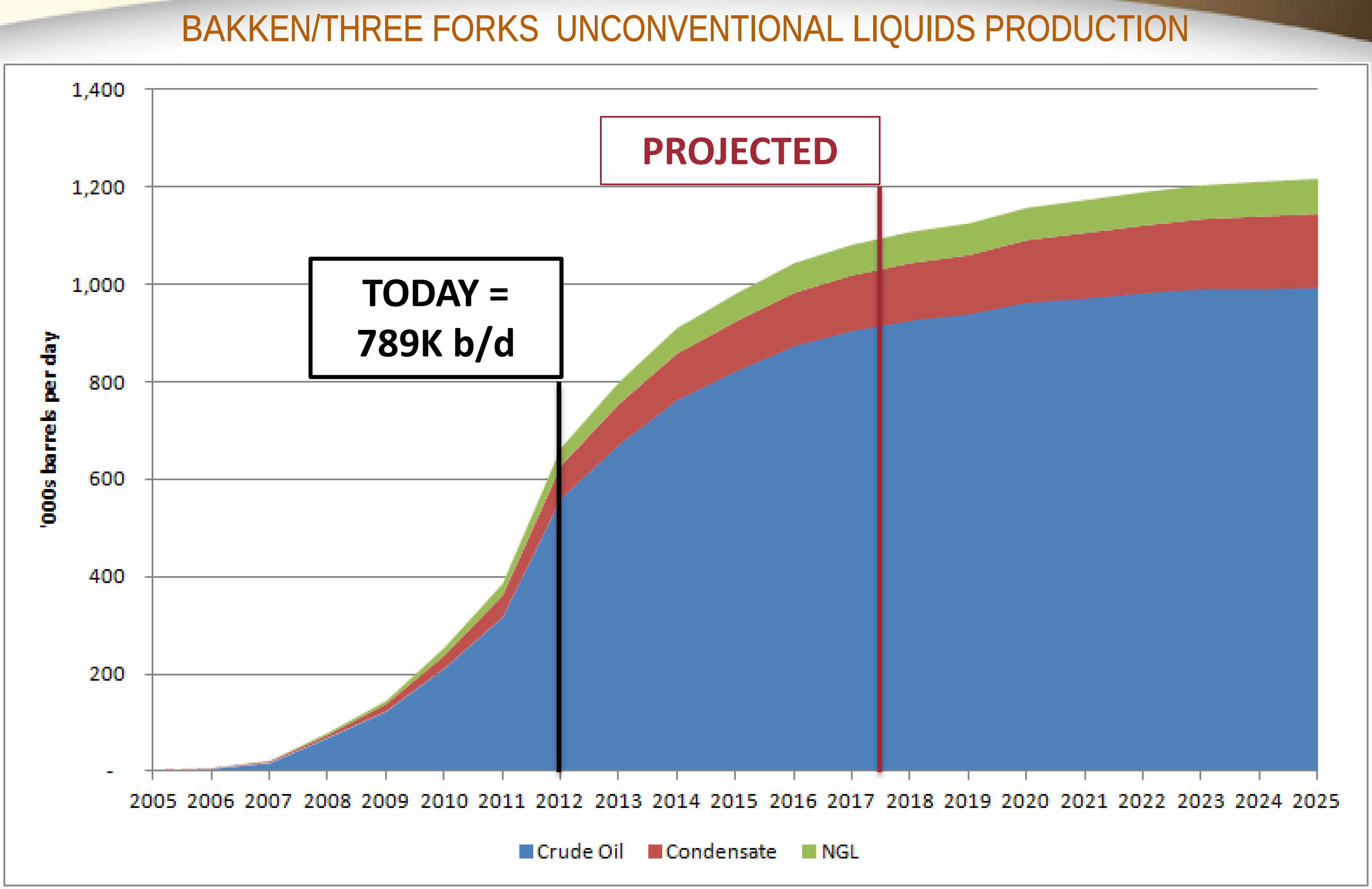
NA Liquids Production Sustainable

WILLISTON OIL PRODUCTION OUTLOOK, DEC. 2010



North Dakota Pipeline Authority, "N.D. Oil Transportation Infrastructure"

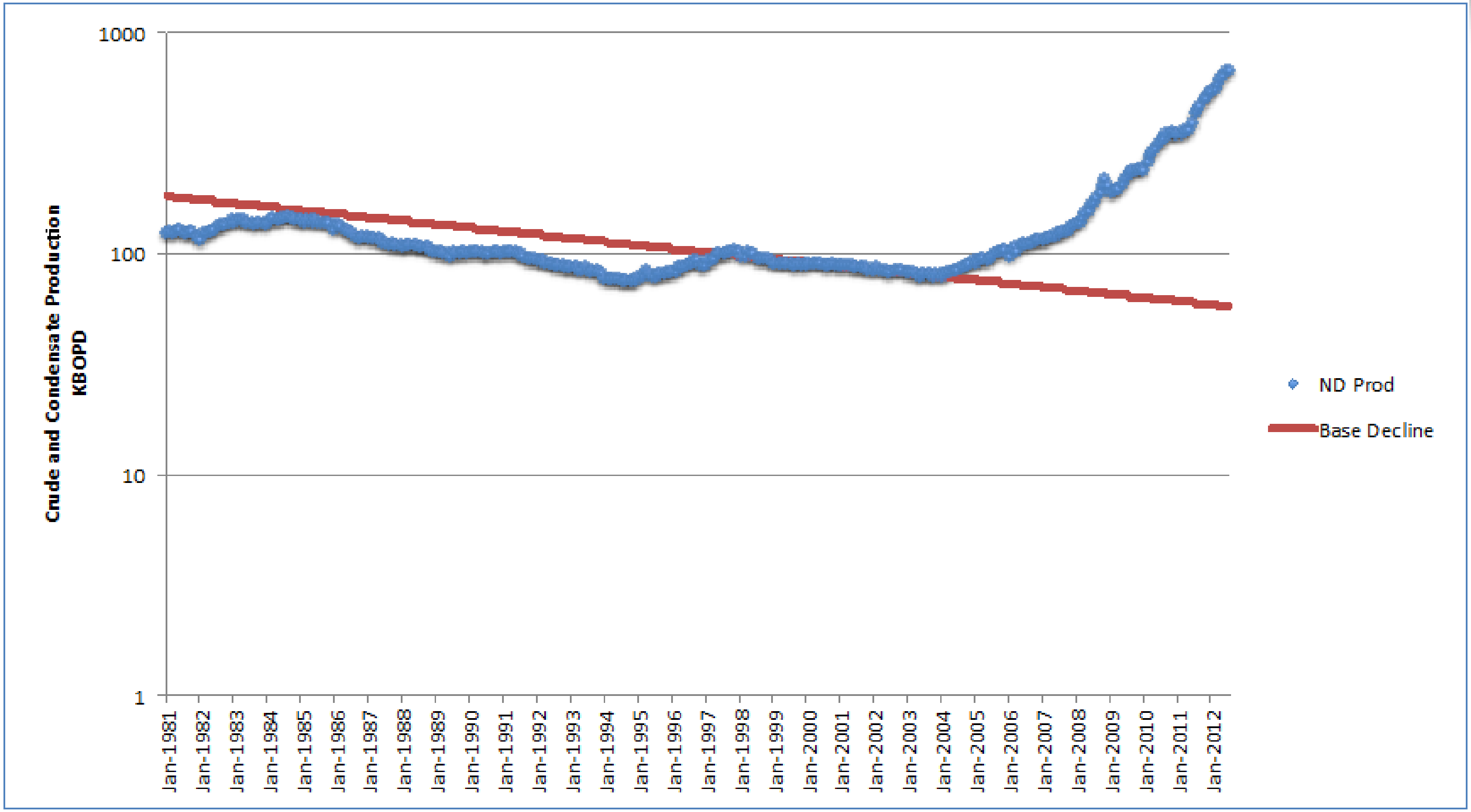
NA Liquids Production Sustainable



Hart Energy's North American Shale Quarterly, 4Q2012

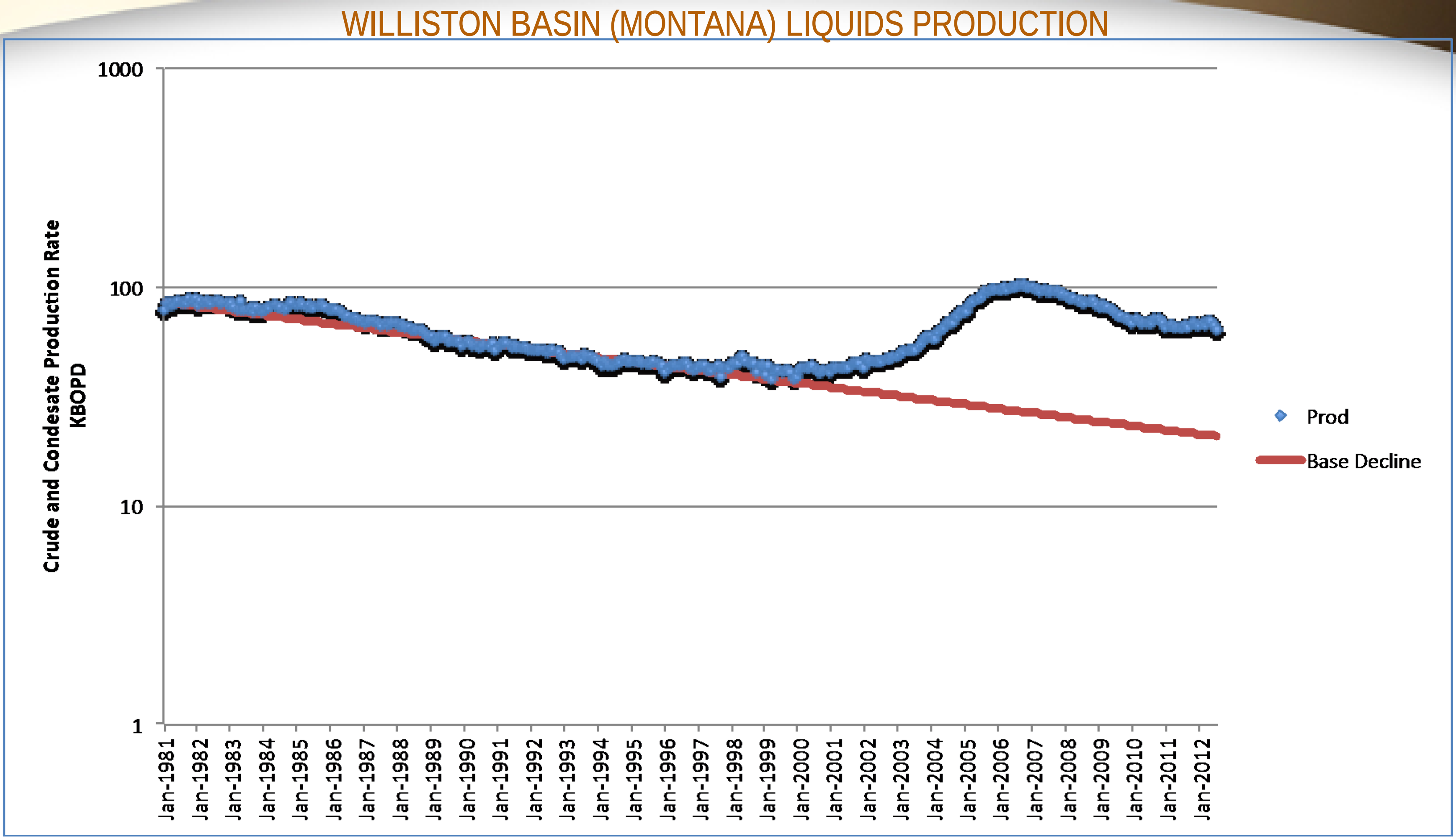
NA Liquids Production Sustainable

WILLISTON BASIN (NORTH DAKOTA) LIQUIDS PRODUCTION



Hart Energy's North American Shale Quarterly, 4Q2012

NA Liquids Production Sustainable



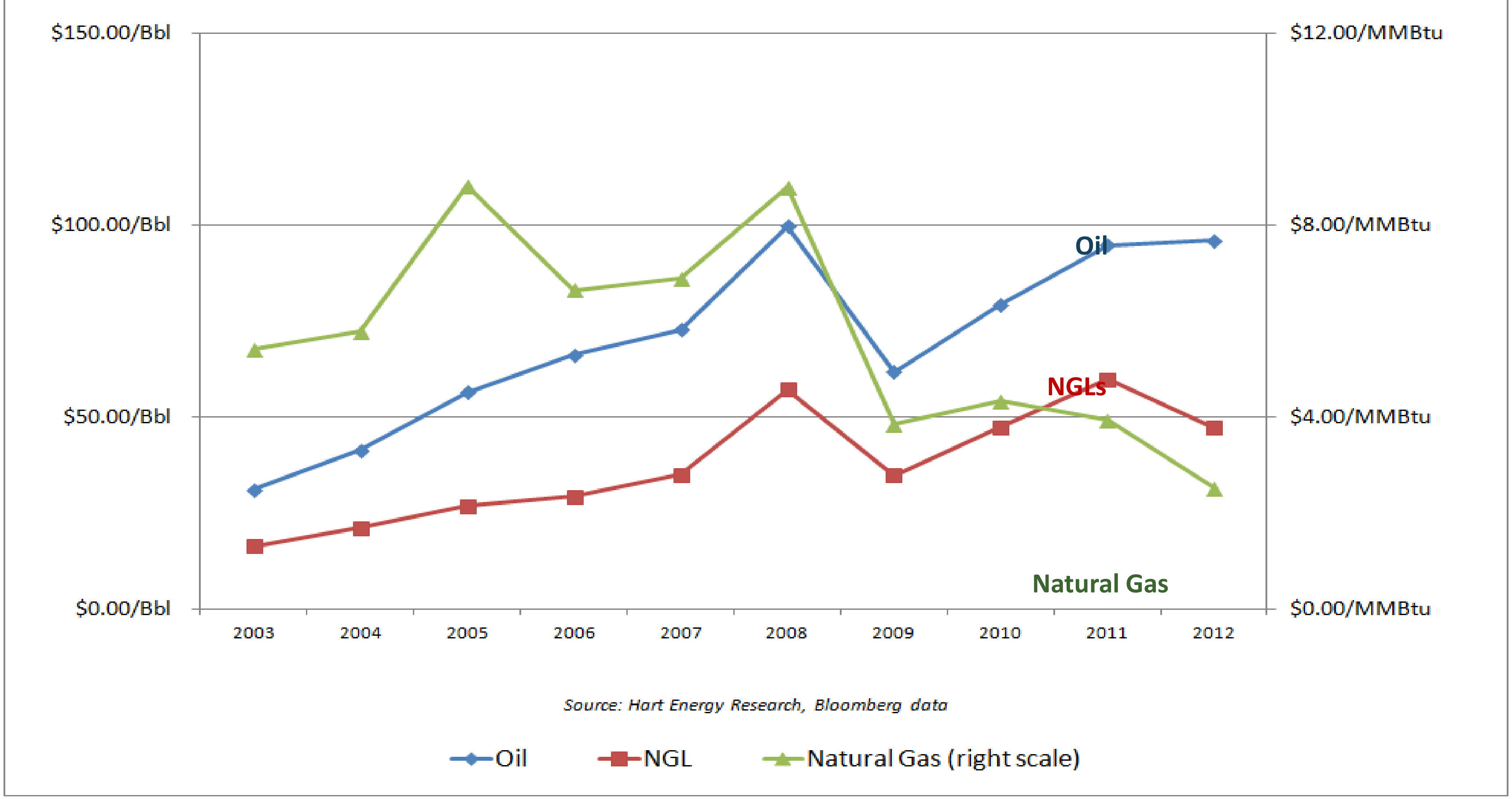
Hart Energy's North American Shale Quarterly, 4Q2012

Challenges to Shale/Tight Oil Production?

- Prices for the NGL basket are starting to fall; only natural gasoline has increased.
- Not every play is going to be like the Bakken.
- Federal regulatory issues could impact the industry.
- Lower forecasted WTI prices given oversupply of liquid sweet crude into PADD 3 refining & lack of export opportunity.

Challenges to Shale/Tight Oil Production?

WTI | NGL | NATURAL GAS AVERAGE ANNUAL PRICES



Hart Energy's Refining Unconventional Oil, 2013

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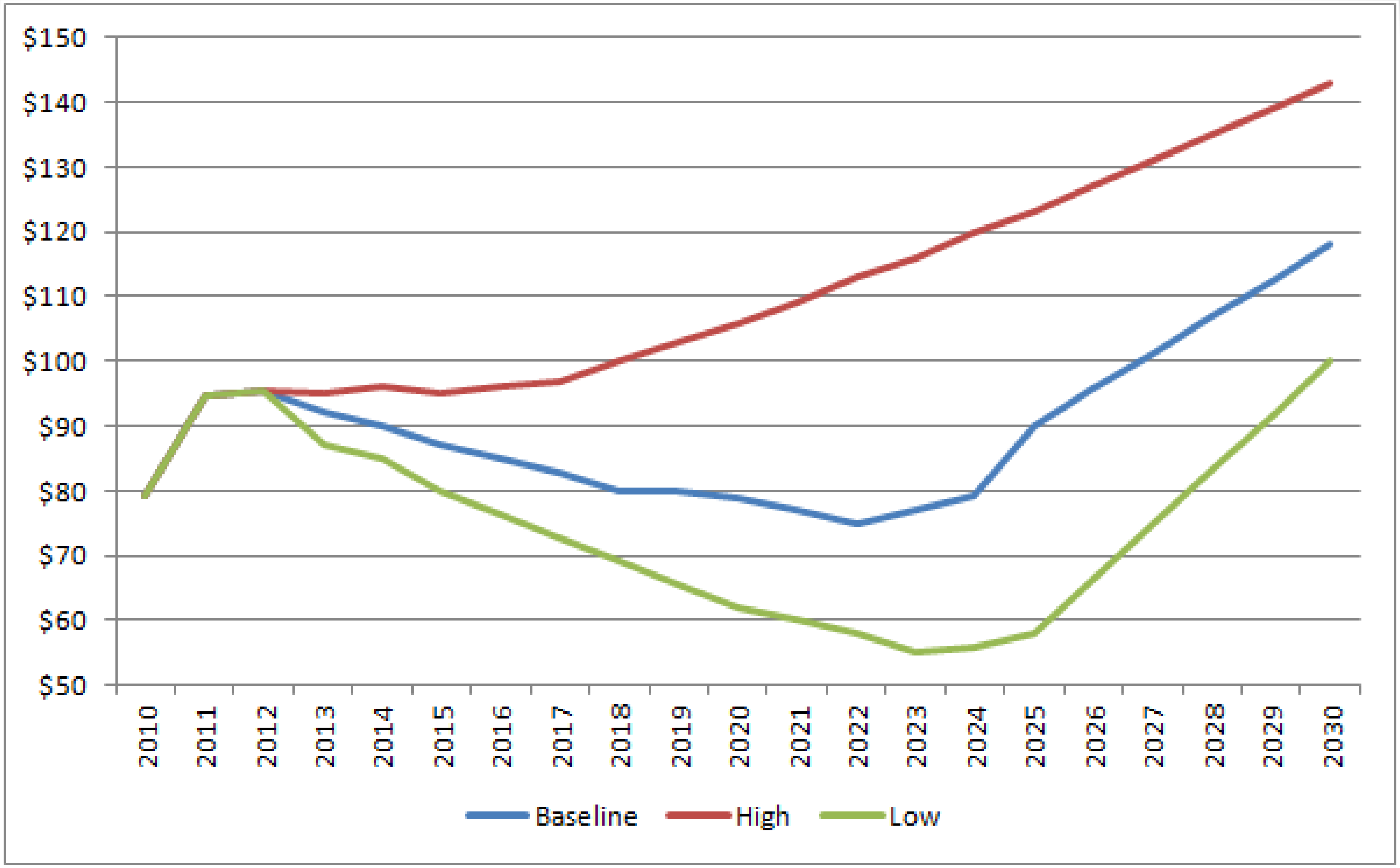
Challenges to Shale/Tight Oil Production?

HART ENERGY WTI CUSHING CRUDE OIL PRICE FORECAST

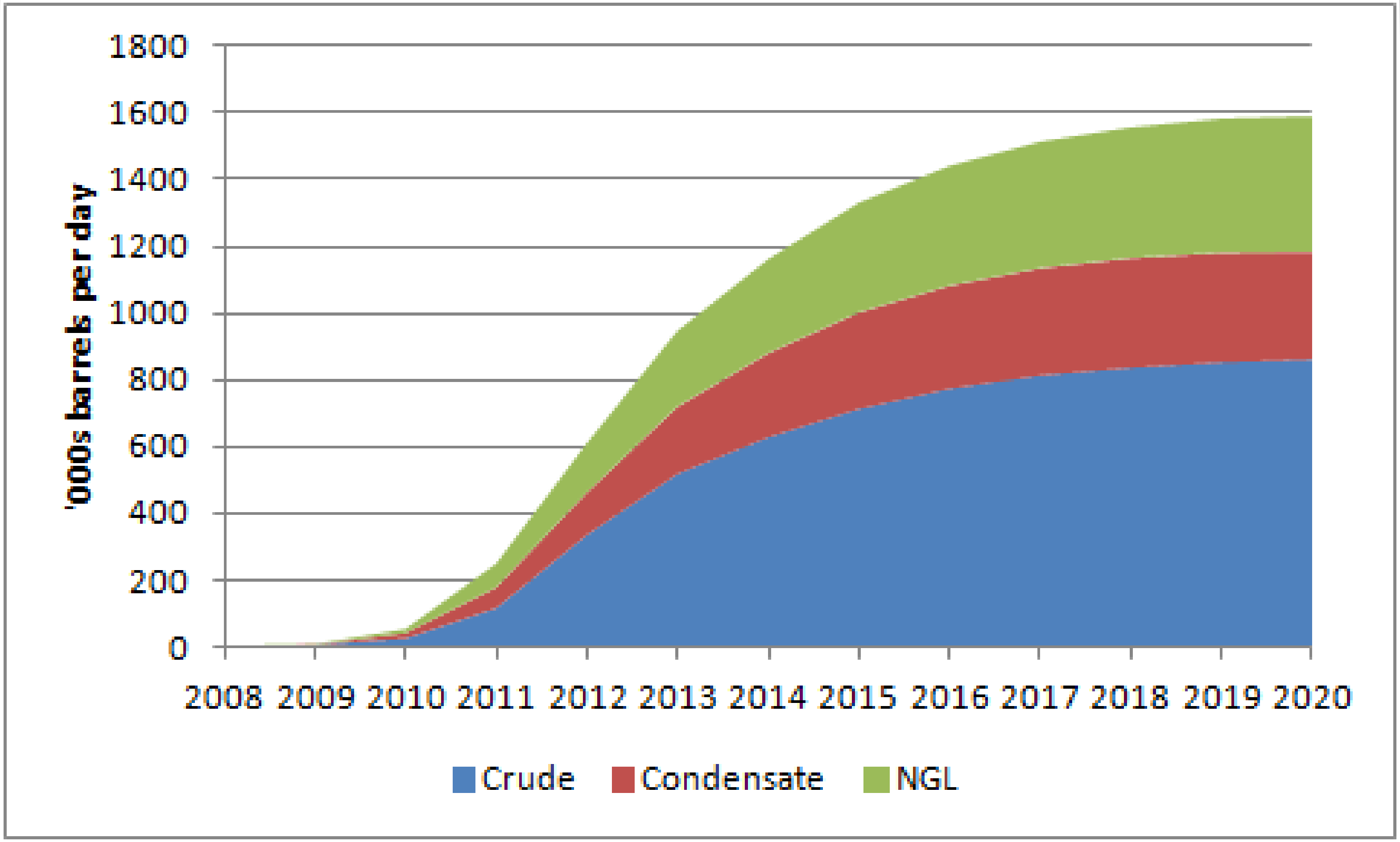


Hart Energy's World Refining & Fuels Service, 2013

Evolution of NA Liquids-Rich Plays

Evolution of NA Liquids-Rich Plays

EAGLE FORD UNCONVENTIONAL LIQUIDS PRODUCTION



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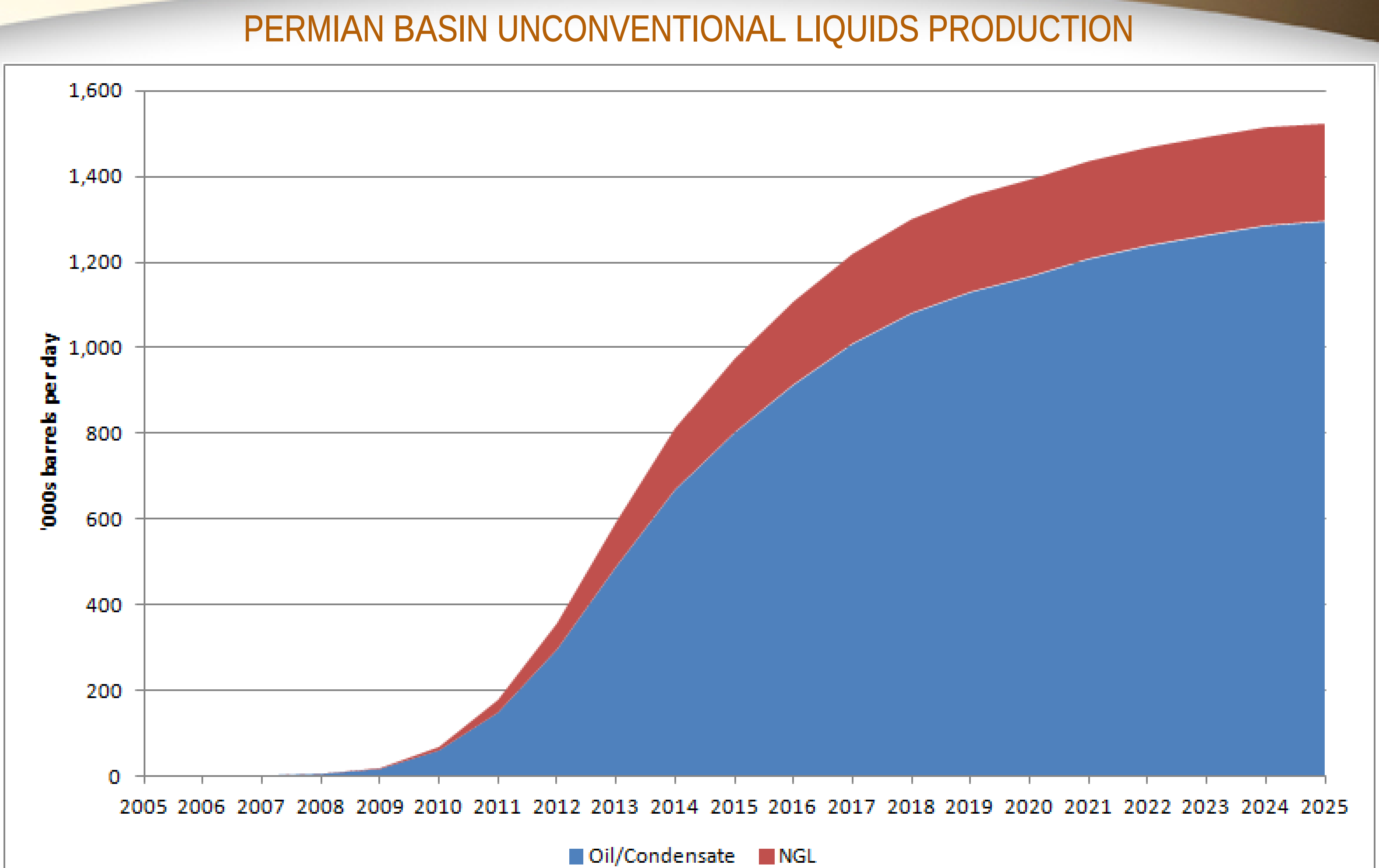
Evolution of NA Liquids-Rich Plays



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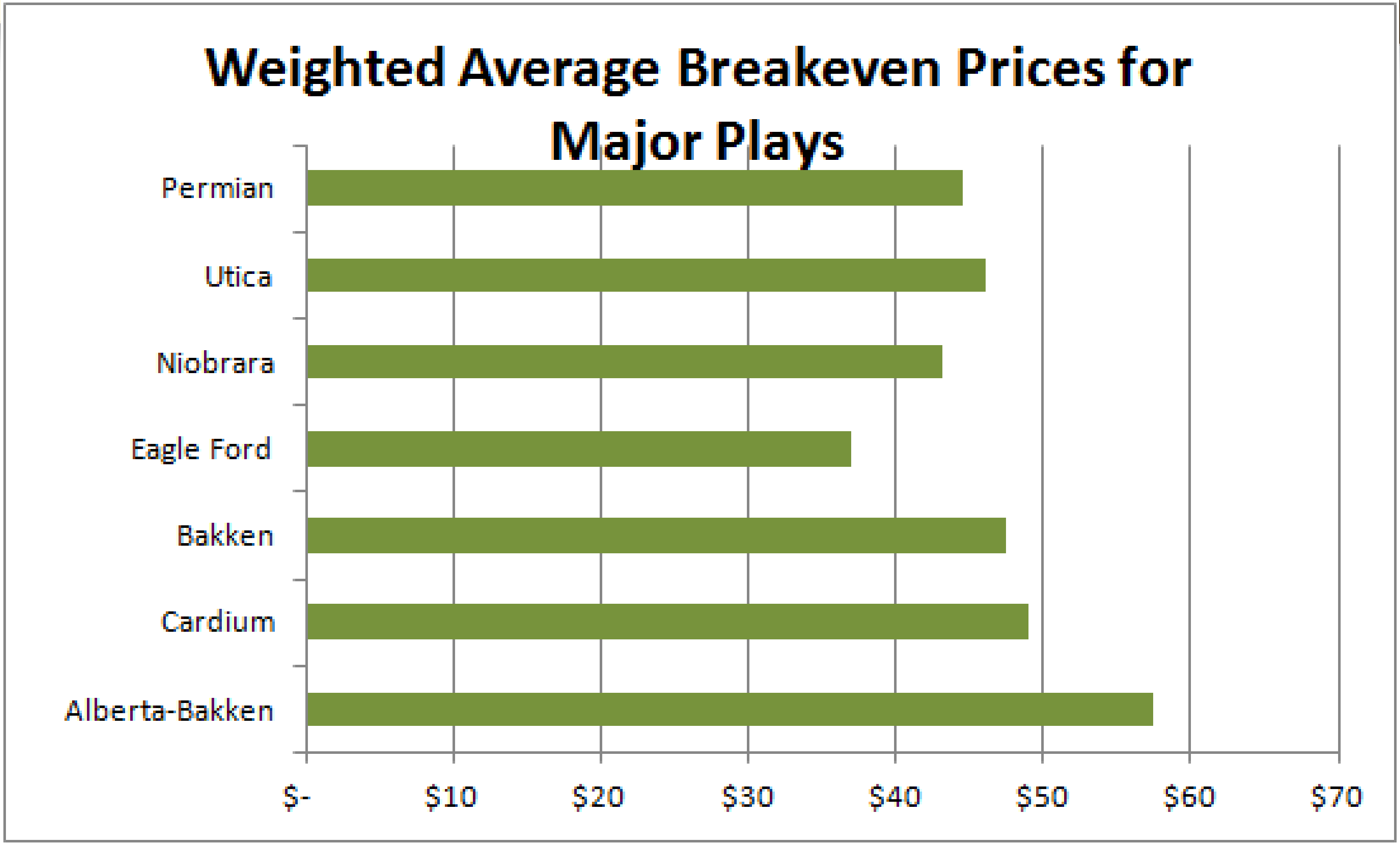
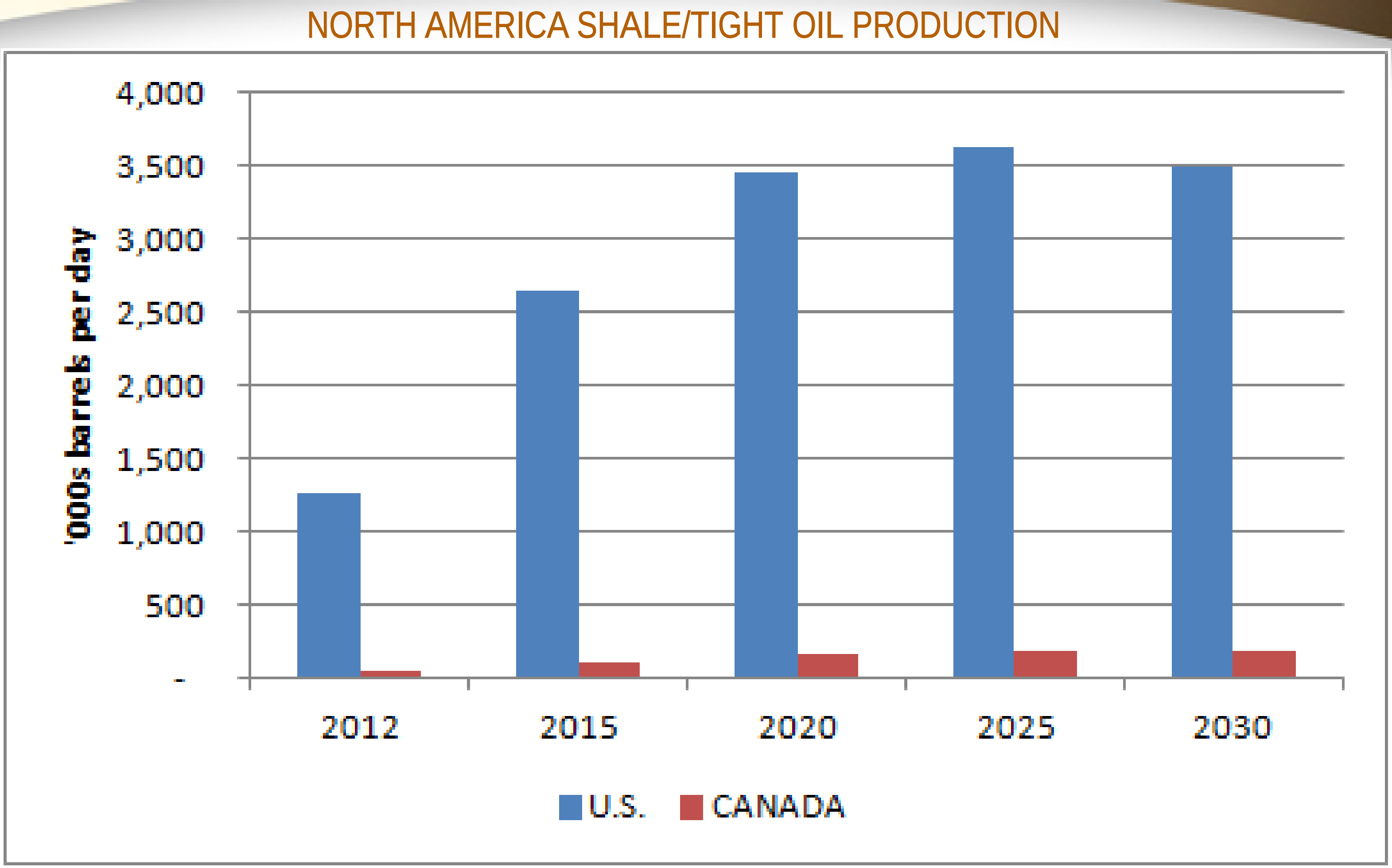
Evolution of NA Liquids-Rich Plays



Hart Energy's North American Shale Quarterly, 4Q2012

Impact on N.A. Crude Oil Production



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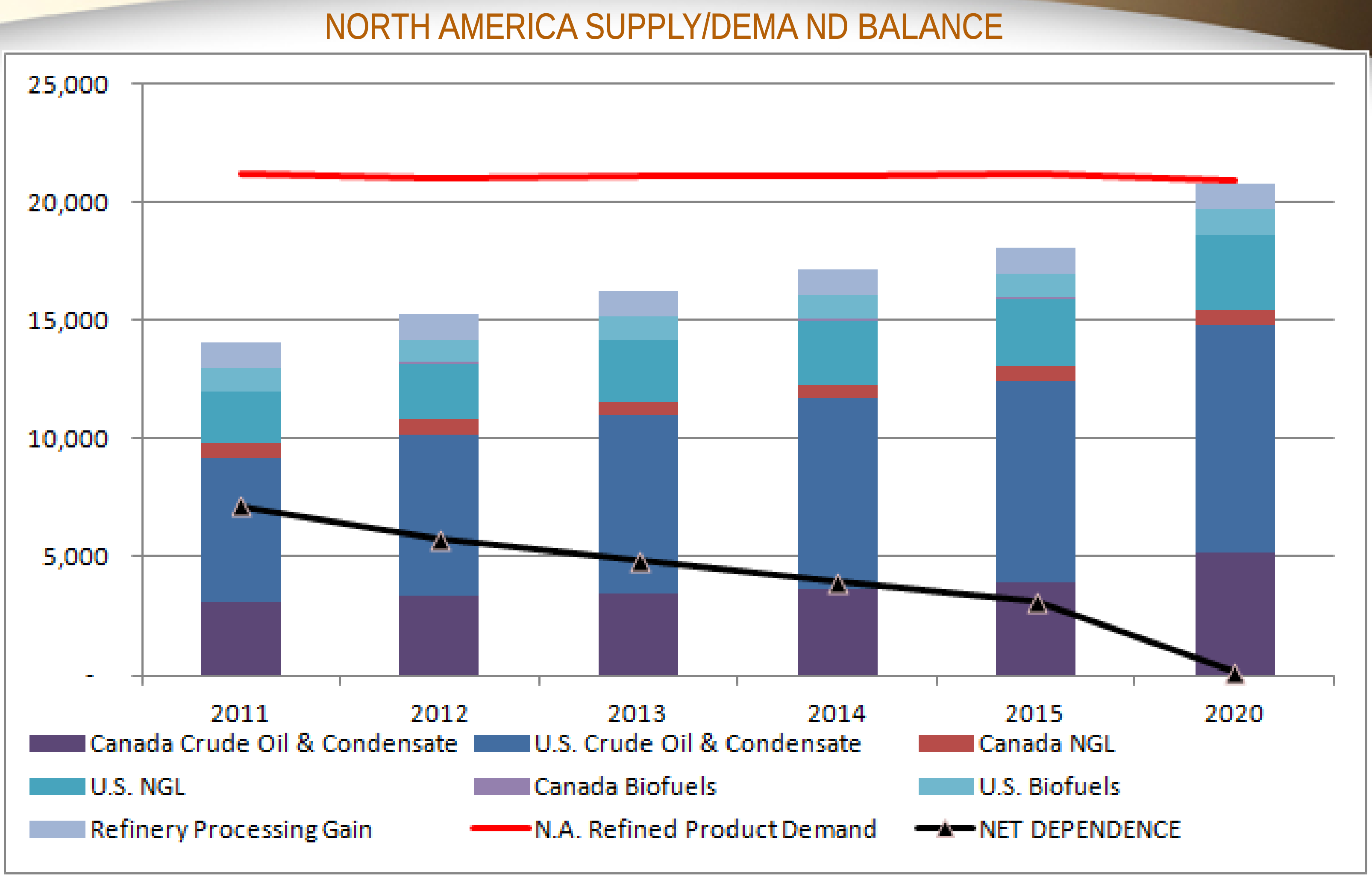
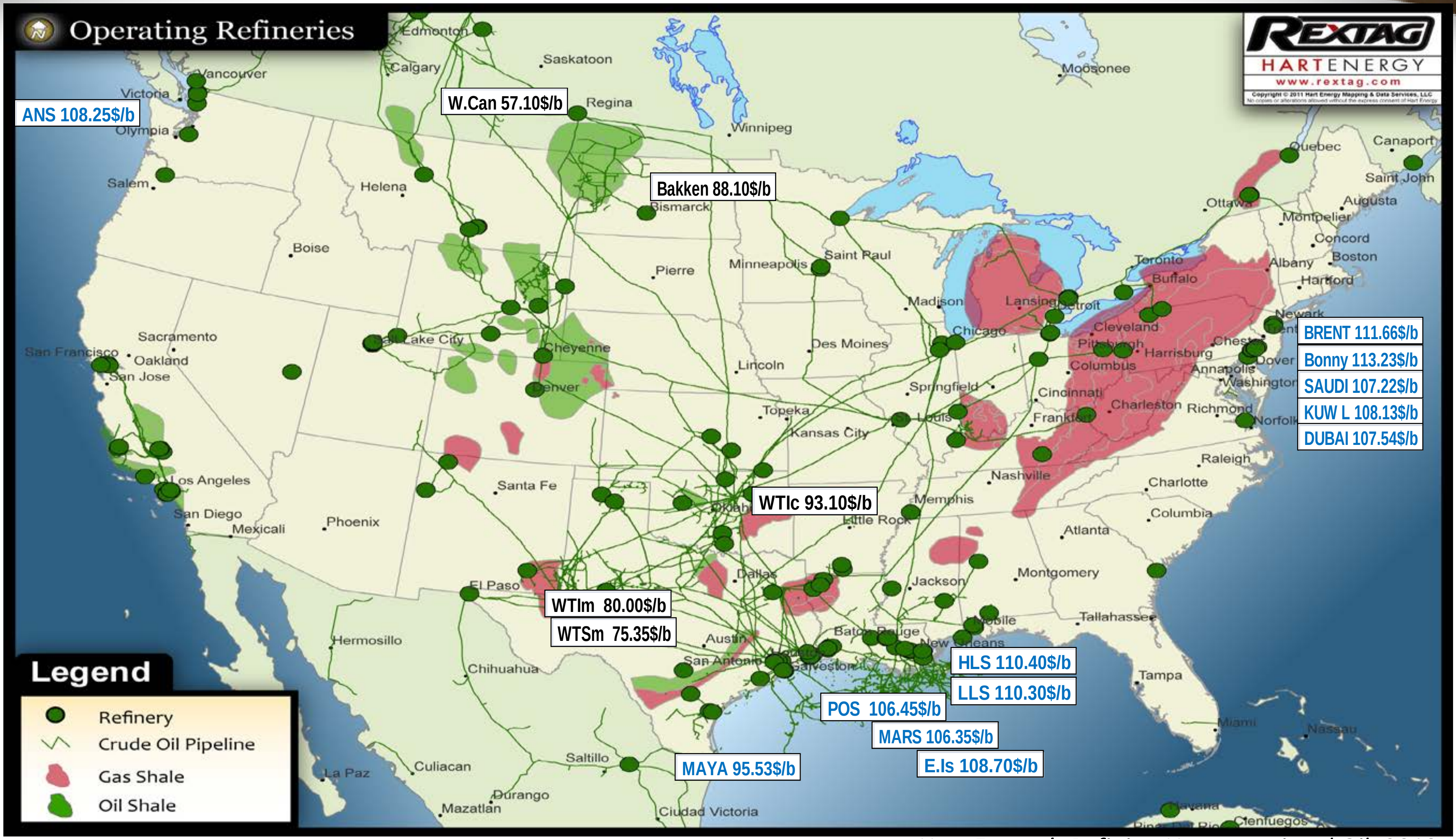
Impact on N.A. Crude Oil Production



Hart Energy's World Refining & Fuels Service, 2013

Collateral Effects of N.A. Shale/Tight Oil Production

U.S. REGIONAL CRUDE OIL PRICE BENCHMARKS



Hart Energy's Refining Unconventional Oil, 2013

Collateral Effects of N.A. Shale/Tight Oil Production

Hart Energy's Refining Unconventional Oil, 2013

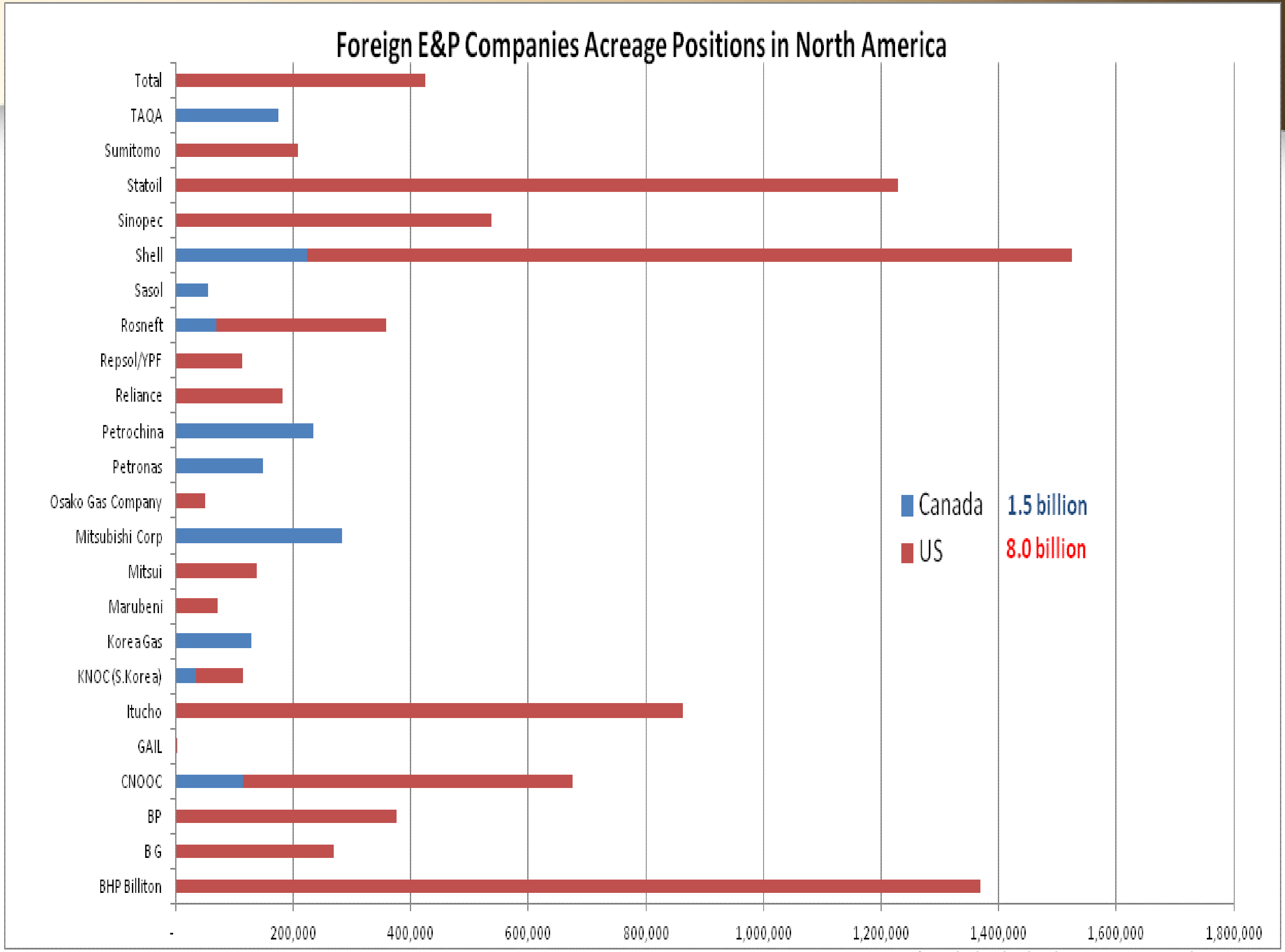
Collateral Effects of N.A. Shale/Tight Oil Production

NORTH AMERICA CRUDE BALANCE LESS PRODUCT EXPORT
('000 barrels per day)

SUPPLY	2012	2013	2014	2015		2020
Crude Oil Production						
Canada	3340	3460	3650	3910		5200
U.S	6860	7500	8040	8540		9590
Subtotal	**10200**	**10960**	**11690**	**12450**		**14790**
DEMAND						
Refinery Input	16670	21100	21100	16910		16570
Net Crude Requirement	6470	10140	9410	4460		1780
Refined Product Imports	-830	-940	-1040	-1140		-1160
Net Dependence	**5640**	**9200**	**8370**	**3320**		**620**

Hart Energy's World Refining & Fuels Service, 2013

N.A. Shale/Tight Oil Replicable Abroad?

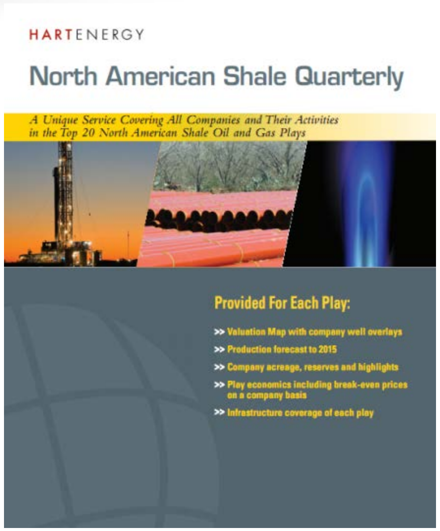


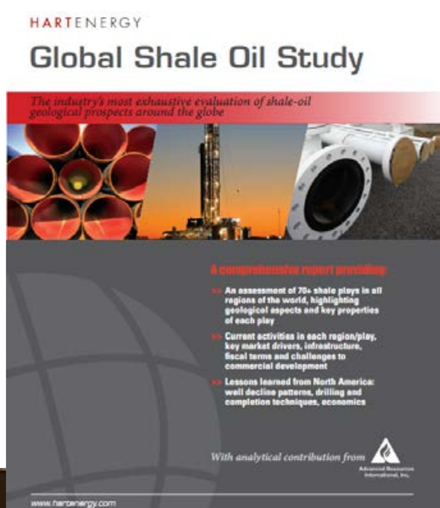
Hart Energy's Global Shale Service, July 2013

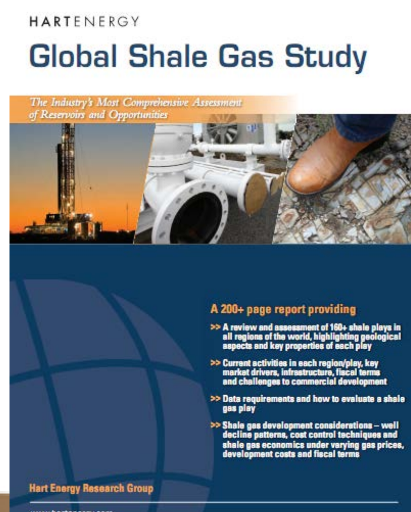
N.A. Shale/Tight Oil Replicable Abroad?

HART ENERGY PRODUCTS (Upstream & Downstream)

Hart Energy Shale Research Service







Hart Energy Research Products