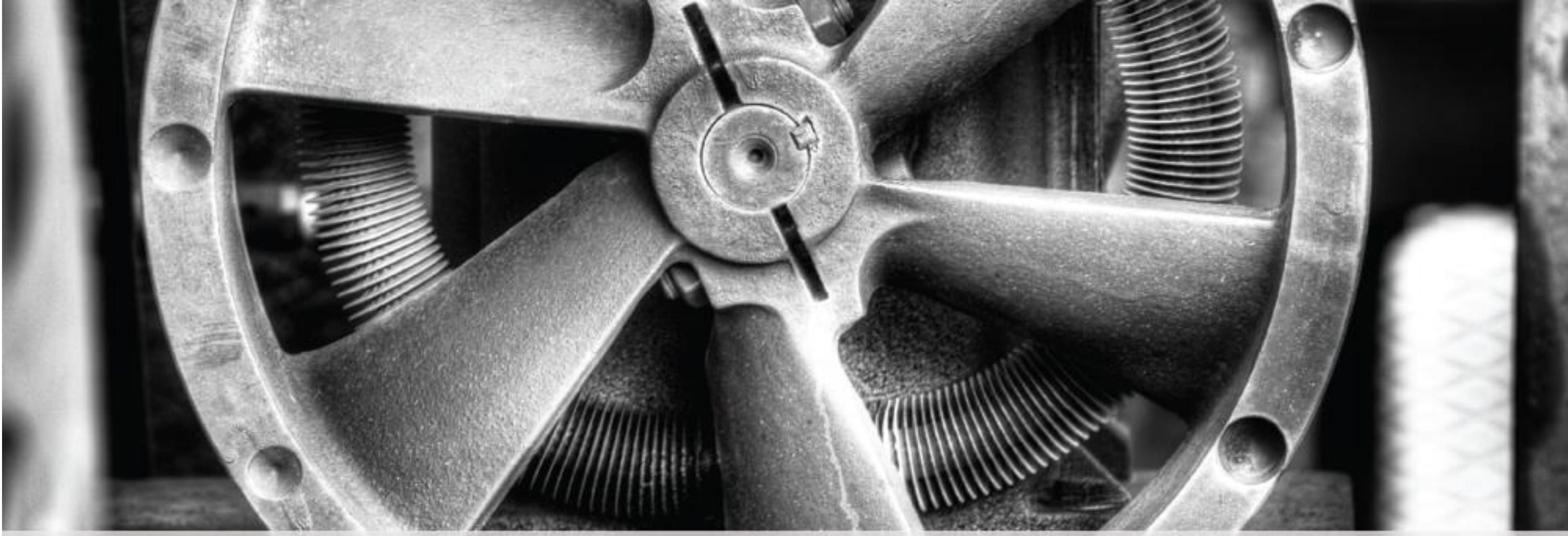

NAPTP Presentation

Richard Robert, EVP & CFO

May 21, 2015

VANGUARD
NATURAL RESOURCES, LLC
NASDAQ: VNR

THE MONTHLY DISTRIBUTION MLP™

Forward Looking Statements

Statements made by representatives of Vanguard Natural Resources, LLC during the course of this presentation that are not historical facts are forward looking statements. These statements are based on certain assumptions and expectations made by the Company which reflect management’s experience, estimates and perception of historical trends, current conditions, anticipated future developments and other factors believed to be appropriate. Such statements are subject to a number of assumptions, risks and uncertainties, many of which are beyond the control of the Company, which may cause actual results to differ materially from those implied or anticipated in the forward looking statements. These include risks relating to the satisfaction of the conditions to closing of the acquisition, uncertainties as to timing, financial performance and results, our indebtedness under our revolving credit facility, availability of sufficient cash to pay our distributions and execute our business plan, prices and demand for oil, natural gas and natural gas liquids, our ability to replace reserves and efficiently develop our reserves, our ability to make acquisitions on economically acceptable terms and other important factors that could cause actual results to differ materially from those anticipated or implied in the forward looking statements. See “Risk Factors” in our most recent annual report on Form 10-K and Item 1A. of Part II “Risk Factors” in our subsequent quarterly reports on Form 10-Q and any other public filings and press releases. Vanguard Natural Resources, LLC undertakes no obligation to publicly update any forward looking statements, whether as a result of new information or future events. This presentation has been prepared as of May 18, 2015.

Overview of Vanguard Natural Resources

- Upstream oil & gas LLC, headquartered in Houston, TX; Initial Public Offering – “**VNR**” – October 2007 had a Total Enterprise Value of ~$240mm
- Monthly distribution of $0.1175 per unit ($1.41 annualized); generates **~8.7% yield** at current price of $16.21;
- In 2012, VNR was the first master limited partnership to institute a monthly cash distribution policy, beginning with our July 2012 distribution
- In 2013, VNR was the first master limited partnership to issue publicly traded preferred units with its initial 7.875% Series A Cumulative Redeemable Perpetual Preferred Units
  - In total, VNR has raised net proceeds of more than $328 million from three preferred equity offerings
- At-the-Market Program (ATM) allows us to systematically sell equity at a much more cost effective means
  - In 2014, VNR raised net proceeds of more than $148 million via common equity and $1.2 million via preferred equity
  - Since restarting ATM on March 17, 2015 and thru April 14, 2015 prior to black out window, VNR raised net proceeds of more than $27 million

Asset Profile(1)

Twenty three strategic acquisitions totaling ~$4.2 bn

- ~2.03 Tcfe (~339 MMBoe) total proved reserves
- ~68% proved developed
- ~27% liquids / 73% gas
- 2013 Production: 212 MMcfe/d
- 2014 Production: 327 MMcfe/d
- 2015E Production: 379 MMcfe/d

Market Valuation

Company Profile (2)	(in millions)
COMMON UNITS	**86.4 MM**
PREFERRED UNITS	**13.8 MM**
EQUITY MARKET CAP (incl. preferred)	$1,720
TOTAL DEBT(3)	$1,908
ENTERPRISE VALUE	**$3,628**

(1) Proved reserves as of 12/31/2014 based on SEC reserve report and includes Pinedale acquisition, Hunt Gulf Coast acquisition and recently closed Piceance acquisition.
(2) Market data as of 5/18/15 and includes 420,000 Class B units. Based off VNR closing price $16.21.
(3) Debt as of 3/31/15.

Experienced Management Team

Name	Title	Prior Affiliations	Years of Experience
Scott W. Smith	*President and CEO*	• Ensource Energy • The Wiser Oil Company • San Juan Partners	>34
Richard A. Robert	*EVP and CFO*	• Enbridge USA • Midcoast Energy Resources • Various energy-related entrepreneurial ventures	>27
Britt Pence	*Executive Vice President of Operations*	• Anadarko Petroleum • Greenhill Petroleum • Mobil	>30
Mark Carnes	*Director of Acquisitions*	• Synergy Oil & Gas • Petromark • Torch Energy Advisors	>37
Chris Raper	*Land Manager*	• Synergy Oil & Gas • Amoco Production	>35
Rod Banks	*Marketing Manager*	• Apache Corporation • Mariner Energy • Producers Energy Marketing	>34

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Geographically Diversified Reserve Base

Core Areas

Green River Basin
- Proved Reserves: 765 Bcfe
- 84% gas and 52% Proved Developed
- 122 MMcfe/d net production

Big Horn Basin
- Proved Reserves: 104 Bcfe
- 84% oil and 95% Proved Developed
- 17 MMcfe/d net production

Williston Basin
- Proved Reserves: 25 Bcfe
- 94% oil and 96% Proved Developed
- 9 MMcfe/d net production

Piceance Basin (1)
- Proved Reserves: 442 Bcfe
- 78% natural gas and 77% Proved Developed
- 100 MMcfe/d net production

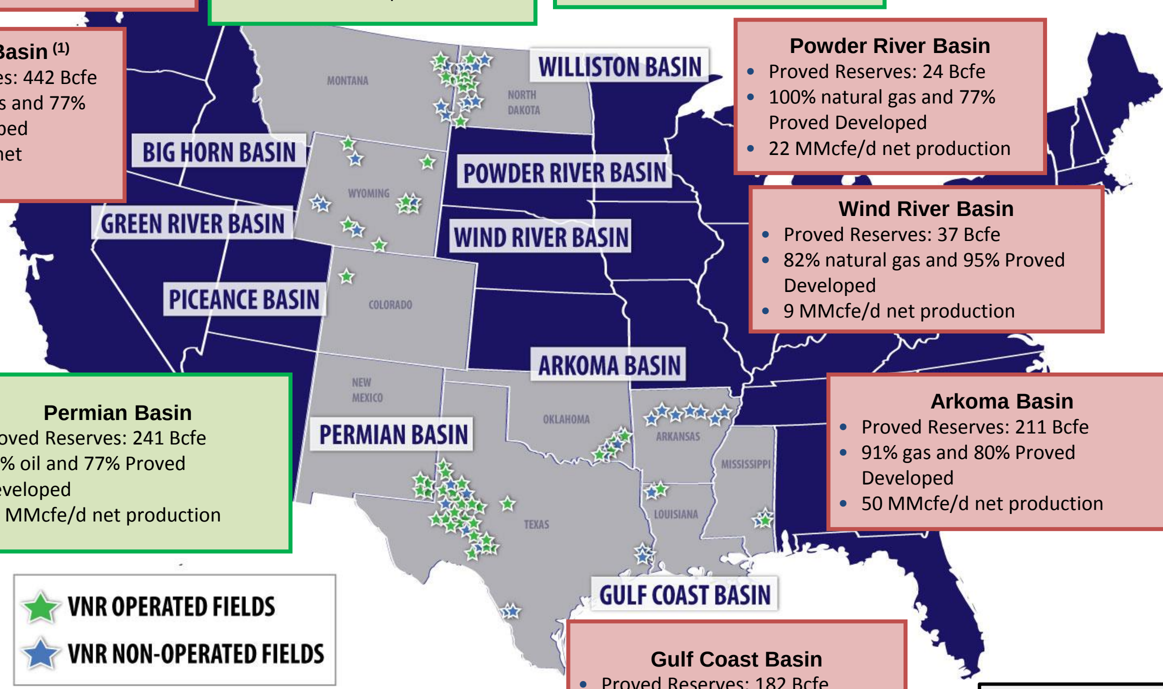
Powder River Basin
- Proved Reserves: 24 Bcfe
- 100% natural gas and 77% Proved Developed
- 22 MMcfe/d net production

Wind River Basin
- Proved Reserves: 37 Bcfe
- 82% natural gas and 95% Proved Developed
- 9 MMcfe/d net production

Permian Basin
- Proved Reserves: 241 Bcfe
- 51% oil and 77% Proved Developed
- 40 MMcfe/d net production

Arkoma Basin
- Proved Reserves: 211 Bcfe
- 91% gas and 80% Proved Developed
- 50 MMcfe/d net production

Gulf Coast Basin
- Proved Reserves: 182 Bcfe
- 63% natural gas and 61% Proved Developed
- 25 MMcfe/d net production



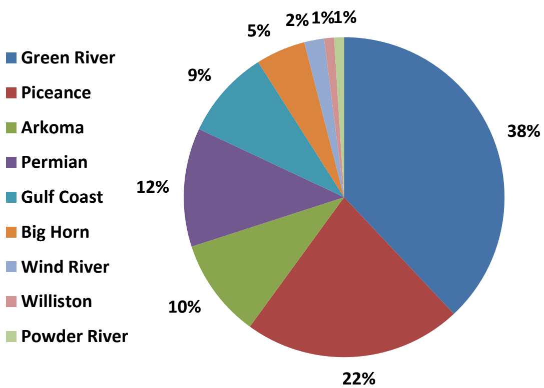
- Primarily Natural Gas
- Primarily Oil

Overview

- ~2.03 Tcfe (~339 MMBoe) proved reserves
- 73% gas and 27% liquids
- 68% proved developed
- R/P is 14 years

Proved Reserves by Area

~2.03 Tcfe (~339 MMBoe)



Note: Proved reserves as of 12/31/2014 based on SEC reserve report. Production represents Q1 2015 average daily net production. Pro forma for the Pinedale acquisition, Hunt Gulf Coast acquisition and recently closed Piceance acquisition.
(1) Includes reserves and production for recently closed Piceance acquisition.

VANGUARD NATURAL RESOURCES, LLC NASDAQ: VNR
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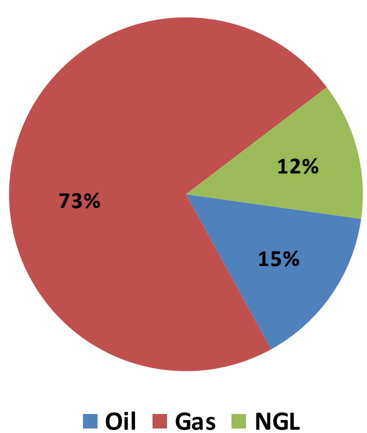
High Quality Asset Base

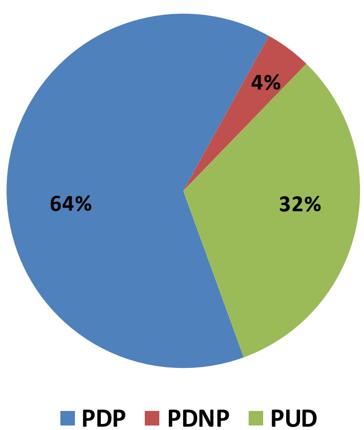
Pro Forma Reserve Summary (SEC Pricing)

Reserve Category	Oil (MMBbls)	Gas (Bcf)	NGLs (MMBbls)	Total (Bcfe)	Net Liquids (%)	PV-10 ($ MM)	PV-10 %
PDP	35.7	916.2	27.0	1,292.0	29%	2,268.3	76%
PDNP	3.4	54.5	1.7	85.6	36%	170.1	6%
PUD	10.9	505.2	13.8	653.7	23%	537.3	18%
Total Proved Reserves	**50.0**	**1,475.9**	**42.5**	**2,031.3**	**27%**	**2,975.7**	**100%**

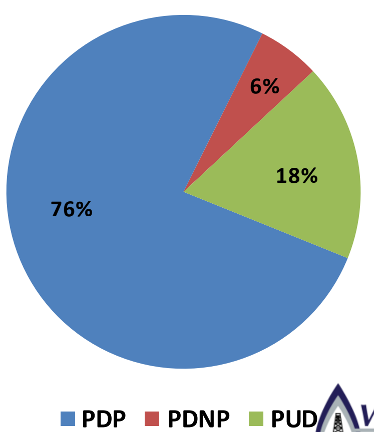
Reserves By Commodity



Reserves By Category



PV-10 By Category

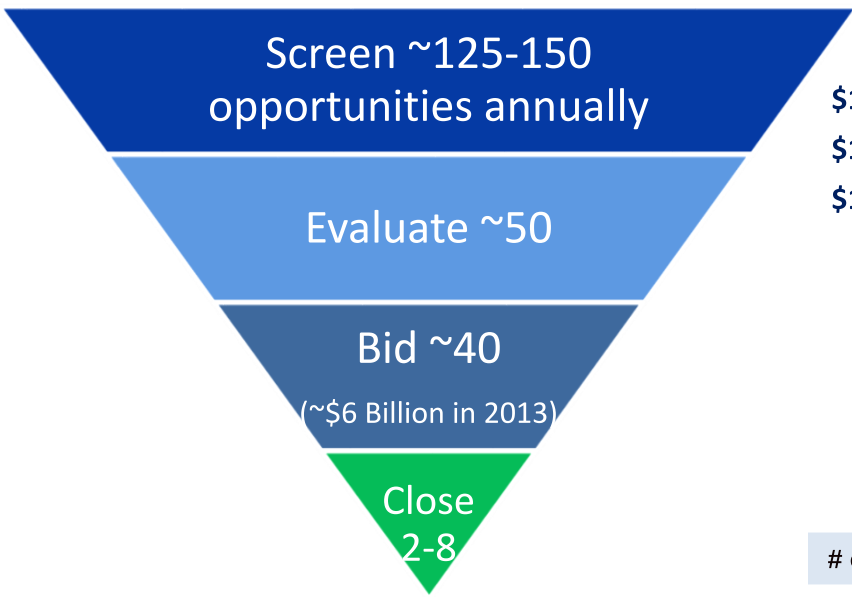


Note: Proved reserves as of 12/31/14 and SEC pricing.

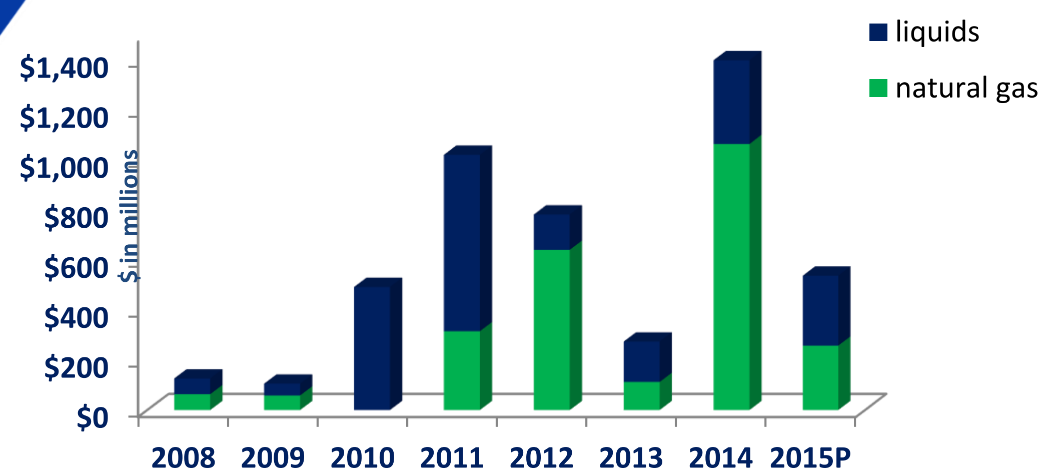
VNR Investment Thesis

- Strong record of evaluating and integrating assets, completing over $4.2 billion since VNR's IPO in 2007
- Designated business development and acquisition evaluation team
- We review between 125-150 and evaluate approximately 50 acquisition candidates each year

Prudent Screening Approach



Acquisitions Completed since IPO



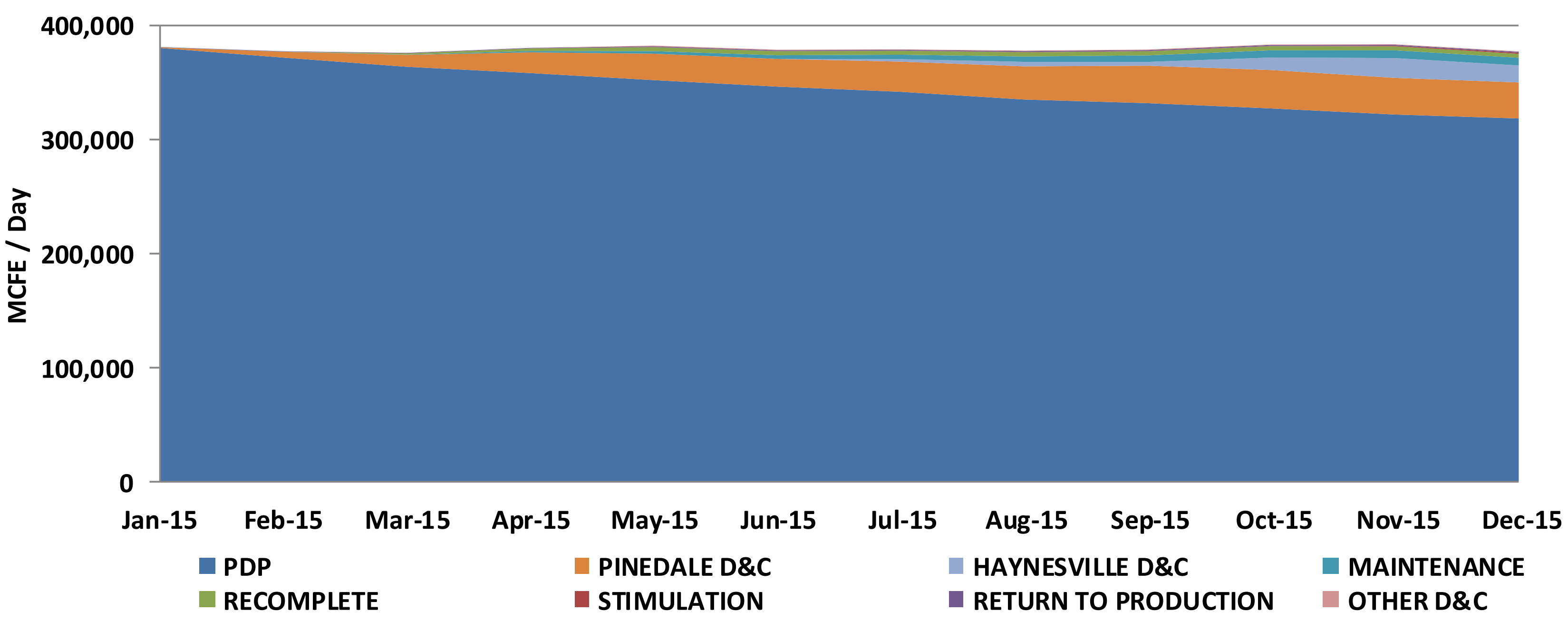
# of Deals	2	2	2	8	3	2	4	1*

*Note: 2015 includes recently announced VNR – LRE pending merger

2015 Capital Program – Maintaining Production

- 20% reduction in total 2015 capital budget from 2014
- Pinedale and East Haynesville account for 75% of 2015E Budget
- After consideration of ethane rejection beginning in January 2015, VNR expects 2015 average daily production to stay relatively flat

Production Maintenance



Pinedale / East Haynesville Returns

- Even in today's commodity environment, the Pinedale and East Haynesville generate good rate of returns without assuming any savings on the drilling and completion costs

Pinedale Economics

- Budget $3.8 MM per well
- EUR of ~5.5 Bcfe
- Average program rate of return of 25%
- Reserves estimation technique allows for selective participation

East Haynesville Economics

- Vertical Wells (2 planned)
  - Budget $2.25 MM per well
  - EUR of ~2.25 Bcfe
  - Expected average rate of return in excess of 50%
  - Anticipate beginning first vertical well in June and drilling the horizontal wells and additional vertical well in succession
  - We anticipate seeing production from the first vertical well in Q3 2015
- Horizontal Wells (2 planned)
  - Budget of $7.5 MM per well
  - We anticipate seeing an impact in production from the horizontal wells by Q4 2015

Strategy Dependent on Acquisitions

1) Continue to Make Accretive Acquisitions- Take advantage of significant opportunities in 2015
   - Large inventory in the U.S. of mature oil and natural gas basins which provide significant opportunity for future growth and consolidation

2) Commodity Optionality – Today's commodity environment creates a unique opportunity to buy assets at historically attractive pricing
   - Acquiring assets today provides long-term optionality should prices improve on the base PDP assets
   - Drilling inventory that is not economic today can be acquired for little to no value providing future upside potential

3) Sources of Capital – Vanguard has many avenues for capital to complete large and small acquisitions
   - ~$266 MM in liquidity based on the **proposed Spring Borrowing Base Redetermination of $1.6 billion**
   - Opportunistically use at-the-market equity program, which is not disruptive to unit price and less expensive (10% of 3 month daily average volume this could equate to ~$30-$40 MM per month)
   - Utilize VNR units to purchase assets from private sellers
   - Partnering with private equity to acquire larger assets
   - Alternative financing strategies are being considered although we will not rule out an equity offering if the acquisition returns are compelling

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VNR + LRE Transaction Overview

Consideration

- VNR to acquire LRR Energy, L.P. (LRE) by issuing 0.55 units of VNR for each LRE unit
- Implied purchase price of $8.93 per LRE common unit based on Vanguard's closing price on April 20, 2015

Transaction Value and Premium

- Total consideration of approximately $539 million
  - Consideration includes assumption of LRE's net debt of $288 million
- Purchase price represents a 13% premium to LRE's closing price on April 20, 2015 and an 19% premium to LRR Energy's ten day volume weighted average price

Key Conditions

- Customary closing conditions, including a vote of the LRR Energy unitholders

Timing

- Closing anticipated in the third quarter of 2015

LRR Energy, L.P. Overview

- Publicly traded Upstream MLP formed in November 2011 (NYSE: LRE)
- Operates more than a dozen fields in 3 regions; Permian Basin, Mid-Continent region, and Gulf Coast region
- 203 Bcfe of estimated net proved reserves as of December 31, 2014
  - Reserves commodity mix: 39% oil; 48% gas and 13% NGL

Asset Profile(2)

Permian Region
- Key fields: Red Lake, Corral Canyon, Pecos Slope
- Acreage: 149,408 gross (122,002 net) acres
- 94% operated
- Proved reserves: 98 Bcfe (68% liquids)

Mid-Continent Region
- Key fields: Potato Hills, East Velma, Putnam, Stroud
- Acreage: 146,753 gross (27,338 net) acres
- 77% operated
- Proved reserves: 85 Bcfe (39% liquids)

Gulf Coast Region
- Key fields: New Years Ridge, George West-Stratton
- Acreage: 12,837 gross (8,769 net) acres
- 91% operated
- Proved reserves: 20 Bcfe (33% liquids)

Capitalization Table(1)

($ in millions)

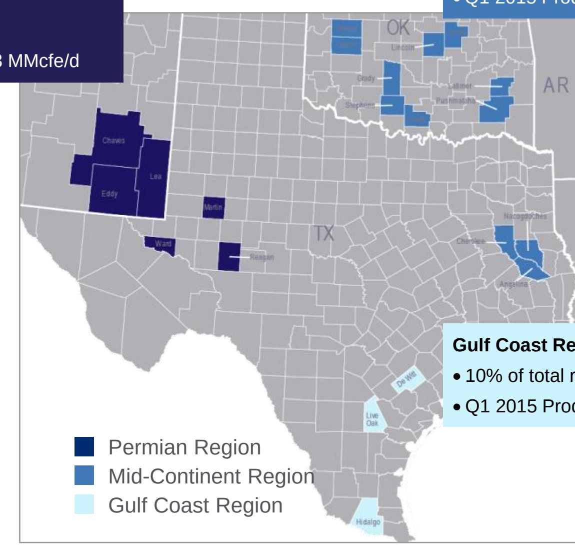
Equity Market Capitalization	$219
Net Debt	288
Enterprise Value	507

Key Statistics(2)

Proved Reserves (Bcfe)	203
% Proved Developed	88%
Q1 2015 Production (MMcfe/d)	41
Total Proved Reserve Life (R/P)	14

Mid-Continent Region
- 42% of total reserves
- Q1 2015 Production: 13 MMcfe/d

Permian Region
- 48% of total reserves
- Q1 2015 Production: 23 MMcfe/d



Gulf Coast Region
- 10% of total reserves
- Q1 2015 Production: 5 MMcfe/d

(1) Market data based on 4/17/2015 unit price of $7.79.
(2) Reserves based on 12/31/14 SEC reserve report.

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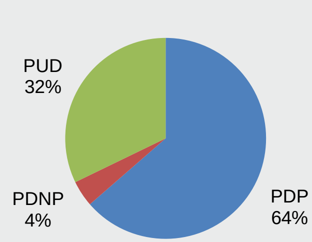
Operational Metrics of Pro Forma Company VNR + LRE

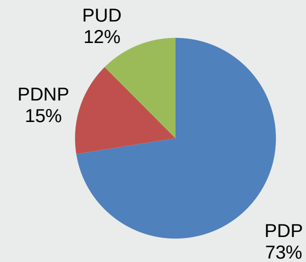
Reserves by Category

Vanguard



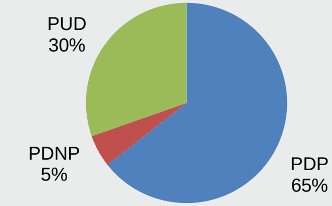
2,031 Bcfe

LRR Energy



203 Bcfe[(1)]

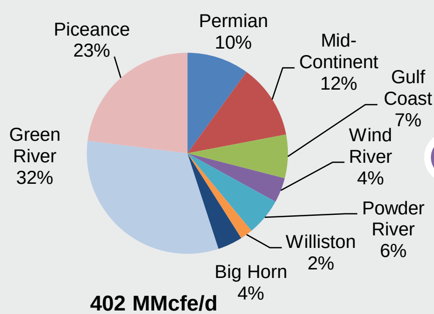
PF Vanguard



2,234 Bcfe

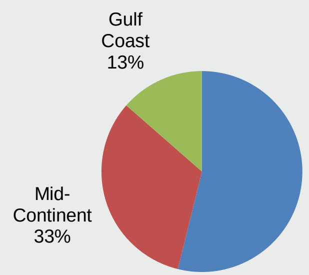
Current Production by Region

Vanguard



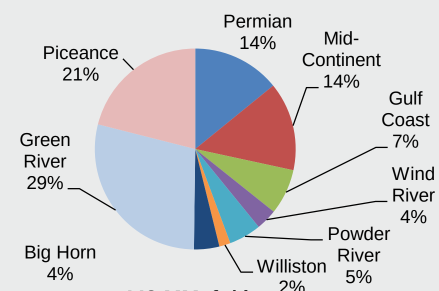
402 MMcfe/d

LRR Energy



40 MMcfe/d

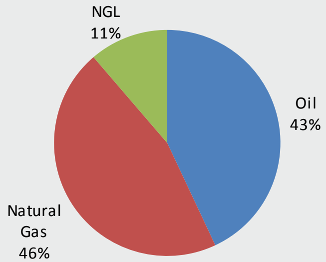
PF Vanguard



442 MMcfe/d

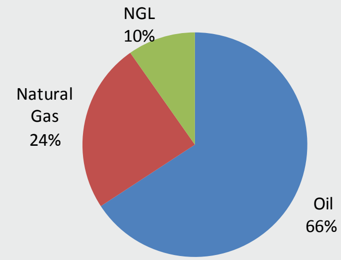
2014 Revenue by Hydrocarbon (Unhedged)

Vanguard



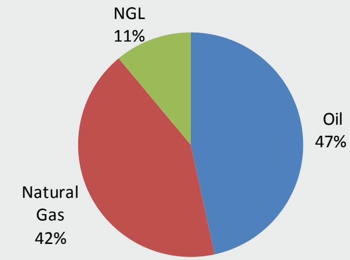
$625 MM

LRR Energy



$116 MM

PF Vanguard



$741 MM

Source: Management presentation, company investor presentations, company projections and company websites.
Note: (1) Reserves based on 12/31/14 SEC reserve report.

VANGUARD NATURAL RESOURCES, LLC NASDAQ: VNR
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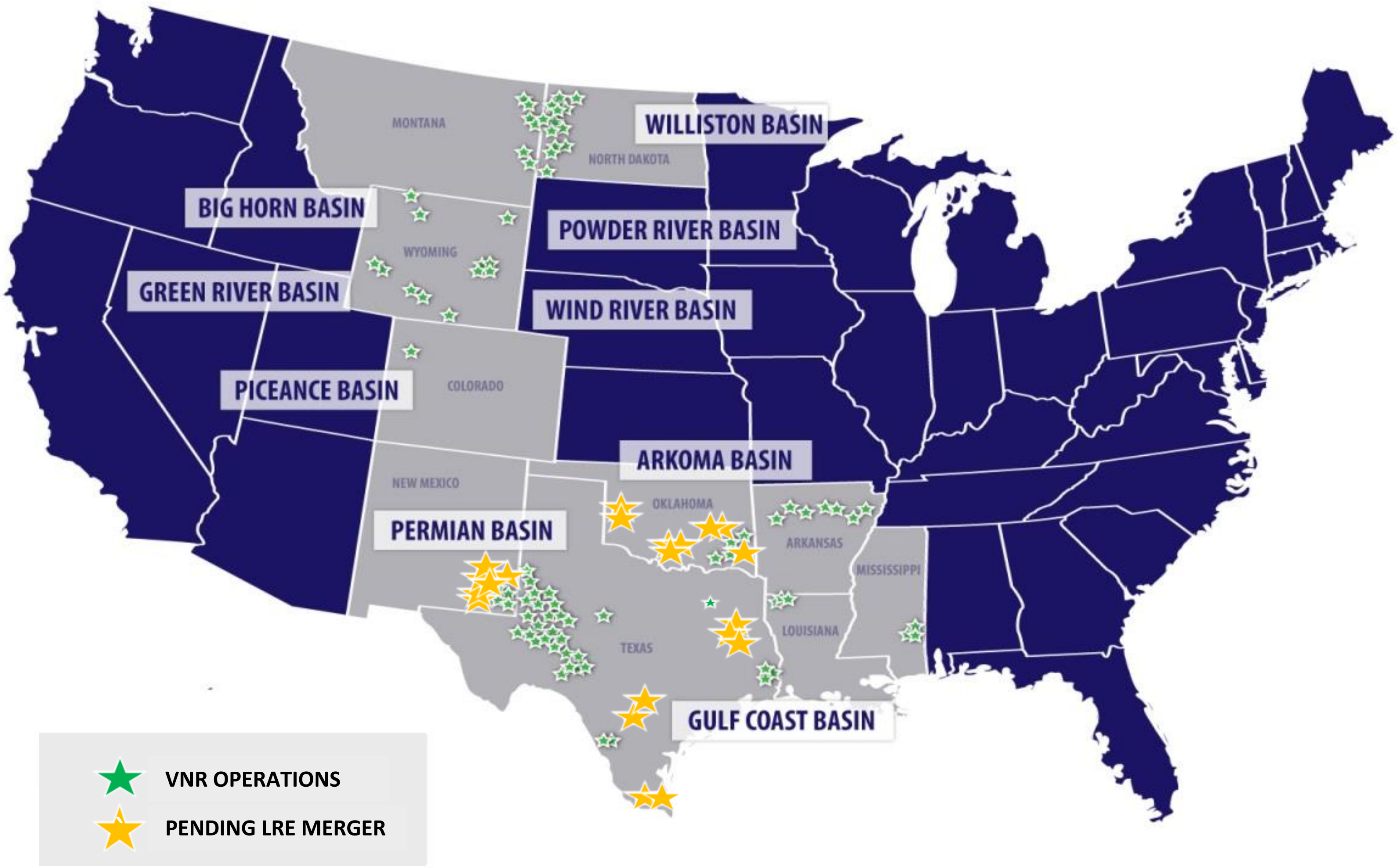
VNR: Strategic Rationale
VNR + LRE Transaction

- Transaction adds attractive portfolio of mature, long-lived assets well-suited to upstream MLP structure
  - Mature asset base with proved reserve life of 14 years
  - Adds additional scale in Permian and Arkoma Basins
  - Provides exposure to high margin, liquids-weighted production and reserves
- Vanguard's stated corporate strategy is to grow via accretive acquisitions
  - Transaction is expected to be immediately accretive
  - Accretion is supported by ability to capture substantial G&A synergies
- Transaction expected to improve credit metrics in 2015 and increase capital markets access
  - Expected to improve 2015 net debt / LTM EBITDA leverage metric
  - Additional scale, diversity and improved liquidity are expected benefits to investors
- Additional scale for pro forma entity in reduced commodity price environment
  - Greater leverage of operating expenses over larger organization
  - Elimination of duplicative public company expenses
  - Reduced per unit field expenses from potential operational synergies in Permian and Arkoma Basins
  - Larger combined float with greater trading liquidity for unitholders

Attractive Operational Overlap
VNR + LRE Combined



VANGUARD NATURAL RESOURCES, LLC
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Financial Overview

VANGUARD NATURAL RESOURCES, LLC
NASDAQ: VNR

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Pro Forma Capitalization and Liquidity
VNR + LRE

- Little change to historical metrics, but expected to improve 2015 leverage metrics

Capitalization Table (3/31/15)

($ in millions)	**Vanguard**	**LRR Energy**	**Pro Forma**
Cash	$15	$3	$17
Credit Facility	1,330	240	1,570
7.875% Senior Notes due 2020	550	--	550
Term Loan	--	50	--
Lease Financing Obligations	28	--	28
Total Debt	**1,908**	**290**	**2,148**
Member's Equity[(1)]			
Common and Class B Units	1,051	180	1,231
Series A Preferred Units	62	--	62
Series B Preferred Units	169	--	169
Series C Preferred Units	104	--	104
Total Member's Equity	**1,386**	**180**	**1,566**
Total Capitalization	**3,294**	**470**	**3,714**
Liquidity[(2)]	266	(40)	226
Metrics:			
Net Debt / 2014 EBITDA [(3)]	3.5x	3.4x	3.4x
Net Debt / Capitalization	57%	61%	57%
Net Debt / Proved Reserves ($ / Mcfe)	$0.93	$1.41	$0.95
Net Debt / Proved Developed Reserves ($ / Mcfe)	$1.37	$1.62	$1.37

(1) Member's equity as of March 31, 2014.
(2) Vanguard's liquidity includes the proposed Spring Borrowing Base redetermination of $1.6 billion with additional $200 million increase upon closing of LRE transaction. Includes $4.5 million in outstanding letters of credit for Vanguard; Pro forma Vanguard liquidity calculation includes the $50 million term loan being paid off via proceeds from ATM common unit sales.
(3) Includes pro forma impact of acquisitions completed by Vanguard during 2014.

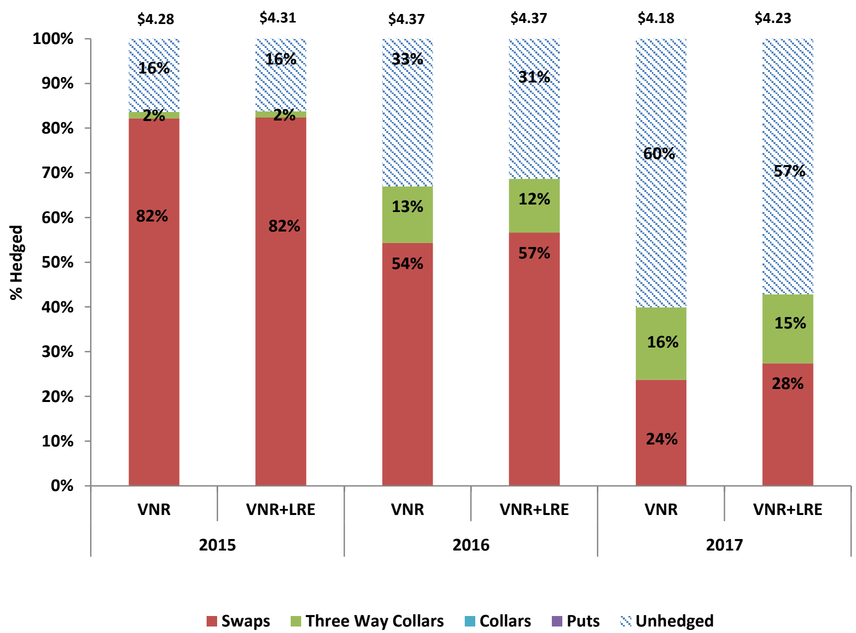
VNR Has Actively Taken Steps to Improve Liquidity and the Balance Sheet

- Effective January 2015, VNR reduced the monthly distribution to $0.1175
- Cut 2015 capital expenditures by 20%; all maintenance capital
- Filed new $625 million ATM shelf in March 2015 to opportunistically raise equity capital
- Held numerous discussions with outside partners / funding sources to provide capital for future acquisitions
- Spring Borrowing Base Redetermination Meeting held on May 12, 2015
  - Proposed Borrowing Base of $1.6 Billion with automatic $200 million increase upon closing of LRE Merger
  - Proposed Amendment to leverage convenant
    - 2015 – 5.5x Debt / Adjusted EBITDA
    - 2016 – 5.25x Debt / Adjusted EBITDA
    - 2017 and beyond – 4.5x Debt / Adjusted EBITDA
- Restructured existing 2015 oil and natural gas three-way collars into fixed price swaps

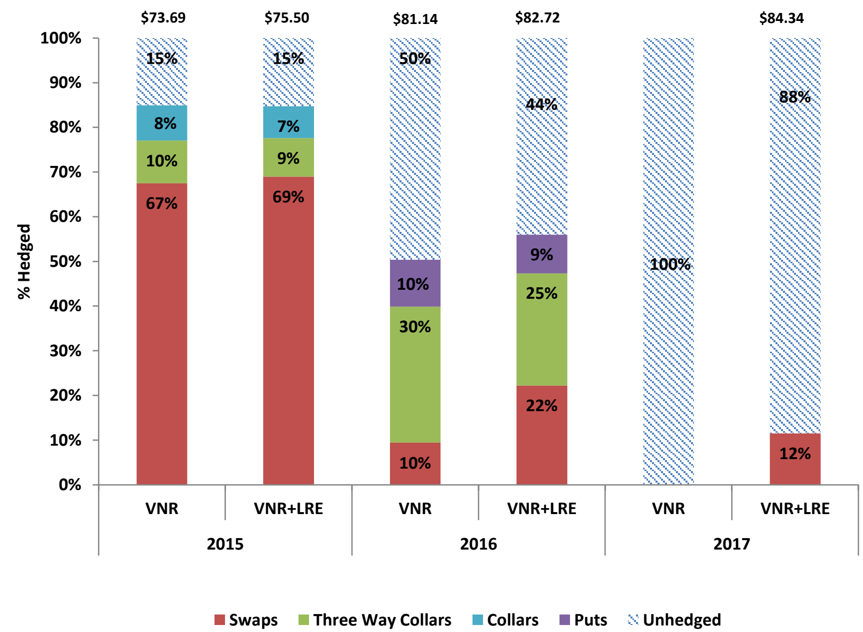
Hedges Mitigate Commodity Price Risk (VNR + LRE)

- Transaction modestly improves Vanguard’s hedge book, increasing weighted average price and volumes hedged for both oil and gas in 2016 and 2017

PF Natural Gas Hedges



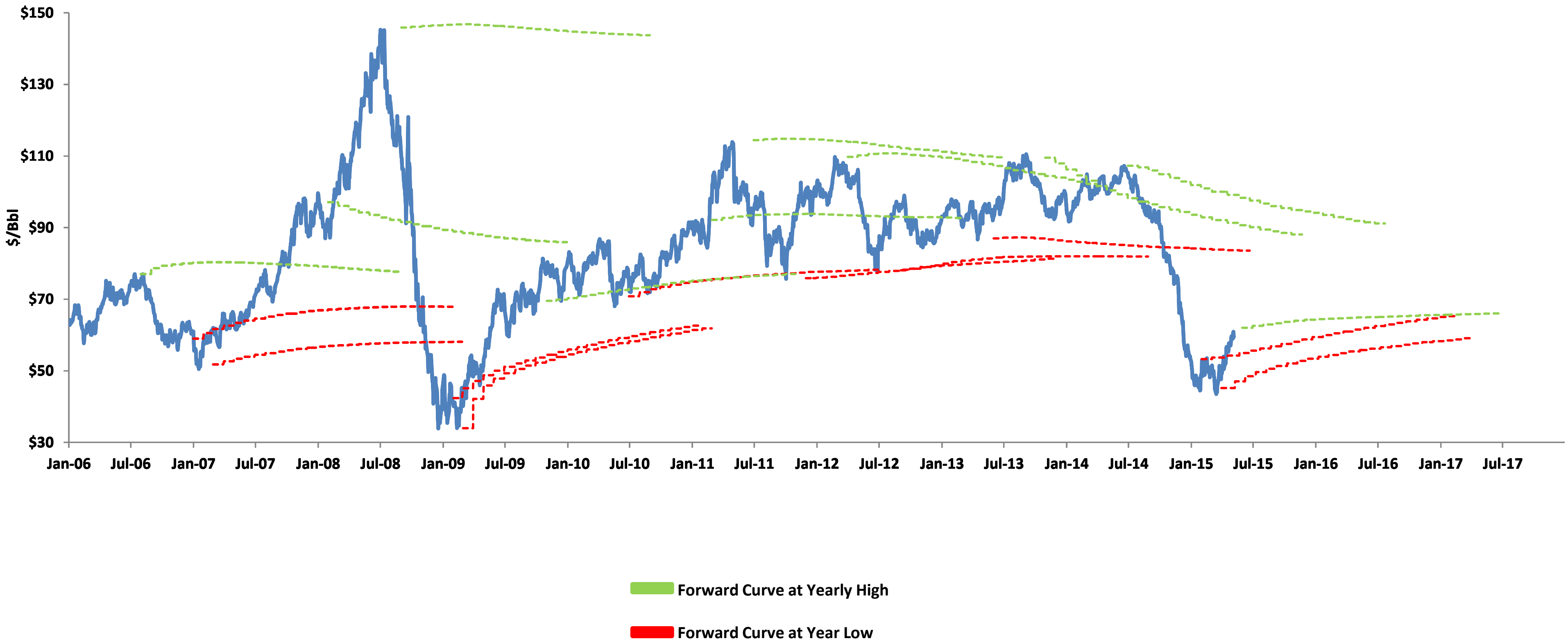
PF Oil Hedges



Note: Hedge prices reflect a weighted average of swap prices, floor prices on collars and long put prices on three way collars. Assumes additional production from capital spending in 2015 and beyond.

A History of Oil Prices

Oil Historical Pricing Coupled with Forward Curves



Source: Bloomberg data as of 5/7/15.

Latest EIA Drilling Productivity Data

Short-Term → Longer-Term

Arguments for US Oil Production Growth Slowing

- As of mid-March, the oil rig count had fallen by 727 since it peaked in October at 1,593 — faster than the rate at which gas rigs fell in 2008-09.
- Producers are holding back wells from completion which will reduce production in the short-term...
- Capex reductions have been impressive... 30-35% on average in North America.
- The EIA's Drilling Productivity Report suggest that oil production in the Bakken, Eagle Ford, and Niobrara will slow month-over-month by April. Year-over-year growth will slow meaningfully.
- Bank redeterminations around April may force some rationalization that has so far been postponed.
- ...But producers are very underhedged in longer-dated tenors, and have far less protection than normal in 2H'15 and 2016. Hedges that have been executed in those tenors were struck at a much lower price point.
- But human capital may take longer to return. Some producers have expressed concern, based on past experience, that once crews leave (possibly for other sectors, in other regions), they can be tough to get back.
- Only 195 bids were received this week for offshore Federal Gulf of Mexico leases, compared to 380 at the time last year. This was the lowest number of bids received since 1986.
- The rush of capital into the North American energy space may not recover to levels that are quite as frenetic.
- Industry consolidation — and specifically acquisitions by oil majors — in the US tight oil space could introduce more industry discipline, resulting in a rate of growth that is slower but also more unshakable...
- Smaller, older, or more marginal wells (e.g. stripper wells) might get shut-in and not return to production when prices rebound.

Arguments Against US Oil Production Growth Slowing

- ...But many companies are not reducing production guidance by much.
- Legacy hedges done at much higher price points protect producers in 1H'15...
- Producers are focusing exclusively on high-productivity acreage, and postponing more prospective activity.
- Variable production costs fall with oil prices. Anecdotally, production costs have already fallen by 8-20%, led by services. Past bear markets indicate that they can take about three years to recover as oil prices rise.
- Efficiency gains, such as multi-pad drilling and a shift from older to newer rigs as lease prices fall mean that producers can do more with less. Some of those gains will be sticky.
- Equity markets have historically rewarded public companies for growing production regardless of the macro environment. Smaller, non-public companies may require cash flow (reduced though it may be) to stay afloat.
- Services, and rigs in particular, can return to service very quickly when prices merit...
- North Dakota has an automatic tax reduction trigger mechanism in place for when oil prices fall. This could be a meaningful percentage of cash costs for independent producers in the Bakken and Three Forks plays (not to mention a big blow to government revenues).
- ...But the backlog of wells awaiting completion will come online quickly when incentivized by price.
- Banks don't want foreclosures. They are likely to work cooperatively with producers to avoid that outcome
- ...Or, asset acquisition by private equity investors may lead to restructuring and refinancing at a lower cost of capital.

Note: From CIBC's "Commodities Strategy" chart, sourced as EIA's Drilling Productivity Report. Retrieved April 24, 2015.

Nat Gas – Supply/Demand Fundamentals

"Globally: Natural gas is the fastest growing fossil fuel, with demand rising at the rate of 1.9%/year over the next two decades to reach 490 Bcf/d while oil falls to just 0.8%/year." [(1)]

Supply

- Supply in 2015 is expected to increase ~3.0 Bcf/d over 2014
- Production is on the rise, mainly in the Marcellus/Utica
- Northeast expected to be a self-sufficient gas producer by 2018
  - Gas will have to be exported during summer months because of insufficient storage capacity
- Associated natural gas continues to rise, which may point to stronger production than the market expects
- May take time for the oversupply to be worked off, as arresting production momentum requires a sizeable slowdown in supply growth and raising demand structurally could take years

Demand

- Increase of ~2.8 bcf/d in 2015 over 2014
- Global and U.S. demand is expected to continue rising
- Sabine Pass, Dominion Cove Point, Freeport LNG and Cameron LNG currently under construction, 6.7 Bcf/d of Export Capacity
  - 1st project online late 2015 and completed in stages through 2017 – 2.4 Bcf/d
  - 2nd project online in 2017 – 0.8 Bcf/d
  - 3rd and 4th online in 2018 – additional 3.5 Bcf/d
- Other Sources of Increasing Demand:
  - Exports to Mexico are currently ~2 Bcf/d and are expected to increase to ~7 Bcf/d
  - Coal Plant Retirements / Coal-Gas Switching
  - Industrial growth as US economy improves

Source: Citi Research (February 25, 2015). Asset Risk Management LNG Global Update (February 2015).
[(1)] According to BP's annual Energy Outlook published February 17, 2015.

Investment Questions

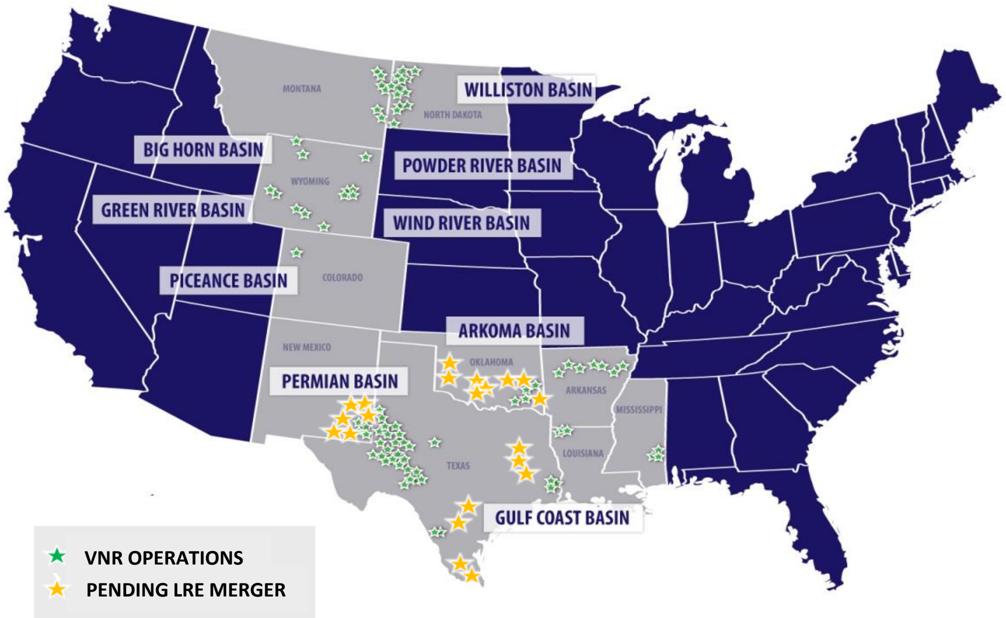
- **Invest In MLPs?**
  - Medium To Long-Term Investor?
  - Current Income Is Important?
  - Like Potential For Income Growth?
  - Looking For Tax Advantaged Income?
  - OK With Getting A K-1?
- **Invest In Upstream MLPs?**
  - Believe Oil/Gas Prices Will Improve?
  - Believe Better Yield Offsets Commodity Price Risk vs. Fixed Fee Midstream Options?
  - Can Handle Near Term Unit Price Volatility?
  - Simply Playing Commodity Prices – Better Alternatives Than Upstream MLP’s?
  - Believe Inflation Will Increase?
- **Invest In VNR?**
  - Believe Increased Natural Gas Demand Will Ultimately Allow Prices To Improve?
  - Believe Our Pending Merger Will Close?
  - Believe Our Proactive Management Philosophy On Adding Assets An The Current Commodity Price Downturn Will Provide Significant Long-Term Value?

Appendix

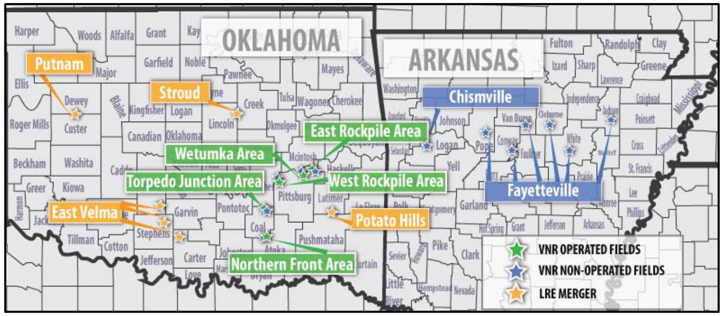
VANGUARD
NATURAL RESOURCES, LLC
NASDAQ: VNR

THE MONTHLY DISTRIBUTION MLP™

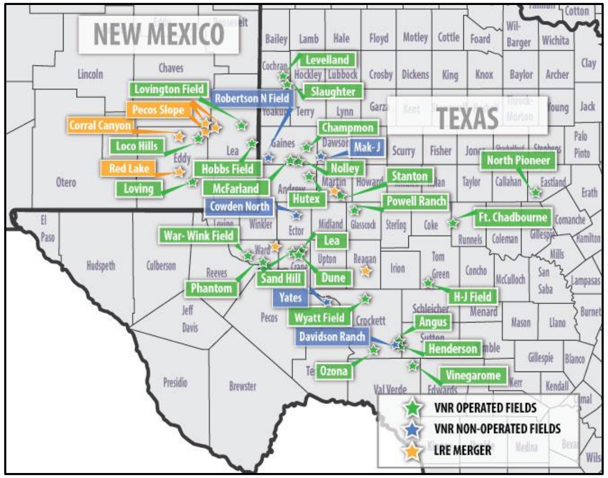
Attractive Operational Overlap
VNR + LRE Combined



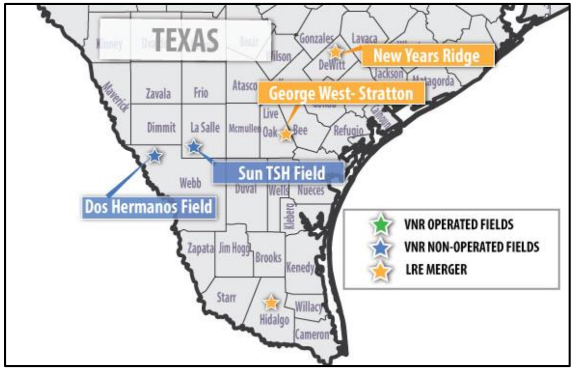
Arkoma Basin



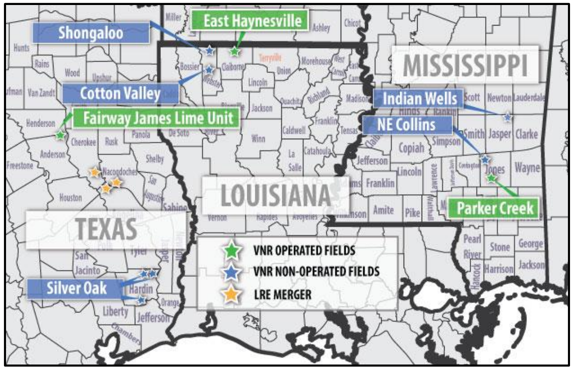
Permian Basin



South Texas



Gulf Coast Basin



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