

**TEACHER RETIREMENT SYSTEM OF TEXAS MEETING
BOARD OF TRUSTEES
AND
INVESTMENT MANAGEMENT COMMITTEE**

(Mr. Barth, Committee Chair; Mr. Colonna; Mr. Kelly; Mr. McDonald; & Ms. Sissney, Committee Members)

AGENDA

**June 13, 2013 – 8:30 a.m.
TRS East Building, 5th Floor Boardroom**

1. Consider the approval of the proposed minutes of the April 18, 2013 committee meeting – Todd Barth.
2. Receive an update and review of Private Equity – Rich Hall.
3. Receive an update and review of Real Assets – Eric Lang.
4. Introduction of Energy and Natural Resources Investment Initiative, including the following:
 - A. Discussion of opportunities and risks associated with investing in energy and natural resources – Sam Oh, Apollo Investment Corporation and Dan Pickering, Tudor, Pickering, Holt & Co.
 - B. Risk review of proposed Energy and Natural Resources strategy – Jase Auby.
 - C. Energy and Natural Resources Strategic Plan – Vaughn Brock.

NOTE: The Board of Trustees (Board) of the Teacher Retirement System of Texas will not consider or act upon any item before the Investment Management Committee (Committee) at this meeting of the Committee. This meeting is not a regular meeting of the Board. However, because a quorum of the Board may attend the Committee meeting, the meeting of the Committee is also being posted as a meeting of the Board out of an abundance of caution.

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Minutes of the Investment Management Committee

April 18, 2013

The Investment Management Committee of the Board of Trustees of the Teacher Retirement System of Texas met on April 18, 2013 in the boardroom located on the Fifth Floor of the TRS East Building offices at 1000 Red River Street, Austin, Texas. The following committee members were present:

Todd Barth, Chair
Joe Colonna
David Kelly
Eric McDonald
Nanette Sissney

A quorum of the committee was present. Others present:

Karen Charleston, TRS Trustee	Lynn Lau, TRS
Charlotte Clifton, TRS Trustee	Scot Leith, TRS
Chris Moss, TRS Trustee	Jaime Llano, TRS
Anita Palmer, TRS Trustee	Denise Lopez, TRS
Brian Guthrie, TRS	Shayne McGuire TRS
Britt Harris, TRS	Scott Moore, TRS
Ken Welch, TRS	Hugh Ohn, TRS
Mark Albert, TRS	Steve Peterson, TRS
Jerry Albright, TRS	Demetrius Pope, TRS
Thomas Albright, TRS	Noel Sherman, TRS
Jase Auby, TRS	Komson Silapachai, TRS
Mohan Balachandran, TRS	Sharon Toalson, TRS
Pat Barker, TRS	David Veal, TRS
Amy Barrett, TRS	Angela Vogeli, TRS
Sylvia Bell, TRS	Susan Wade, TRS
Bernie Bozzelli, TRS	Dr. Keith Brown, Investment Advisor
Chi Chai, TRS	Steven Huff, Fiduciary Counsel
Patrick Cosgrove, TRS	Brady O'Connell, Hewitt EnnisKnupp
David DeStefano, TRS	Jim Bauer, Unite Here
Dennis Gold, TRS	Tathata Lohachitkul, Albourne America
Brian Gomolski, TRS	Philip Mullins, Texas Retired Teachers Association and Texas State Employees Union
Rich Hall, TRS	John Powell, State Street
Dan Herron, TRS	Steve Meier, State Street
Janis Hydak, TRS	Craig teDuits, State Street
Dan Junell, TRS	

Mr. Barth called the meeting to order at 9:02 a.m.

1. Consider the approval of the proposed minutes of the December 13, 2012 committee meeting.

On a motion by Mr. McDonald, seconded by Ms. Sissney, the committee approved the minutes of the December 13, 2012 meeting as presented.

Mr. Kelly arrived at 9:35 a.m.

2. Receive a review of Internal Public Markets.

Mr. Harris reviewed the major components of the administration of the Investment Management Division (IMD), their allocations, and key members.

Mr. Chai provided an overview of the Internal Public Markets (IPM) team, which manages Global Best Ideas (GBI), US High Quality, GBI Core, GBI Quant and GBI Gold. He also described the organizational structure. Ms. Hydak, Mr. DeStefano, Mr. Albert and Mr. McGuire presented the IPM portfolios, including their positioning, risk and return compositions, characteristics, investment process, and team accomplishments and priorities. Mr. Albert explained for Mr. McDonald the different time horizons and turnover levels of the three Quant strategies: strategic, dynamic and macro distance. Mr. McGuire explained for Dr. Brown that the tracking error of the Gold Portfolio was set high to balance the equity volatility. Mr. McGuire further explained the relationship between gold and equities. He confirmed for Dr. Brown that the Gold Portfolio had become an alpha generating portfolio because of the overall performance of TRS' gold investments. He said that gold should continue to play a role as an insurance policy for an equities dominant portfolio.

Mr. Chai provided a historical overview of the IPM.

Mr. Albert gave a presentation on a collaborative project between the IPM and the Risk Group, which combines a low volatility (vol) equity portfolio with a put options strategy. He explained how the portfolio would outperform or underperform given different market situations. He explained for Mr. Colonna and Mr. Barth the portfolio's internal approval process. He described for Mr. Barth and Mr. McDonald the investment and research processes of the low volatility equity portfolio. Responding to Mr. Kelly's concern about the potential risk of an embedded loss through the put options strategy, Mr. Chai stated that the strategy was intended to combine two complimentary strategies. The low vol equity portfolio, he said, provided a lower beta to the market, while the puts option raised the beta and reduced the risk of the combined strategy. Mr. Albright confirmed for Mr. Barth that third-party controls ensured that the collaborative portfolio would be monitored and reported on outside IPM. Mr. Kelly requested that staff continue to keep the board abreast of the new phenomenal strategies and expansion and their associated risk and potential issues.

Ms. Hydak laid out the new GBI alpha opportunity plan. There was a general discussion relating to a recent pre-IPO purchase. Mr. Harris described for Mr. Kelly the internal process of managing liquidity. Ms. Hydak confirmed for Mr. Barth that the IPM team worked with the private equity group when they reviewed a pre-IPO commitment to a private equity fund. Mr. Colonna cautioned that the 144(a) market has been well established and it would be premature to expect that the TRS fund has an advantage in that market. Responding to a question from Mr. Barth concerning the team's alpha in 2012, Mr. Chai stated that it was about \$130 million in 2012 and the total alpha since inception five years ago was about \$500 million. Mr. Harris clarified for Ms. Sissney that the \$130 million was over the benchmark without considering the cost savings. He noted that by managing the portfolios internally, the fund also saved about \$120 million per year.



Dr. Brown suggested that the board review the investment policy to ensure that the allocation and risk mandates were still appropriate given the implementation of the new investment strategies and the changing market environment. Per Mr. Barth's request, Dr. Brown said he would visit with staff and provide his opinions regarding the new strategies, in particular the combined strategy of low volatility (vol) equity and puts options. Mr. O'Connell commented that managing the puts option strategy internally and setting the information ratio at 2% were both considered uncommon. Mr. Chai stated that although combining the risk management strategy with an alpha generating strategy was uncommon, staff managed the collaborative portfolio by monitoring and controlling risk. Mr. Harris noted that the combined strategy would allow alpha stacking by adding additional value through their positive information ratios and low correlation.

Responding to a question from Mr. Colonna regarding the possibility of increasing the gold fund allocation, Mr. McGuire and Mr. Harris discussed the projected market. Responding to a question from Dr. Brown, Mr. McGuire projected that the silver market would perform well.

3. Receive a review of the Trading Management Group.

Mr. Bozzelli provided an overview of the Trading group, including its primary functions, organizational structure, accomplishments in 2012, trading partner network, partner evaluation process, and performance in 2012.

Mr. Peterson presented the equity trading performance for 2012 and explained the transition management process. He responded to Mr. Kelly that by managing the portfolio transition internally, the group saved about \$1.8 million in commissions in 2012.

Mr. Jaime Llano presented the foreign exchange execution process. He explained for Mr. Barth the internal currency trading process.

Mr. Silapachai presented the trading process of the Treasury and TIPS portfolios and highlighted how the Trading group added value to those portfolios.

Mr. Bozzelli reviewed the group's accomplishments in 2012 and discussed its 2013 priorities.

The meeting adjourned at 11:25 a.m.



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Private Equity

Richard Hall
Managing Director
June 2013

Agenda

- I. Executive Summary
- II. Organizational Structure
- III. Portfolio Structure
- IV. Performance
- V. Market Conditions
- VI. Summary
- VII. Appendix

Executive Summary

As of December 31, 2012

PERFORMANCE			
Asset Class	1-Year TWR	3-Year TWR	10-Year TWR
Private Equity (\$13,416mm AUM)	16.4%	15.6%	16.8%
State Street PE Index	<u>11.3%</u>	<u>13.0%</u>	<u>8.5%</u>
Excess Return	5.1%	2.6%	8.3%
TUCS Peer Comparison	11th	12th	1st

PORTFOLIO GROWTH ¹			
PE (millions)	1-Year	3-Year	10-Year
Starting Value	\$11,543	\$6,683	\$453
plus Contributions	2,533	7,496	16,687
less Distributions	2,587	5,753	9,623
Investment Return	1,927	4,990	5,899
Ending Value	\$13,416	\$13,416	\$13,416

LONG-TERM MARKET RETURN AND RISK EXPECTATIONS				
Style	Portfolio Weight	Strategic Goal	Expected Market Return ²	Public Risk Proxy ³
Buyout	70%	Equity Alpha	12.7%	21.0%
Growth Equity / Venture	15%	Equity Alpha	11.6%	34.5%
Credit / Special Situations	15%	Diversification	11.4%	13.3%
PRIVATE EQUITY TOTAL	100%	Equity Alpha / Diversification	12.3%	21.1%

ALLOCATION SUMMARY						
Style	% of Portfolio			% of Total Trust		
	12/31/2012	12/31/2011	Change	12/31/2012	12/31/2011	Change
Buyout	78.8%	81.2%	-2.4%	9.2%	9.0%	0.2%
Growth Equity / Venture	7.4%	5.5%	1.9%	0.9%	0.6%	0.3%
Credit / Special Situations	13.8%	13.3%	0.5%	1.6%	1.5%	0.1%
PRIVATE EQUITY TOTAL	100.0%	100.0%	-	11.7%	11.1%	0.6%

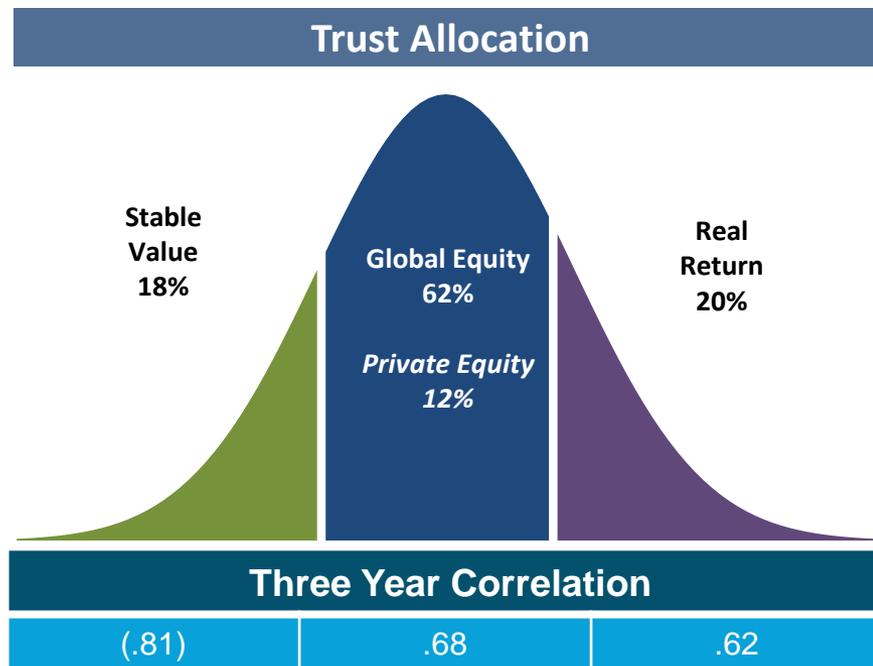
¹ Pure View reports as of 12/31/12, 12/31/09, 12/31/07

² Hamilton Lane, 20 years of data ending 9/30/12

³ TRS Risk Group/Morgan Stanley

Executive Summary

Role in the TRS Trust



PRIVATE EQUITY				
Portfolio Target	Portfolio Weight	Expected Market Return ¹	Volatility	
			Observed ²	Public Risk Proxy ³
Buyout	70%	12.7%	18.8%	21.0%
Growth Equity / Venture	15%	11.6%	32.0%	34.5%
Credit / Special Situations	15%	11.4%	19.3%	13.3%
PE Total	100%	12.3%	15.2%	21.1%
Performance	IRR ⁴	TWR ⁵	Policy Benchmark	TUCS Rank
1 Year	16.7%	16.4%	11.3%	11 th
3 Years	14.9%	15.6%	13.0%	12 th
10 Years	13.6%	16.8%	8.5%	1 st
Drawdown Risk	Drawdown ⁶			
S&P 500	45.8%			
Russell 2000	47.9%			
TRS Private Equity	29.9%			

- Performance data for period ending December 31, 2012

¹Hamilton Lane, 20 years of data ending 9/30/12

²TRS Private Equity

³TRS Risk Group/Morgan Stanley

⁴TPEG report as of 12/31/12

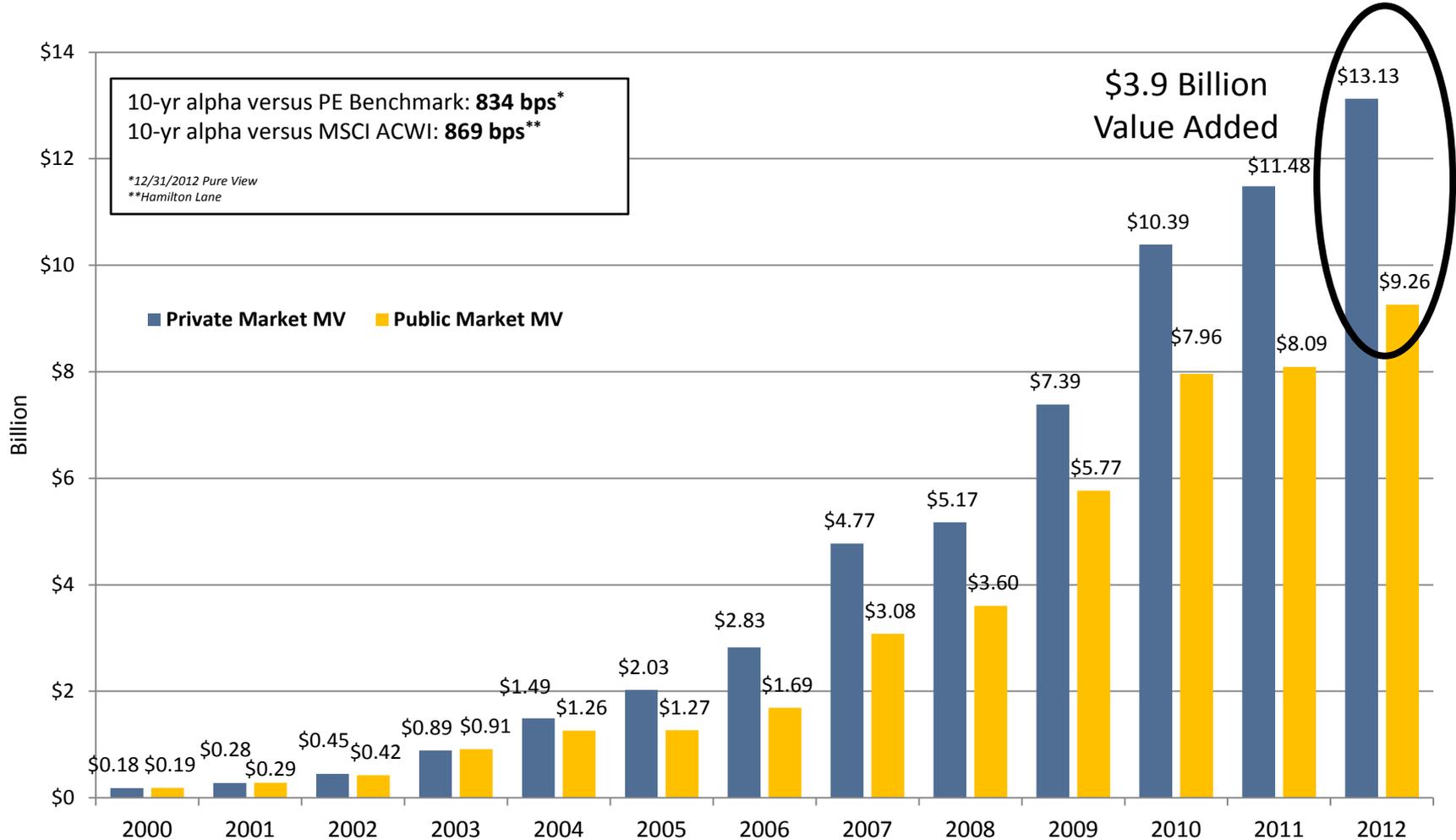
⁵Pure View report as of 12/31/12

⁶S&P 500 Drawdown 3/31/09; Russell 2000 Drawdown 3/31/09; TRS Private Equity Drawdown 6/30/09

Executive Summary

Private Equity Value Added

- Private equity performance relative to Public Markets and SSPEI Benchmark as of December 31, 2012



Hamilton Lane; values through 12/31/2012

Public Market values calculated by assuming investments were made in the MSCI All World index in the same size and timing as TRS Private Equity cash flows

In 2012, valuations adjusted for fourth quarter cash flows if GP valuation not available

Private Equity Organization Chart



Rich Hall
Managing Director
*BA, Harvard
MBA, Northwestern*



Neil Randall
Director
BBA, MS, Texas A&M



Michael Lazorik
Senior Investment Manager
BBA, UT Austin



Molly Rose
Analyst
BBA, Texas State



Allen MacDonell, CFA
Senior Investment Manager
*BBA, U. of Georgia
MBA, Georgia State*



Jeff Edwards
Contractor
*BBA, UT Austin
MBA, U. of N. Carolina
MSF, Boston College*



Carter Ware
Contractor
BA, U. of Virginia



Brad Thawley
Investment Manager
BBA, Bucknell U.



Melissa Kleihege
Deal Flow Analyst
BS, Texas A&M



Scott Ramsower
Investment Manager
BBA, Texas A&M



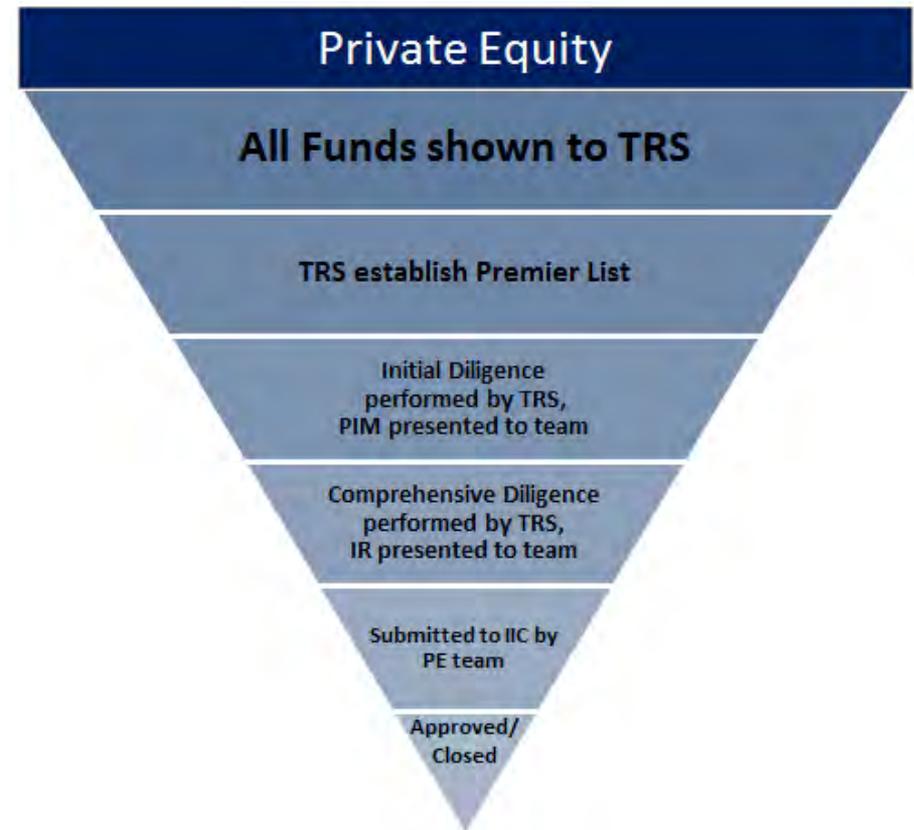
Alana Fields
Contractor
BA, UT El Paso

Advisors and Consultants
BlackRock and Hamilton Lane

Portfolio Structure

Private Equity Investment Process

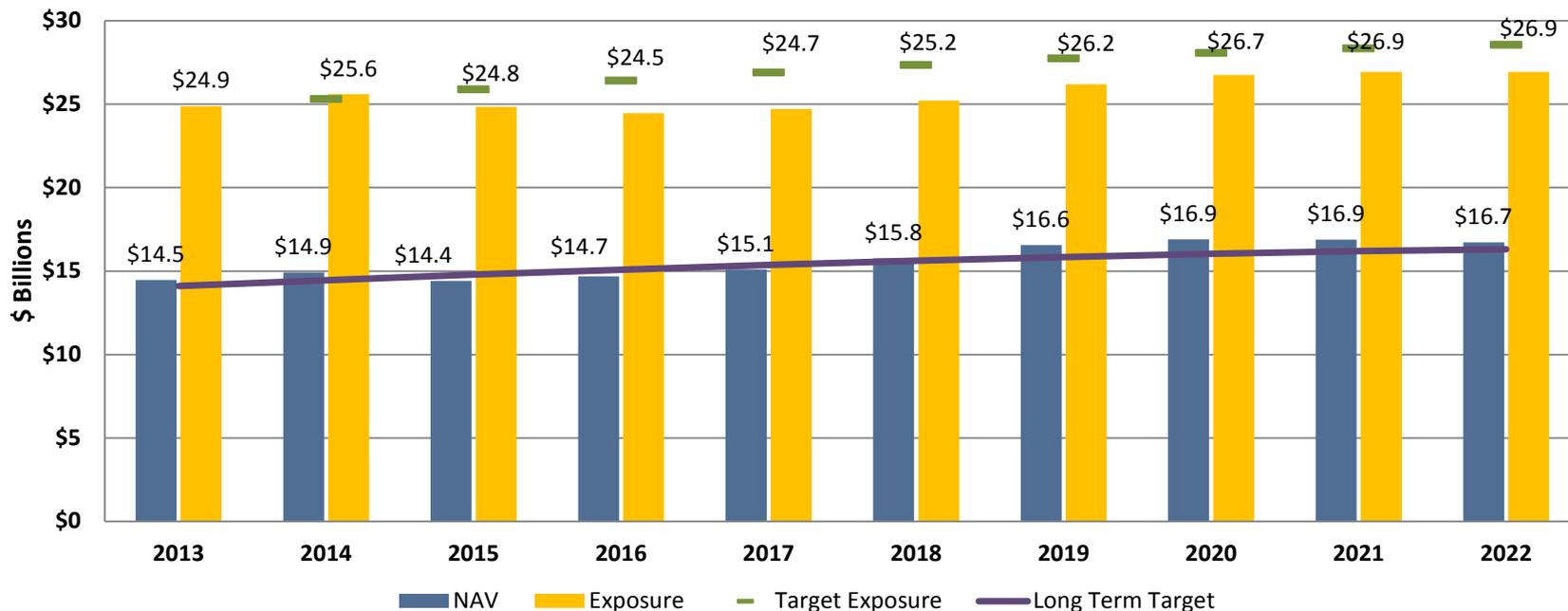
- Develop annual allocation in collaboration with SAA and Risk Groups, review with Investment Management Committee
- Maintain allocation at target level of 12%
- Achieve long-term target return of 14% (including alpha)



Portfolio Structure

Long-term Funding Plan, as of December 31, 2012

Total PE Portfolio NAV and Exposure (2013-2022)



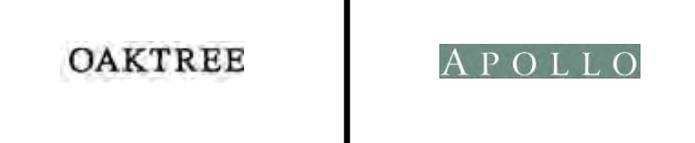
Capital Plan	\$3,090	\$2,805	\$2,520	\$2,000	\$2,350	\$2,320	\$2,600	\$2,770	\$2,840	\$2,920
PE % of Trust	12.3%	12.4%	11.7%	11.7%	11.8%	12.1%	12.5%	12.6%	12.5%	12.3%
Capital Calls	2,626	2,523	2,784	2,633	2,521	2,484	2,429	2,555	2,625	2,770
Distributions ¹	<u>2,269</u>	<u>2,828</u>	<u>3,972</u>	<u>3,090</u>	<u>2,854</u>	<u>2,617</u>	<u>2,495</u>	<u>3,100</u>	<u>3,550</u>	<u>3,815</u>
Net Calls/ (Distributions)	\$357	(\$305)	(\$1,187)	(\$458)	(\$333)	(\$133)	(\$66)	(\$546)	(\$924)	(\$1,045)



¹Return of NAV

Portfolio Structure

Style, Geography and Representative Managers

	Domestic	International Developed	International Emerging	Total	
	Target / Actual	Target / Actual	Target / Actual	Expected Return ¹	Public Risk Proxy ²
Buyout	40% / 55%	25% / 22%	5% / 2%	12.7%	21.0%
				Actual Total - 79%	
				70%	
Growth Equity & Venture Capital	8% / 8%	0% / 0%	8% / 1%	11.6%	34.5%
				Actual Total - 9%	
				15%	
Credit & Special Situations	8% / 12%	5% / 1%	3% / 0%	11.4%	13.3%
				Actual Total - 13%	
				15%	
Total	55% / 75%	30% / 22%	15% / 3%	12.3%	21.1%
	Actual Total - 100%				



¹TRS Risk Group/Morgan Stanley

²Hamilton Lane, 20 years of data ending 9/30/12

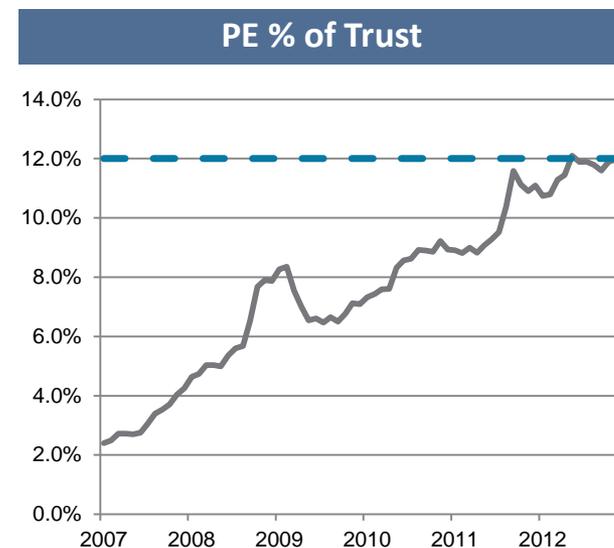
Managers listed are representative of subset of TRS Premier List managers by strategy and geography

Performance

Asset Growth, Allocation and Returns

Growth (millions) ¹	1-YR	3-YR	10-YR
Starting Value	\$11,543	\$6,683	\$453
<i>plus</i> Contributions	2,533	7,496	16,687
<i>less</i> Distributions	2,587	5,753	9,623
Investment Return	1,927	4,990	5,899
Ending Value	\$13,416	\$13,416	\$13,416

Premier List Investments ²	Total	Invested Last 12 Months	Invested Last 24 Months
Number of Premier Managers	34	14	19
Percent Invested in Funds	86%	78%	74%
Percent invested in Principal Investments	14%	22%	26%



Style	Allocation			Investment Returns			Inception Date ⁴
	2012	2009	2007	1 YR TWR	3 YR TWR	SI IRR ³	
Buyout	78.8%	77.1%	86.5%	16.5%	15.6%	12.6%	2000
Growth Equity / Venture	7.4%	6.0%	7.7%	13.9%	12.3%	7.2%	2001
Credit / Special Situations	13.8%	16.9%	5.8%	19.7%	17.9%	14.9%	2005
PE Total	100%	100%	100%	16.4%	15.6%	12.4%	2000

- Performance data for period ending December 31, 2012

¹Pure View reports as of 12/31/12, 12/31/09, 12/31/07

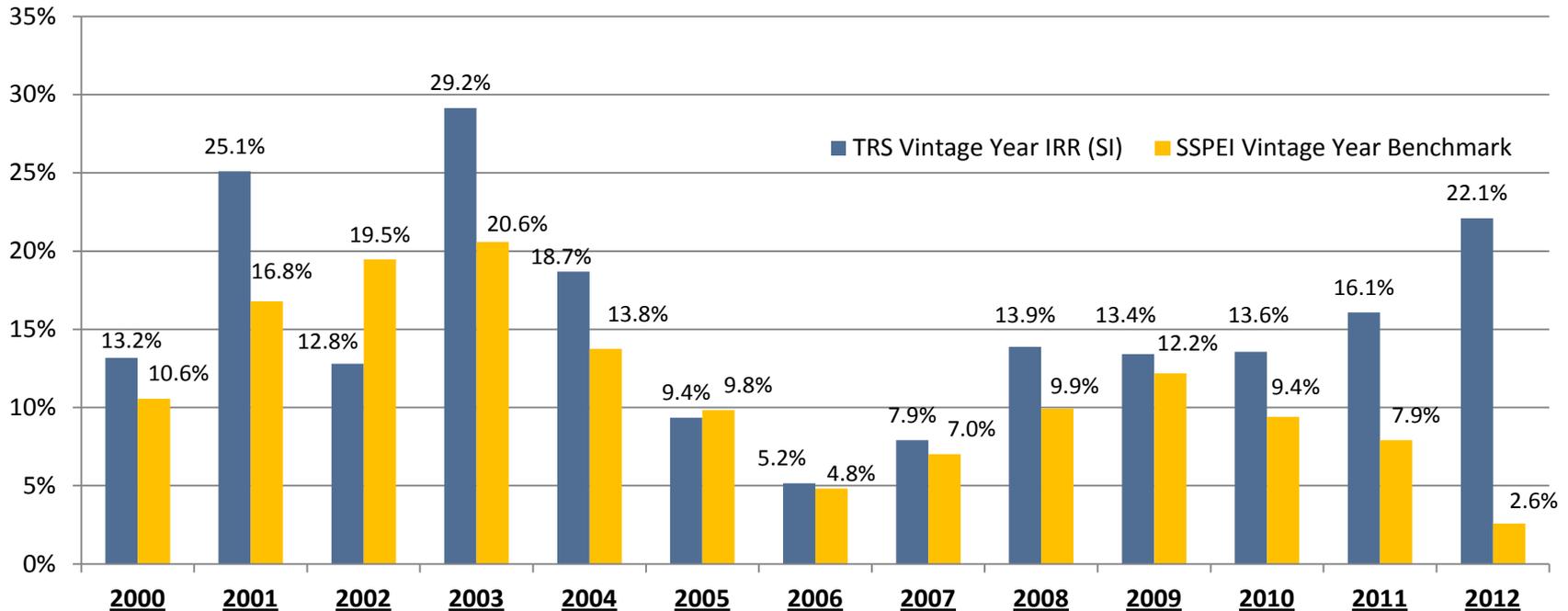
²Excludes Emerging Managers

³12/31/12 Since Inception IRR per State Street Private Edge Group

⁴ Excludes legacy portfolio commitments to Texas Growth Funds and Goldman Sachs Vintage Fund made prior to 2000

Performance

TRS Vintage Year Comparison



	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Total</u>
Committed	\$275	\$862	\$238	\$456	\$595	\$750	\$2,666	\$4,673	\$4,348	\$2,831	\$906	\$1,710	\$3,698	\$24,010
Invested	<u>262</u>	<u>849</u>	<u>237</u>	<u>435</u>	<u>551</u>	<u>671</u>	<u>2,427</u>	<u>3,974</u>	<u>3,192</u>	<u>1,858</u>	<u>452</u>	<u>801</u>	<u>716</u>	16,426
Remaining	\$13	\$13	\$0	\$21	\$44	\$79	\$239	\$699	\$1,157	\$973	\$454	\$909	\$2,981	\$7,584

- Performance data for period ending December 31, 2012



Sources: State Street Private Edge/ Hamilton Lane

Performance

Accomplishments and Priorities

2012 Accomplishments

- Provided 16.8% for 10-year return - #1 performance in TUCS universe
- Returned 16.4% and 15.6%, respectively for 1 and 3-year periods- nearly top decile performance for both periods
- Added 1-year alpha of 510 bps and 3-year alpha of 260 bps
- “Self-funding” portfolio: distributions exceeded contributions by \$55 million
- Completed 21 Investments
 - Committed \$1.75 billion to 9 funds
 - Committed \$425 million to 3 Principal Investments
 - Committed \$1.40 billion to 6 funds under the SPN
 - Committed \$45 million to 3 Emerging Managers
- Collaborated with Risk Group to develop risk management and monitoring tools

2013 Priorities

- Complete up to \$3 billion of commitments
- Evaluate foreign currency exposure risk
- Enhance Principal Investments impact and strategy
- Strengthen relationships with managers – generational leadership transitions
- Continue to refine Premier List
- Analysis of manager sector expertise
- Analysis of manager value creation methods

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Market Conditions

	2012 "Today"	Long-Term Average (excl. 2006-2007)	2007 "Peak"	2002 "Pre-Peak"
Supply of Capital				
Capital Raised (billions) ¹	\$167	\$156	\$347	\$90
# of Funds	349	394	593	321
% of US GDP ²	1.1%	1.2%	2.5%	0.8%
Demand for Capital				
Total Value of PE-Backed Buyout Transactions (billions) ³	\$176	\$174	\$809	\$90
# of Disclosed Deals/Total # of Deals	859/1,939	856/1,573	1,483/2,972	581/928
% of Transactions > \$1 billion	8%	6%	13%	4%
Average LBO Size (millions)	\$205	\$198	\$545	\$156
Largest LBO (millions)	\$7,150	-	\$43,797	\$4,971
Realizations				
Total Value of PE-Backed Exits (billions)	\$279	\$124	\$265	\$20
# of Companies	1,290	678	1,170	205
Dry Powder				
Total Amount (billions) ¹	\$639	\$529	\$699	\$180
% of Dollars Invested	362%	320%	86%	199%
Pricing (EV/EBITDA Multiple)				
Sponsor-Backed Buyouts Average ⁴	9.1x	8.2x	10.2x	7.0x
Strategic Buyers Average	9.7x	9.1x	9.1x	9.2x
Public Market Average (Russell 2000) ⁵	10.4x	11.1x	12.4x	10.7x
Debt				
Debt Availability (1=hard to access; 10=easy to access)	9	5	10	5
Total Leveraged Loan and High Yield Volume (billions) ⁶	\$851	\$350	\$701	\$201
Typical Pricing	6.4%	7.6%	8.3%	7.1%
Average Debt/EBITDA Multiple	5.3x	4.6x	6.2x	4.0x
Average % Debt Used in Transactions	62%	60%	67%	60%
Returns				
IRR at Year 5 ⁷	--	--	5.9%	24.9%
IRR at Year 10 ⁸	--	--	--	19.6%

¹Preqin, Global- Buyouts, Mezzanine, Growth, Distressed and Venture strategies

²St. Louis Federal Reserve

³Dealogic

⁴S&P Leveraged Commentary & Data April 2013

⁵Bloomberg data for EV/EBITDA for the Russell 2000 Index

⁶Morgan Stanley

⁷The SSPEI pooled average IRR return at 12/31/2011 and 12/31/2006, respectively

⁸The SSPEI pooled average IRR return at 12/31/2011

Market Conditions

Other Considerations

General Partners

- Maintaining focus on Premier List Firms
- GPs – “A Tale of Two Cities”
- Competition: Canadian Model + Sovereign Wealth Funds
- US Refinancing wall pushed back to 2017, Europe to be determined
- Advancement in transparency, reporting systems and automated data exchange

Macro Issues

- Monitoring Europe carefully
- Evolving impact of banking reforms
- Global economic conditions
- Debt conditions pushing asset prices

Other Issues

- Preferred global destination for large, attractive investments
- Global Equity integration and collaboration
- Pre-IPO Investment Capability (with IPM)
- Continued focus on Principal Investments
- Established SPN-specific unit and ENR team

Summary

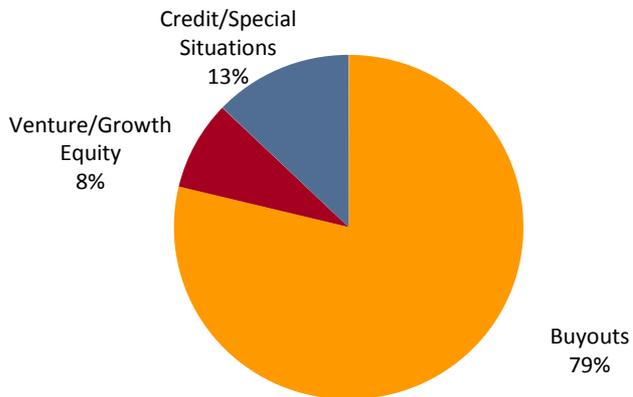
- Private Equity allocation at long-term target
- Historical Results
 - One, three and ten year returns above target
 - Exceeding public markets (MSCI Daily TR Net World USD) by 8.7%¹ over 10-year time period
 - Risk and correlations within expectations
- Distributions exceeded contributions
- Cash requirements very manageable
- GP relationships strong and increasingly focused
- Principal investment capabilities with early results meeting expectations
- Market conditions: Neutral from a long-term perspective

APPENDIX

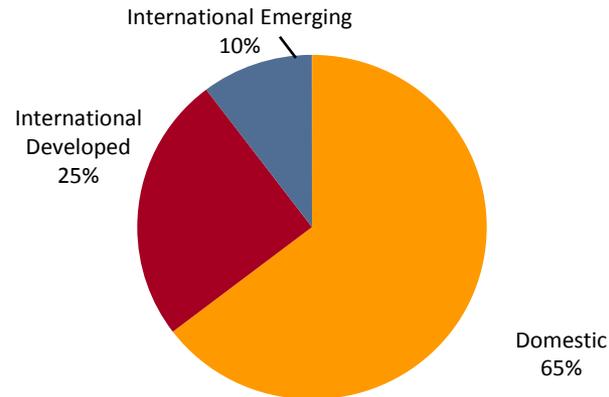
Portfolio Composition

Private Equity Snapshot, as of December 31, 2012 Quarterly Holdings

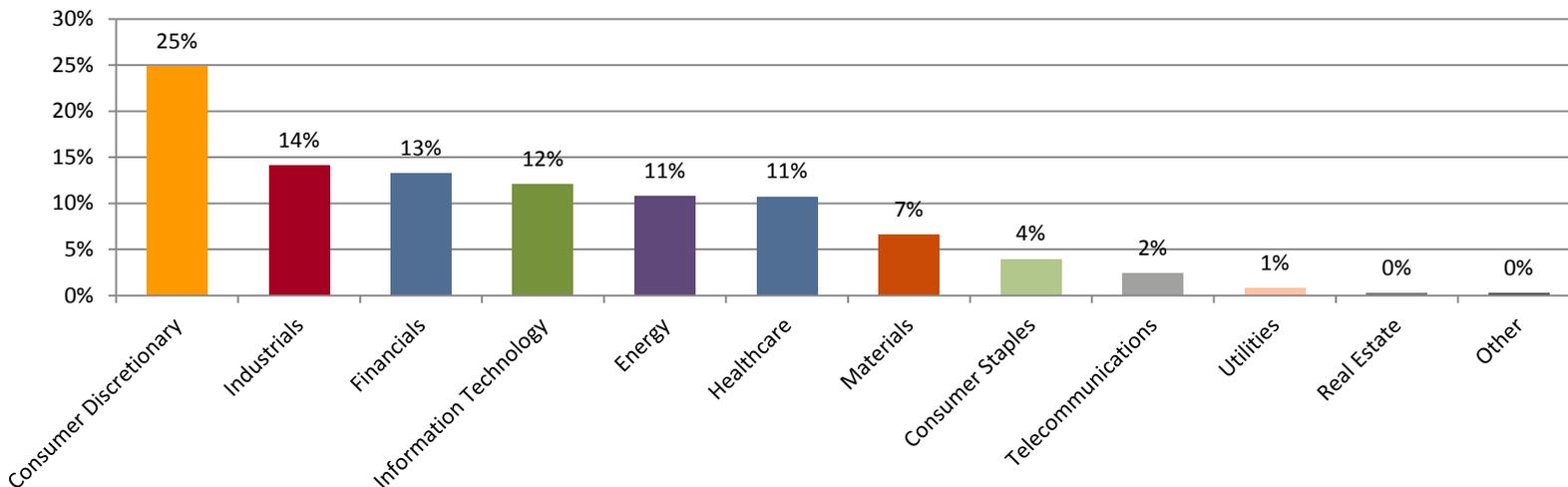
Market Value by Strategy



Market Value by Geographic Diversification



Market Value by Industry Diversification





Real Assets

Eric Lang

Managing Director

June 2013

Agenda

- I. Executive Summary
- II. Role in Trust
- III. Organizational Structure
- IV. Portfolio Structure
- V. Performance
- VI. Accomplishments and Priorities
- VII. Investing Outlook
- VIII. Market Conditions
- IX. Other Considerations
- X. Summary
- XI. Appendix

Executive Summary

As of December 31, 2012

PERFORMANCE				
Asset Class	Assets (\$ millions)	1-Year Return	3-Year Return	SI Return ¹
Real Assets TWR	\$13,893	13.6%	13.6%	3.6%
Real Assets TWR (ex REITs)		12.7%	11.5%	2.0%
Real Assets Benchmark TWR		10.5%	11.1%	5.0%
TUCS Peer Comparison TWR		23 rd	38 th	
Real Assets IRR		12.4%	14.2%	4.9%

PORTFOLIO GROWTH ²				
Real Assets (\$ millions)	1-Year	3-Year	5-Year	
Starting Value	\$11,216	\$3,891	\$1,909	
<i>plus</i> Contributions	2,650	9,767	13,507	
<i>less</i> Distributions	1,390	2,503	2,585	
Investment Return	1,417	2,738	1,062	
Ending Value	\$13,893	\$13,893	\$13,893	

LONG TERM MARKET RETURN AND RISK EXPECTATIONS				
Style	Portfolio Weight	Strategic Goal	Expected Market Return ³	Public Risk Proxy ⁴
Core	25%	Diversification/Beta/Inflation Protection	8.0%	16.0%
Value-Add	10%	Return Enhancement/Inflation Protection	9.8%	19.5%
Opportunistic	25%	Return Enhancement	12.8%	24.1%
Real Assets Special Situations (RASS)	15%	Relative Value	8.9%	14.9%
Other Real Assets	25%	Inflation Protection	11.8%	12.2%
REAL ASSETS TOTAL	100%	Diversification/Inflation Protection	10.3%	17.2%

ALLOCATION SUMMARY						
Style	% of Portfolio			% of Total Trust		
	<u>12/31/2012</u>	<u>12/31/2011</u>	<u>Change</u>	<u>12/31/2012</u>	<u>12/31/2011</u>	<u>Change</u>
Core	29.1%	31.5%	-2.4%	3.6%	3.5%	0.1%
Value Added	12.7%	11.9%	0.8%	1.6%	1.3%	0.3%
Opportunistic	32.0%	31.2%	0.8%	4.0%	3.5%	0.5%
Real Assets Special Situations (RASS)	9.4%	11.1%	-1.7%	1.2%	1.2%	-0.1%
Other Real Assets	16.0%	14.0%	2.0%	2.0%	1.6%	0.4%
Emerging Managers	0.8%	0.2%	0.6%	0.1%	0.0%	0.1%
REAL ASSETS TOTAL	100.0%	100.0%	-	12.5%	11.1%	1.4%

¹ Since Inception, inception date of July 1, 2005

² Pure View reports as of 12/31/12, 12/31/09, and 12/31/07

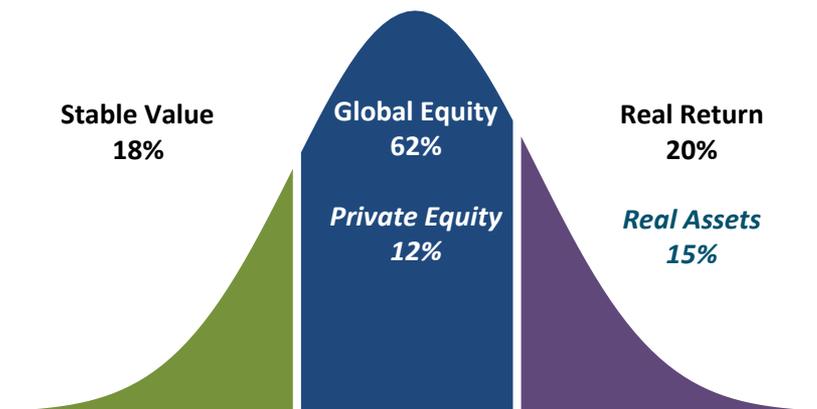
³ TRS Real Assets/ Townsend

⁴ TRS Risk Group/ Morgan Stanley

Role in the TRS Trust

Period Ending December 31, 2012

Trust Allocation



Three Year Correlation

(0.30)

0.49

0.67

Real Assets

Portfolio Target	Portfolio Weight	Expected Market Return ¹	Volatility	
			Observed ²	Public Risk Proxy ³
Core	25%	8.0%	7.8%	16.0%
Value Added	10%	9.8%	17.6%	19.5%
Opportunistic	25%	12.8%	20.6%	24.1%
RASS	15%	8.9%	17.7%	14.9%
Other Real Assets	25%	11.8%	6.0%	12.2%
Private Real Assets Total	100%	10.3%	13.3%	17.2%
Performance ⁴	Return	Benchmark	Excess Return	TUCS Rank
1-Year TWR	12.7%	10.5%	2.2%	23 rd
3-Year TWR	11.5%	11.1%	0.4%	38 th
Since Inception TWR	2.0%	5.0%	-3.0%	--
Drawdown Risk	Drawdown ⁵			
S&P 500	45.8%			
REITs (MSCI US REITs)	66.4%			
TRS Real Assets ⁶	41.5%			

¹ TRS Real Assets/ Townsend

² TRS Real Assets

³ TRS Risk Group/ Morgan Stanley

⁴ TWR Performance excludes REITs

⁵ S&P 500 drawdown date 03/31/09, REITs drawdown date 03/31/09, and TRS Real Assets drawdown date 03/31/10

⁶ Prior to the Global Financial Crisis that largest drawdown was 0.9% (12/31/06, during the ramp up of the RA portfolio)

Real Assets Organization Chart



Eric Lang, CCIM
Managing Director
BBA, UT Austin
MBA, U. of Houston



Michael Pia, CFA, CAIA
Senior Investment Manager
BS, US Naval Academy
MS, U. of W. Florida
MBA, Texas Christian U.



Jennifer Wenzel
Investment Manager
BBA, UT Austin



Molly Rose
Analyst
BBA, Texas State



Craig Rochette, CFA, CAIA
Investment Manager
BS, U. of Arizona



Brian Baumhover
Senior Associate
BS, Iowa State
MBA, UT Austin



Carter Ware
Contract Analyst
BA, U. of Virginia



Grant Walker
Senior Investment Manager
BBA, Baylor
MBA, St. Edwards



Ross Willmann
Associate
BBA, Texas A&M



Melissa Kleihege
Deal Flow Analyst
BS, Texas A&M



Nathan Zinn
Senior Investment Manager
BA, MBA Northwestern



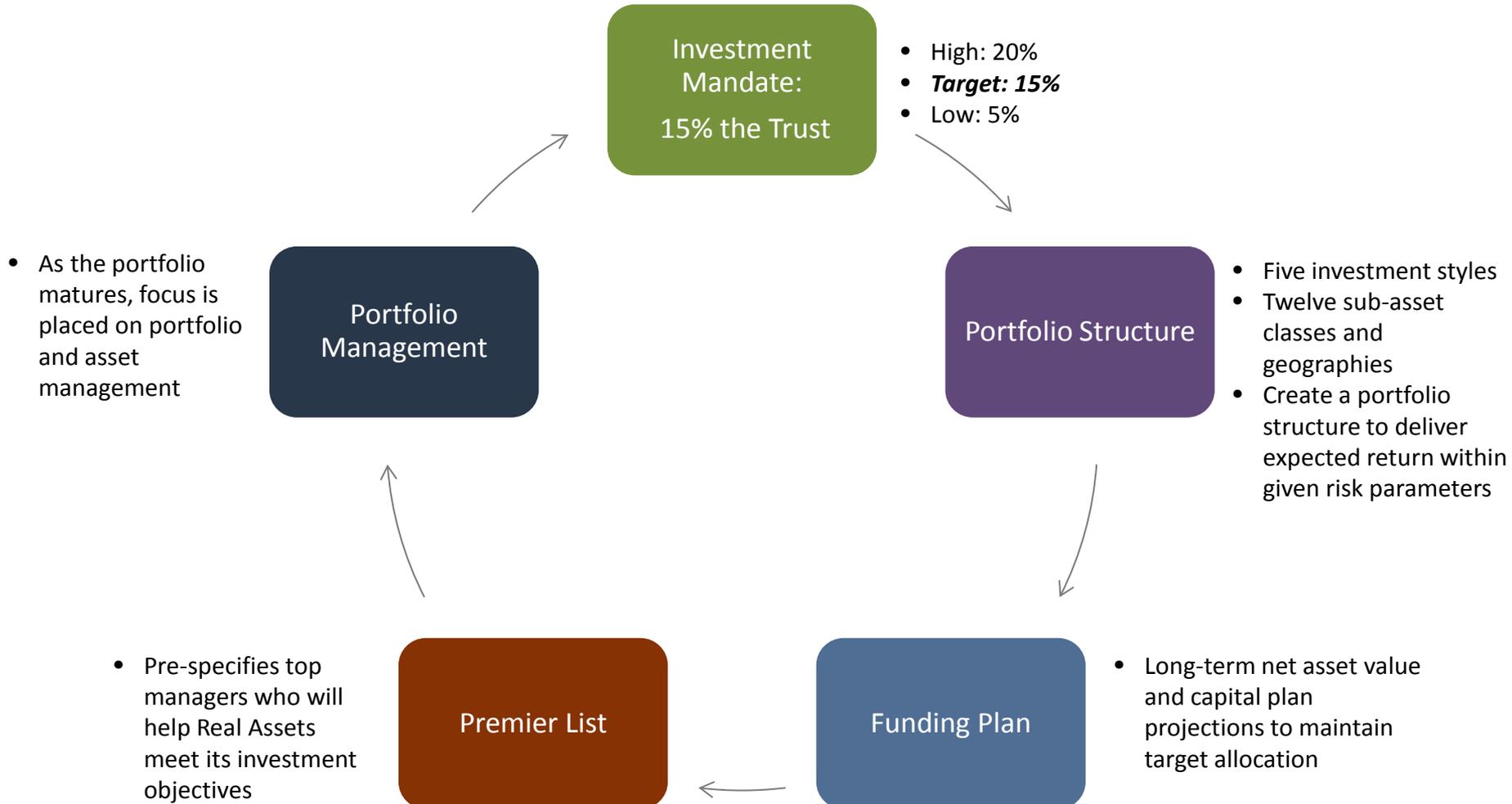
Matt Halstead
Associate
BBA, MPA UT Austin



Gracie Marsh
Administrative Assistant
BA, UC Davis

Portfolio Structure

Investment Process



Portfolio Structure

Primary Objectives

- Achieve a long-term return of 10%
- To outperform our benchmark by 250 basis points
- Portfolio is a hedge to inflationary environment and diversifier to the Trust
- Maintain neutral target allocation of the Trust

Methods Employed

- Bottom-up portfolio allocation framework based on various styles
- Top-down long-term funding plan
- Core Real Estate and Infrastructure styles are the foundation of the portfolio structure
- Value investor based on market environment

Portfolio Structure

Global Diversifiers and Tactical Alpha

Global diversification and tactical/opportunistic returns

- Target (31%)
- Actual (36%)

Foundation Complement

Added diversification and/or enhanced returns

- Target (33%)
- Actual (27%)

Foundation

Stable income with lower volatility, diversification, and inflation sensitivity

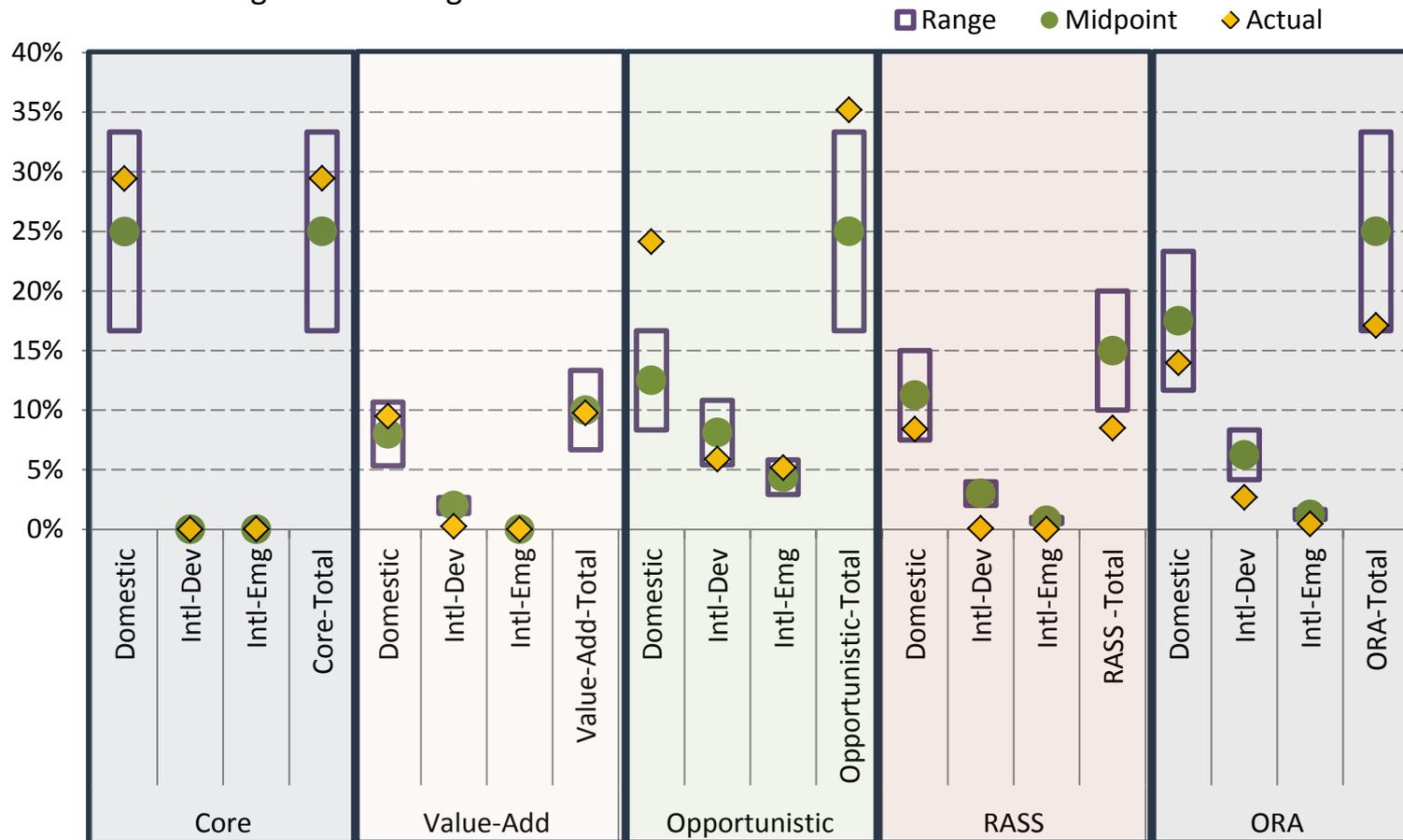
- Target (36%)
- Actual (37%)



Portfolio Structure

Target Allocations by Style and Geographies

- Investment styles are within current target range except Opportunistic Domestic and RASS
- Overweight to Opportunistic Domestic to take advantage of the market dislocation and distress
 - This overweight is mitigated through lower use of leverage which is currently at ~50% compared to the typical target of 75%
 - RASS is absorbing the overweight

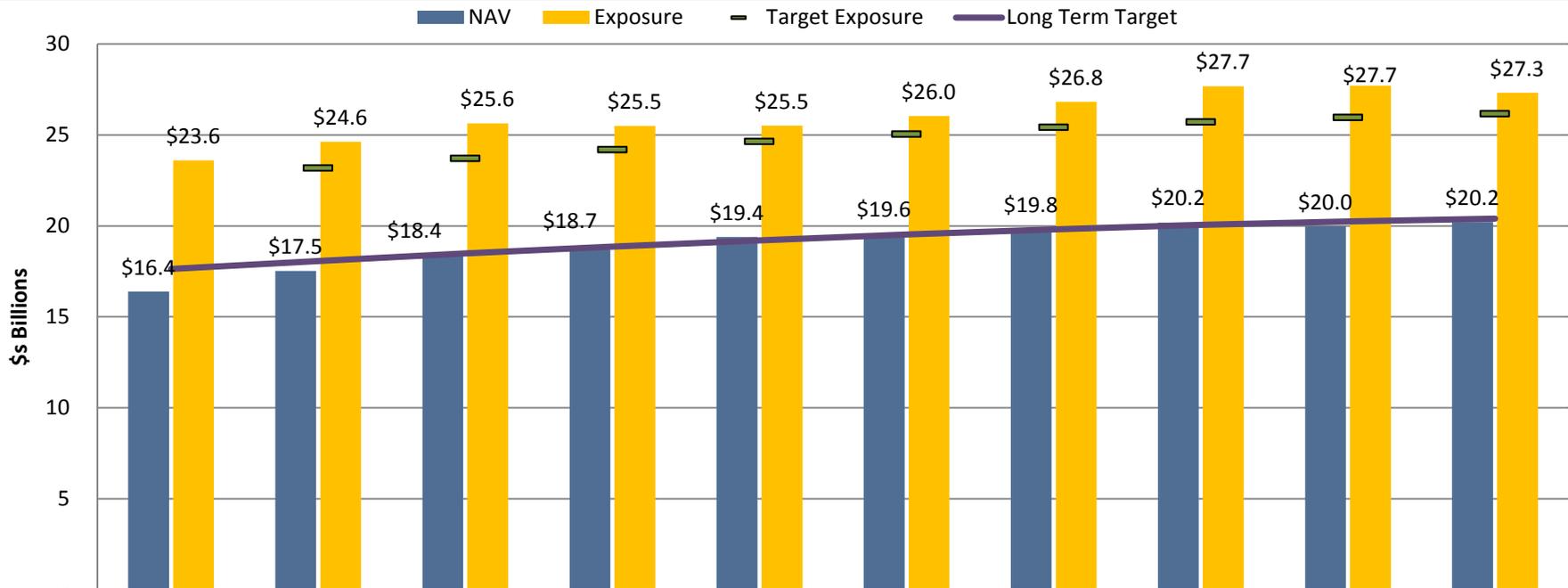


Portfolio Structure

Long-term Funding Plan, as of December 31, 2012

- We expect to be self-funding in 2015

Total RA Portfolio NAV and Exposure (2013-2022)



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Capital Plan:	\$2,895	\$1,910	\$2,110	\$1,810	\$1,480	\$2,320	\$2,415	\$2,420	\$2,410	\$1,750
RA % of Trust:	14.0%	14.6%	15.0%	15.0%	15.2%	15.1%	15.1%	15.1%	14.8%	14.9%
Capital Calls:	\$2,625	\$2,619	\$1,693	\$2,009	\$1,960	\$1,912	\$1,784	\$1,804	\$2,103	\$1,830
Distributions ¹ :	\$1,827	\$1,810	\$2,016	\$3,066	\$2,263	\$2,463	\$2,354	\$2,589	\$3,062	\$2,786
"Net" Outflows:	\$799	\$809	(\$322)	(\$1,056)	(\$302)	(\$551)	(\$570)	(\$784)	(\$959)	(\$956)

¹ Distributions represent return of Net Asset Value

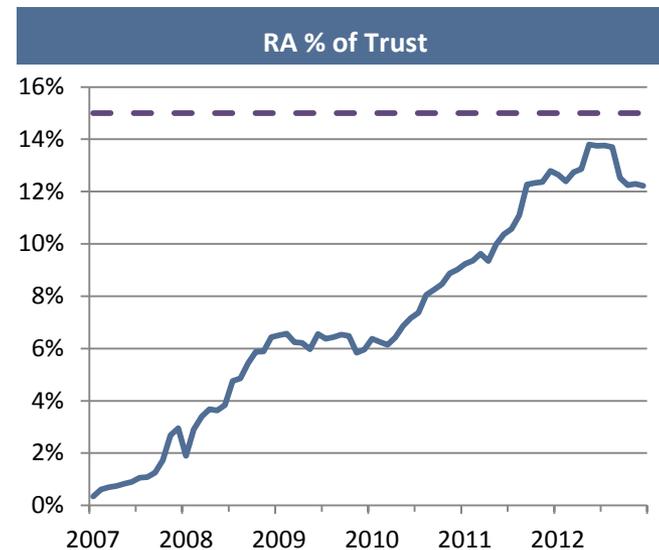


Asset Growth, Allocation and Returns

Period Ending December 31, 2012

Growth (\$ millions)	1-YR	3-YR	5-YR
Starting Value	\$11,216	\$3,891	\$1,909
Contributions	2,650	9,767	13,507
Distributions	1,390	2,503	2,585
Investment Return	1,417	2,738	1,062
Ending Value	\$13,893	\$13,893	\$13,893

Premier List Investments	Total	Invested Last 12 Months	Invested Last 24 Months
Number of Premier Managers	41	12	24
Percent Invested in Funds	76%	93%	87%
Percent invested in Principal Investments	24%	7%	13%



Style	TRS Leverage ¹	Typical Leverage	Allocation			Investment Returns			Inception Date
			2012	2009	2007	1-YR TWR	3-YR TWR	SI TWR	
Core	35.7%	35% - 50%	29%	27%	14%	12.0%	14.4%	5.0%	2006
Value Added	42.1%	50% - 65%	13%	10%	17%	15.3%	9.0%	-5.3%	2006
Opportunistic	40.4%	65% - 80%	32%	23%	24%	12.0%	9.6%	-3.0%	2006
RASS	17.7%	Varies	9%	0%	0%	24.3%	n/a	20.2%	2010
Other Real Assets	19.2%	< 70%	16%	9%	5%	7.3%	6.8%	-1.2%	2007
Emerging Managers	50.0%	70%	1%	0%	0%	2.3%	n/a	0.2%	2011
Private Real Assets	40.9%		100%	69%	60%	12.7%	11.5%	2.0%	2005
Passive REITs	n/a		0%	31%	40%	17.9%	18.0%	9.8%	2007
Real Assets Total	n/a		100%	100%	100%	13.6%	13.6%	3.6%	2005



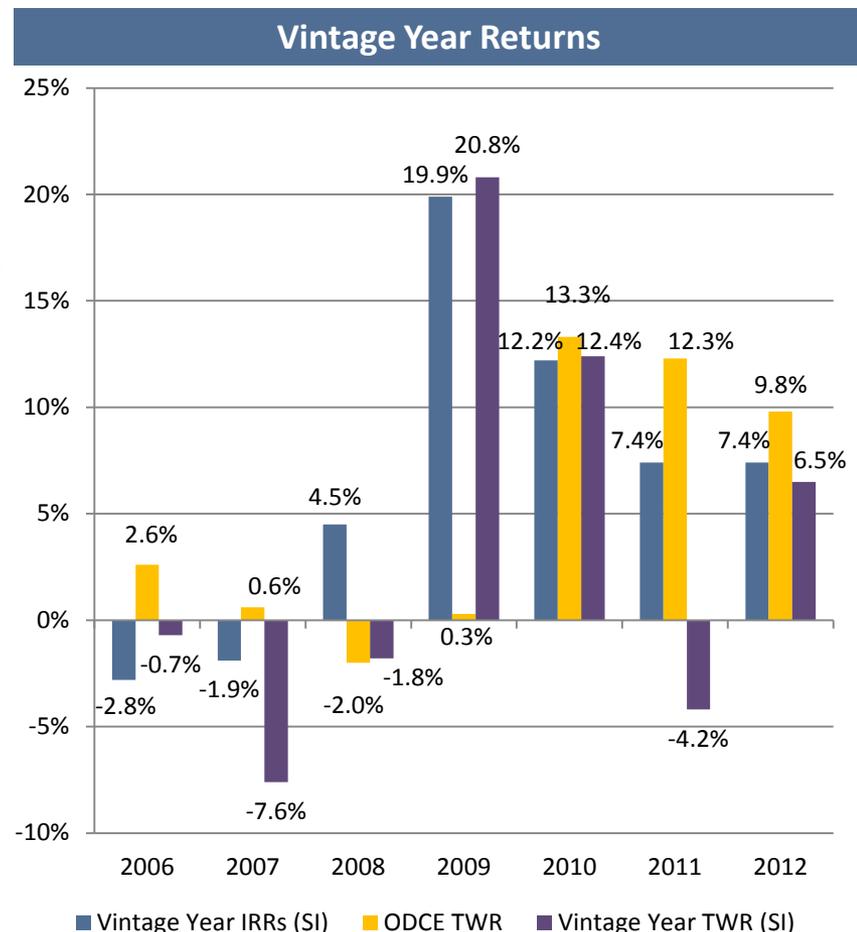
¹ State Street Private Edge

TRS Vintage Year Comparison

As of December 31, 2012

- The Real Asset portfolio is well positioned with the majority of the investments having been made after the Global Financial Crisis

TRS Real Assets Vintage Year Cycle (\$ millions)						
Year	Committed	Invested	Remaining	Vintage YR IRR (SI)	Vintage YR TWR (SI)	ODCE TWR
2006	\$1,419	\$1,381	\$38	-2.8%	-0.7%	2.6%
2007	3,358	3,058	300	-1.9%	-7.6%	0.6%
2008	3,769	3,187	582	4.5%	-1.8%	-2.0%
2009	2,751	2,216	535	19.9%	20.8%	0.3%
2010	5,811	3,569	2,243	12.2%	12.4%	13.3%
2011	1,926	851	1,075	7.4%	-4.2%	12.3%
2012	2,173	532	1,641	7.4%	6.5%	9.8%



Accomplishments and Priorities

2012 Accomplishments

- Committed \$2.2 billion
 - Committed \$360 million in 4 principal investments
- Collaborated with Risk Group and developed risk management and monitoring tools
- Returned 12.7% and 11.5%, respectively for 1 and 3 year periods
- Provided 1-year alpha of 220 basis points and 3-year alpha of 40 basis points
- Named 2012 North American Limited Partner of the Year by PERE (three of the past four years)

2013 Priorities

- Commit up to \$2.9 billion
- Continue the successful principal investments program with a goal of \$300 million in commitments
- Continue to collaborate with Risk Group on the new Real Asset risk modeling
- Review the interest rate and currency exposure within the Real Assets portfolio
- Continue to develop the Real Assets team
- Continue to be a thought-leading limited partner

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Market Conditions

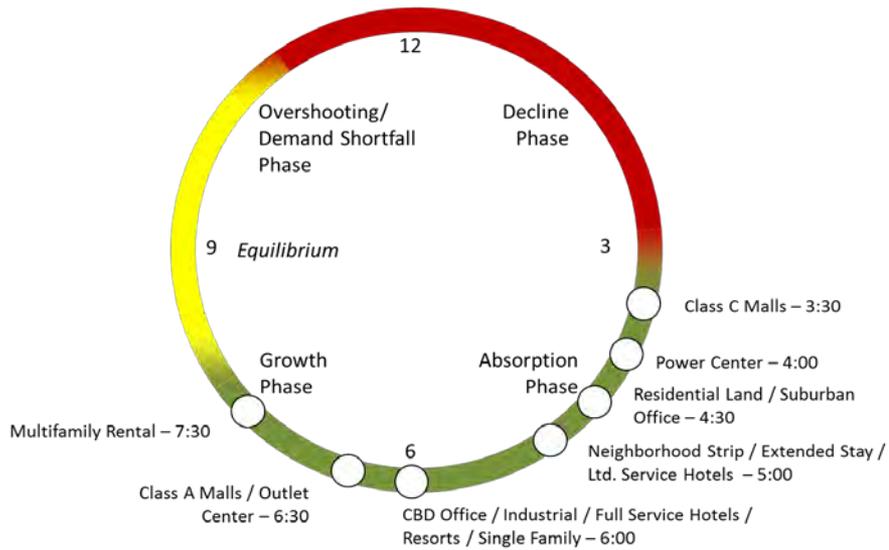
Domestic Only

	2012 ("Today")	2009 ("Trough")	2007 ("Peak")	2002 ("Pre-Peak")	10 year Average
Capital Flows (billions)					
Total Net Capital Flows	\$228	-\$263	\$308	\$135	\$169
REIT Capital Offerings	\$78	\$45	\$47	\$40	\$49
Fund Dollars Raised	\$40	\$27	\$61	\$10	\$37
Number of Funds	103	100	155	53	105
Transactions (billions)					
All Transactions	\$248	\$55	\$393	\$103	\$205
% of US GDP	1.6%	0.4%	2.8%	1.0%	n/a
Fund Transactions	\$30.1	\$3.7	\$69.6	\$7.6	\$25.0
Institutional Transactions	\$52	\$7	\$62	\$20	\$34
Private Transactions	\$110	\$32	\$176	\$41	\$93
Pricing					
Cap Rates	6.9%	7.6%	6.6%	8.7%	7.2%
Cap Rate Spread to UST	5.1%	4.0%	2.5%	4.6%	3.7%
Debt					
CMBS Issuance	\$46	\$1	\$230	\$52	\$85
Percent Debt	60-65%	65-70%	65-85%	65%	65%-70%
Availability (1=hard to access; 10=easy)	5	2	10	5	5
Terms	Tight Standards	Tight Standards	Covenant Light	Tight Standards	n/a
Interest Rate	3.5% - 5.5%	4.5% - 6.5%	4.5%-6.5%	5.0%-7.0%	

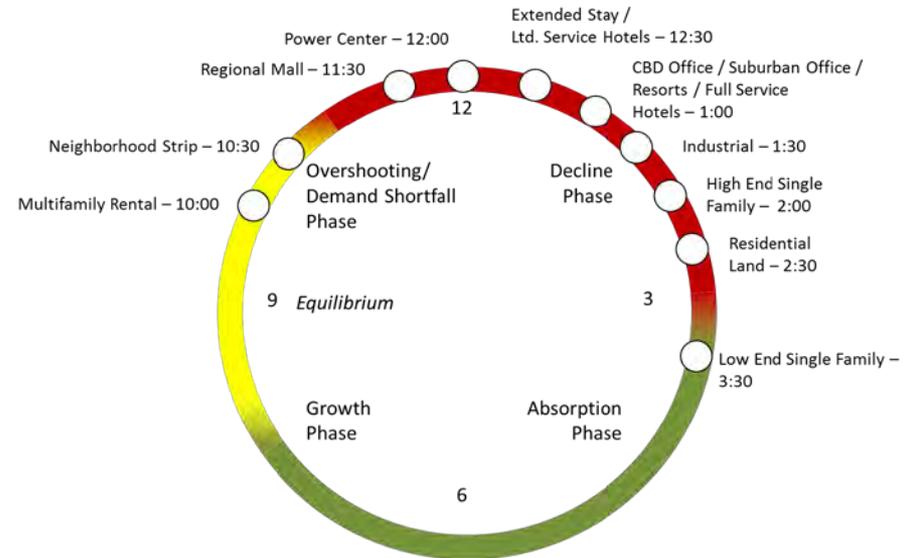
Market Conditions

Real Estate Cycle

End of Year 2012



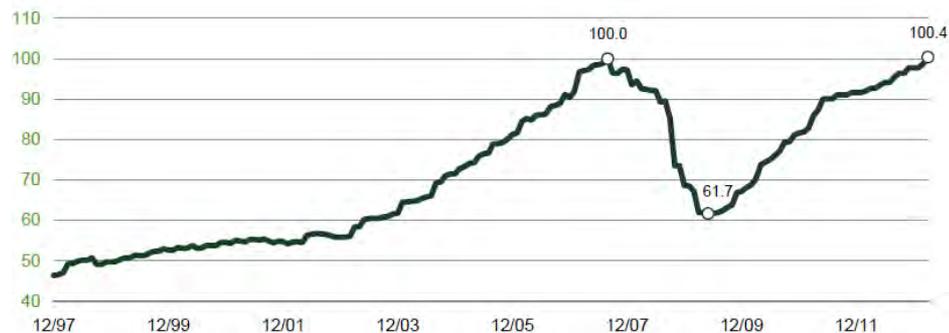
End of Year 2009



Market Conditions

- It has taken five to six years for commercial property values to recover their values
- Most of the recovery is in top-tier markets

Green Street Commercial Property Price Index



Green Street Commercial Property Price Index is indexed to 100 in August '07.

- REITs have traded to a premium of their Net Asset Value for a few years
- Investors are looking for yield

Green Street REIT Valuations



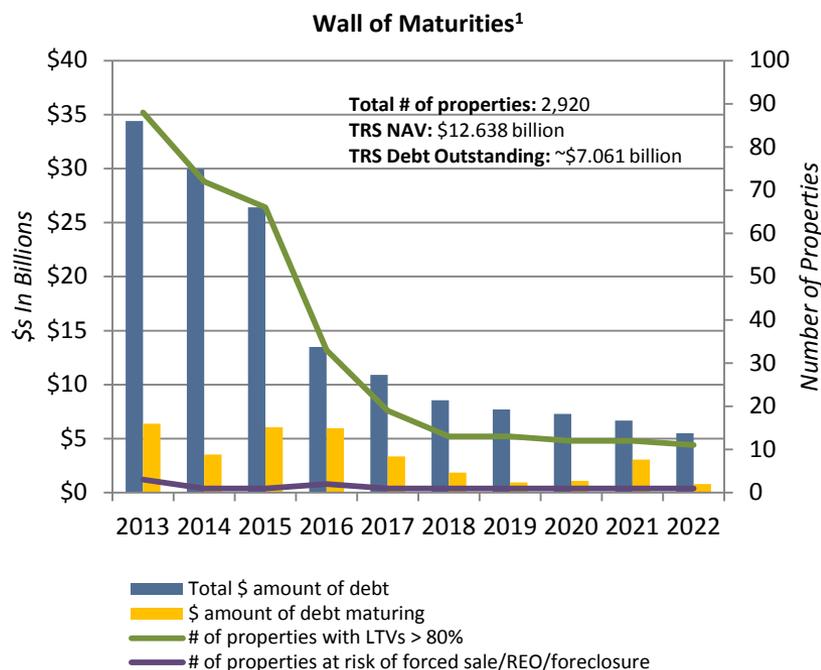
Source: Green Street Advisors



Other Considerations

Macro Issues

- Unemployment is getting better but tenants are not expanding
- Difficult to find value in new Core Real Estate acquisitions
- TRS' debt roll-over is not an issue



General Partners

- Increasing focus on Premier List Firms
- Managers are still having difficulty raising funds
- Large Canadian and European investors are going alone and not investing in funds
- PREA standardization efforts

Organization

- As the portfolio matures, the team has a greater focus on portfolio and asset management
- Continuing focus on Principal Investments and unique vehicles
- SPN-specific unit was created
- ENR-specific unit was created

¹ TRS Real Assets portfolio, data as of June 2012

Summary

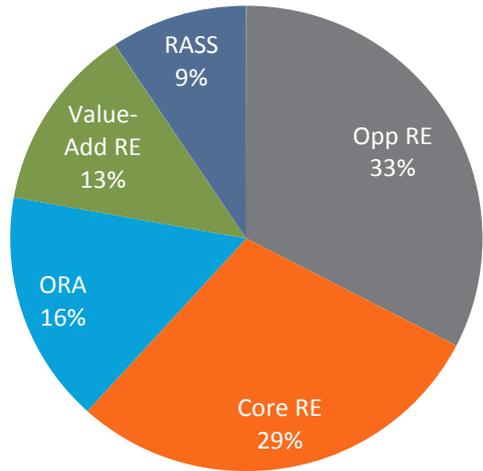
- Real Asset allocation is projected to reach long-term neutral target (15%) by 2014
 - Strong 2013 Trust growth may delay reaching target allocation
- Historical Results
 - Performance on a one and three-year basis are on target and above the benchmark
 - Risk and correlations within expectations
- Funding needs will decline
- General Partner relationships strong and increasingly focused
- Strategic Partnerships functioning well
- Principal Investment capabilities rising and results satisfactory
- Markets conditions are neutral to fully priced, difficult to find value

APPENDIX

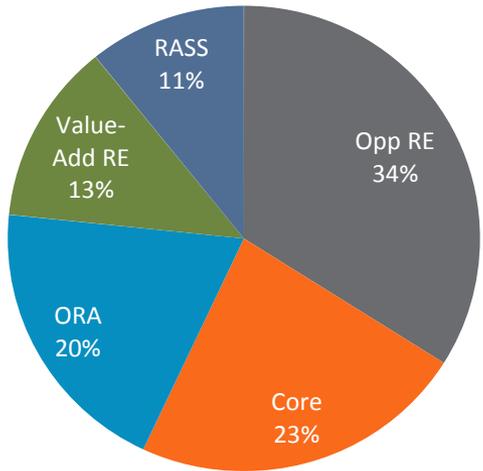
Real Assets Portfolio Composition

As of December 31, 2012

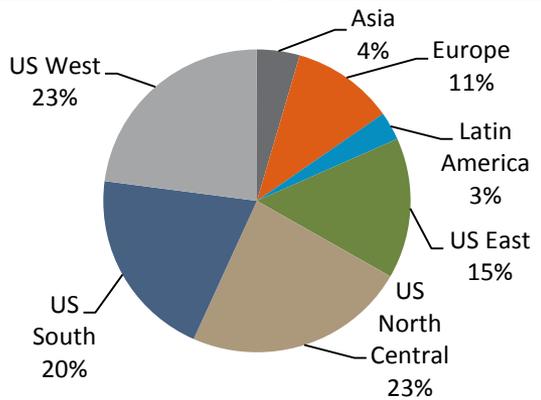
Market Value by Strategy



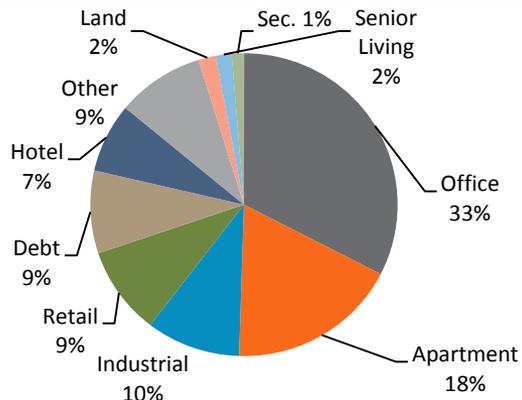
Exposure by Strategy



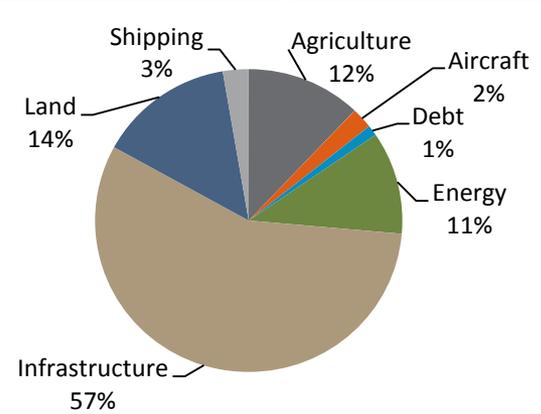
Private Real Estate – Region by Property Diversification by Market Value



Private Real Estate – Property Type Diversification by Market Value



Other Real Assets – Diversification by Market Value



Note: All Real Asset compositions include Energy Natural Resources (ENR) and Emerging Manager (EM) allocations

Real Asset Strategy Definitions

- **Core**
 - Institutional quality, best-located and best-leased assets in the market in each of the traditional property types (office, multifamily, retail, industrial)
 - Leverage limit is 50% loan-to-value (LTV)
- **Value-Add**
 - Return-enhancing strategies executed at the property level designed to enhance value through execution of one or more of the following strategies: lease-up, rehabilitation, repositioning
 - Typical leverage is 50% to 65% LTV
- **Opportunistic**
 - Broad range of risk and return via opportunity funds, specialized investments, and mezzanine debt or equity with the majority of strategies involving some level of development or distress
 - Leverage is usually 70% LTV and higher
- **Real Assets Special Situations (RASS)**
 - Publicly traded shares of listed REITs (Real Estate Investment Trusts) and REOCs (real estate operating companies) or other real asset related entities, public or private real asset debt, energy MLPs (Pipelines)
- **Other Real Assets (ORA)**
 - Infrastructure, oil and gas, commodities, agricultural real estate, timber, and other opportunistic investments providing value enhancement with relatively low expected volatility

Types of Principal Investments

Co-Investment (Alongside a Fund)	Direct (Two Types)	Single Limited Partnership (LP) Fund	Sidecar (Two Types)
<p>What: A specific investment opportunity that is brought to TRS by an existing manager</p> <p>Why: Manager needs more capital than is available in the main fund (due to size, concentration, etc.)</p> <ul style="list-style-type: none"> • TRS equity invests alongside main fund and GP serves as fiduciary of the co-investment vehicle • RA terms are usually negotiated as half (50% discount) compared to the main fund fees/promote, PE terms are '0%/0%' • Typically in/out on same timing & terms as GP <p>Examples: CBRE - Wood I and II , AEW SHI, Academy and Samson</p>	<p>What: A specific investment that can be underwritten and evaluated immediately</p> <p>Why: Allows TRS to capitalize on a specific investment opportunity in real-time</p> <p><u>With a Manager</u></p> <ul style="list-style-type: none"> • Majority of capital comes from TRS • TRS underwrites the investment alongside manager • Unlike a Co-Investment – TRS may have the ability to control hold period and exit decision <p>Examples: TLF, Bravern, and Wood III, Project Allstar, Project Cheetah, Project Expedition</p> <p><u>Without a Manager</u></p> <ul style="list-style-type: none"> • All capital comes from TRS • TRS underwrites the investment and receives a prudent investor letter from external advisors • Unlike a Co-Investment – TRS has ability to control hold period and exit decision <p>Example: Bridgewater, Delta Topco (Formula 1), General Growth Properties, ProLogis</p>	<p>What: Fund created with a specific strategy to invest over an Investment period. No pre-specified assets.</p> <p>Why: Create a vehicle to target a specific strategy and invest over a period of time</p> <ul style="list-style-type: none"> • Usually 100% TRS capital • TRS has opt-out rights (negative control) and reviews each investment • Can be open-ended and recycle capital • Terms are market driven (but less than a commingled fund) • TRS has ability to control hold period and exit decision <p>Examples: USAA-US Republic Fund, Invesco-San Jacinto Fund</p>	<p>What: Fund created alongside a main fund</p> <p>Why: Fees and/or promote are lower than main fund and negotiated in advance</p> <p><u>TRS Control (PI)</u> – TRS has opt-out rights and more control over which deals are put into the sidecar</p> <ul style="list-style-type: none"> • TRS controls decision to invest in a specific investment alongside the fund • Gives manager pre-committed co-investment capital for deals with short time-lines <p>Examples: Principal Green and Square Mile</p> <p><u>Manager Controlled (Non-PI)</u> – Manager has discretion for when to allocate sidecar capital to opportunities – either pro-rata in every deal or manager drives investment decision</p> <ul style="list-style-type: none"> • Purpose: Lower overall blended fee drag for TRS <p>Examples: Encap – TTEF and Walton Street V</p>

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Energy and Natural Resources Portfolio Fit

Jase Auby
Chief Risk Officer
June 2013

Contents

- Portfolio Fit
- Inflation Sensitivity
- Liquidity Risk
- Preliminary Benchmark

Introduction

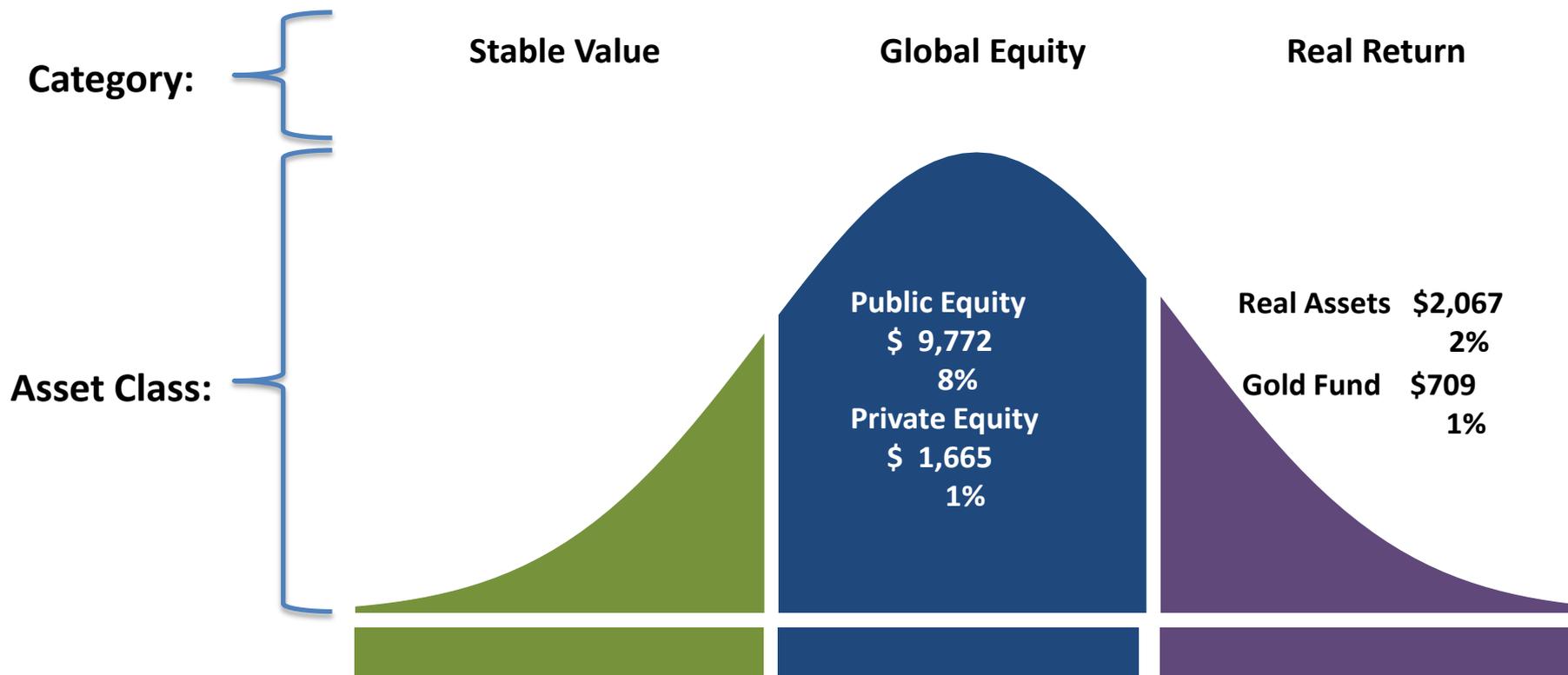
We have reviewed the portfolio fit, potential benchmark and inflation sensitivity of an Energy and Natural Resources (ENR) allocation to the Trust

- **Existing Investments.** The Trust currently has 12.0% invested in ENR investments. 2.3% of these assets are held in concentrated ENR portfolios which would transfer to a new ENR policy asset allocation
- **New 3% Policy Allocation.** The analysis herein reviews a preliminary new benchmark for a 3% policy allocation to ENR with 2% coming from the current Real Assets benchmark and 1% coming from the current Private Equity benchmark
 - The preliminary new benchmark is a blend of the Cambridge Associates Natural Resources Index (75%) and the Consumer Price Index (25%)
- **Increased Policy Allocation.** In addition, we analyze a future 2% expansion of this 3% to 5% under two scenarios:
 - Case 1 – 2% future allocation to ENR funded from 1% US Large Cap and 1% Non-US Developed
 - Case 2 – 2% future allocation to ENR funded from 2% US TIPS
- **Inflation Sensitivity.** We also review the inflation sensitivity of Energy and Natural Resources investments

Natural Resources Investments in the Trust

Across Multiple TRS Strategies

TRS has holdings in Natural Resources across the Trust in the following groups:



For Period Ending March 31, 2013

Total TRS Assets In Natural Resources: \$ 14.2 Billion NAV

\$ 16.8 NAV plus Committed/Unfunded

Percent of Trust: 12.0% NAV



Source: TRS

Portfolio Fit

New ENR Policy Asset Allocation

	Asset Allocation					Tracking Error				
	Policy	Actual			VaR		Contribution			
		ow/uw	Alone	Contrib	Alone	Alloc	Select	Total		
Current Fund										
Public Fund	73%	75.1%	+2.1%	7.0%	0.5%	112	79	31	110	
Private Equity	12%	11.7%	-0.3%	13.6%	-0.1%	164	-6	4	-2	
Real Assets	15%	12.6%	-2.4%	13.1%	0.0%	534	-30	59	28	
Gold Fund	0%	0.6%	+0.6%	13.9%	-0.1%	3435	n/a	1	1	
Total Fund	100%	100.0%	+0.0%	8.4%	0.3%	138	43	94	138	
Benchmark				8.1%						
Current Fund with ENR Assets Split Out										
Public Fund	73%	75.1%	+2.1%	7.0%	0.4%	112	70	30	101	
Private Equity	12%	11.1%	-0.9%	13.9%	0.0%	169	4	7	10	
Real Assets	15%	11.6%	-3.4%	13.5%	0.1%	602	-20	54	34	
ENR Total	0%	2.3%	+2.3%	9.5%	-0.2%	1599	-12	4	-8	
Total Fund	100%	100.0%	+0.0%	8.4%	0.3%	138	42	95	138	
Benchmark				8.1%						
ENR -- Private	0%	1.7%	+1.7%	10.8%	-0.1%	1461		2	2	
ENR -- Gold Fund	0%	0.6%	+0.6%	13.9%	-0.1%	3294		2	2	
Current Fund with Preliminary New ENR Benchmark										
Public Fund	73%	75.1%	+2.1%	7.0%	0.4%	112	71	29	100	
Private Equity	11%	11.1%	+0.1%	13.9%	0.0%	169	2	8	10	
Real Assets	13%	11.6%	-1.4%	13.5%	0.1%	602	-22	61	39	
ENR Total	3%	2.3%	-0.7%	9.5%	-0.1%	832	-10	4	-6	
Total Fund	100%	100.0%	+0.0%	8.4%	0.4%	143	40	103	143	
Benchmark				8.0%						
ENR -- Private	3%	1.7%	-1.3%	10.8%	0.0%	298		2	2	
ENR -- Gold Fund	0%	0.6%	+0.6%	13.9%	-0.1%	3084		2	2	

Of the 12.0% total NAV within the Trust, 2.3% would transfer to the new ENR policy asset allocation

Absolute risk remains constant

New benchmark reduces tracking error

Portfolio Fit

Potential Future Increase of ENR Allocation from 3% to 5%

	Asset Allocation			VaR		Tracking Error			
						Contribution			
	Policy	Actual	ow/uw	Alone	Contrib	Alone	Alloc	Select	Total
Case 1 -- Increase ENR from 3% to 5% / Decrease USLC by 1% and Non-US Developed by 1%									
Public Fund	71%	72.3%	+1.3%	6.9%	0.4%	129	74	28	102
Private Equity	11%	11.1%	+0.1%	13.9%	0.0%	169	2	8	9
Real Assets	13%	11.6%	-1.4%	13.5%	0.1%	602	-23	62	39
<u>ENR Total</u>	<u>5%</u>	<u>5.0%</u>	<u>+0.0%</u>	<u>10.0%</u>	<u>-0.1%</u>	<u>355</u>	<u>0</u>	<u>2</u>	<u>2</u>
Total Fund	100%	100.0%	+0.0%	8.4%	0.5%	152	53	99	152
Benchmark				8.0%					
ENR -- Private	5%	4.4%	-0.6%	10.5%	0.0%	0		0	0
ENR -- Gold Fund	0%	0.6%	+0.6%	13.9%	-0.1%	3084		2	2
Case 2 -- Increase ENR from 3% to 5% / Decrease US TIPS by 2%									
Public Fund	71%	72.3%	+1.3%	7.2%	0.4%	128	73	29	101
Private Equity	11%	11.1%	+0.1%	13.9%	0.0%	169	2	8	10
Real Assets	13%	11.6%	-1.4%	13.5%	0.1%	602	-22	61	38
<u>ENR Total</u>	<u>5%</u>	<u>5.0%</u>	<u>+0.0%</u>	<u>10.0%</u>	<u>-0.1%</u>	<u>355</u>	<u>0</u>	<u>2</u>	<u>2</u>
Total Fund	100%	100.0%	+0.0%	8.6%	0.4%	151	52	100	151
Benchmark				8.2%					
ENR -- Private	5%	4.4%	-0.6%	10.5%	0.0%	0		0	0
ENR -- Gold Fund	0%	0.6%	+0.6%	13.9%	-0.1%	3084		2	2

An increase funded by equity is neutral to VaR and marginally increases tracking error

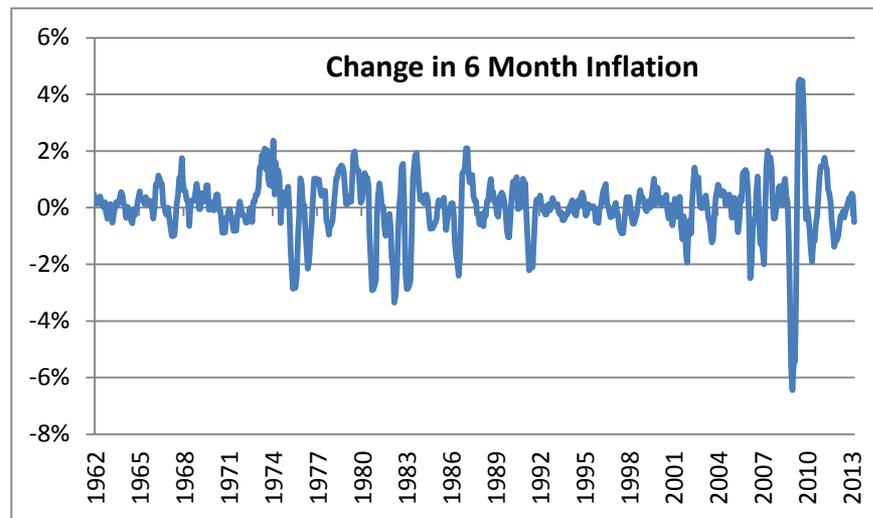
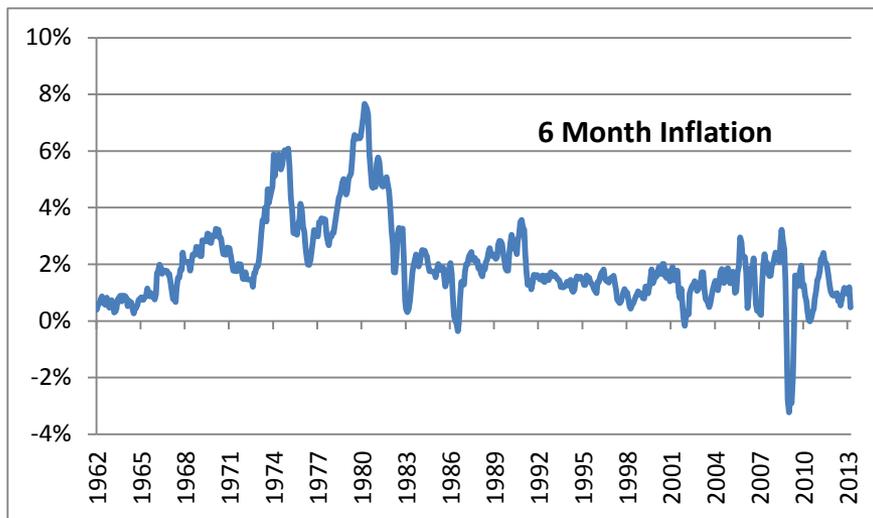
An increase funded by US TIPS increases VaR and tracking error

Source: State Street Risk Services



Inflation Sensitivity

- A primary motivation to invest in Energy and Natural Resources is to obtain higher sensitivity to **rising / falling inflation**

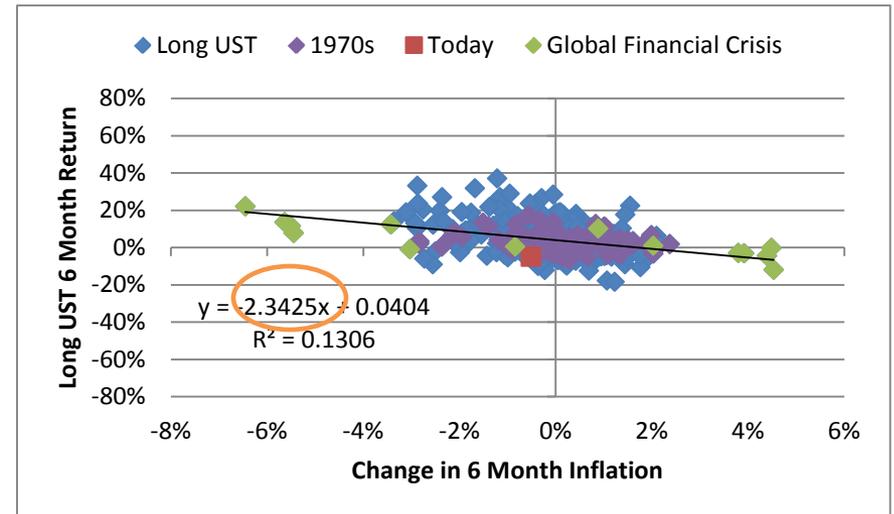
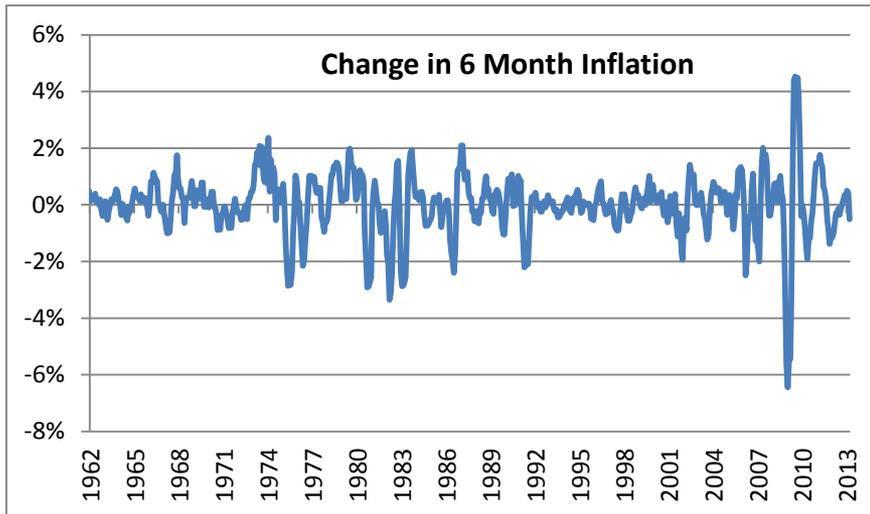
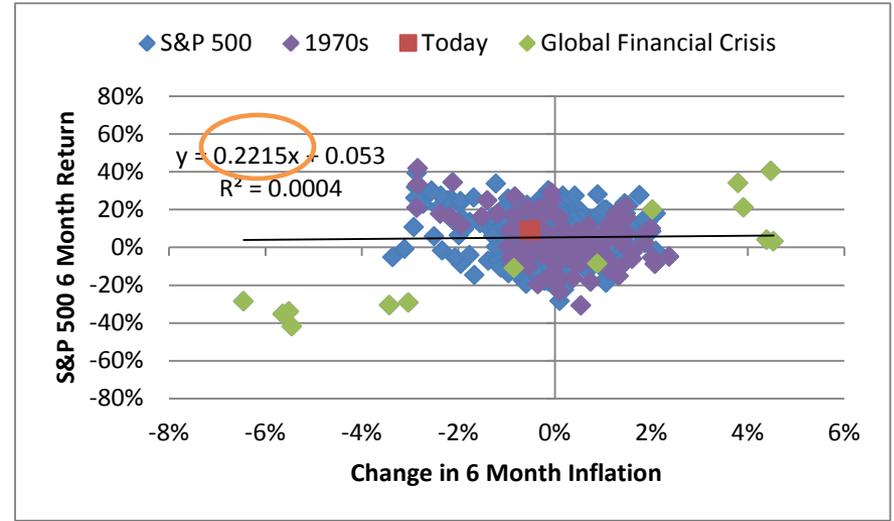
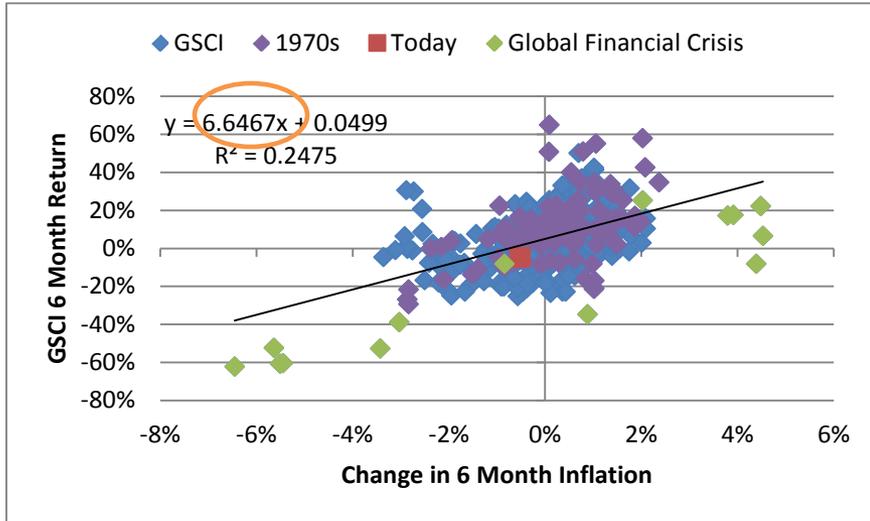


- The Trust's best inflation-linked assets are Commodities and US TIPS. However, these are low or zero-yielding assets. Investing in Energy and Natural Resources provides increased inflation sensitivity while also providing current return

Source: TRS Calculations, Bloomberg

Inflation Sensitivity

1962 to Today – Investment Returns versus Rising / Falling Inflation



Source: TRS Calculations, Bloomberg

Inflation Sensitivity circled in orange



Inflation Sensitivity

1962 to Today – Equity Sectors

Key

ENR Equity Sectors

Other Equity Sectors

Bonds

Commodities



← 1962 to Today

← 1970s

Global Financial Crisis
(4/2008 to 10/2009) →



Source: TRS Calculations, CRSP Database, Bloomberg

Liquidity Risk

- An incremental 2% to ENR would have a small liquidity impact

Sources of Liquidity (\$, billions)	Market Value	Stressed Value	
		Current	+2% ENR
Liquid Assets Not on Loan (Cash, UST, TIPS, Equity, Commodities)	\$59.4	\$34.3	\$33.0
Securities Lending Collateral (Cash, Fixed Income)	\$22.5	\$17.9	\$17.9
Total Sources of Liquidity	\$82.0	\$52.2	\$50.9
<i>Note: Excluded Illiquid Assets (PE, Real Assets, HF, Other)</i>	\$39.0	NA	NA
<i>Note: Excluded Liquid Assets remaining on loan</i>	\$19.1	NA	NA

Uses of Liquidity (\$, billions)	Market Value	Stressed Value	
		Current	+2% ENR
Normal Uses of Liquidity	-\$0.3	-\$0.3	-\$0.3
Stressed Securities Lending		-\$2.4	-\$2.4
Stressed Derivatives		-\$1.0	-\$1.0
Stressed Private Markets		-\$2.7	-\$2.7
Total Uses of Liquidity	-\$0.3	-\$6.4	-\$6.4

Liquidity Ratio		
Sources of Liquidity	\$52.2	\$50.9
Uses of Liquidity	-\$6.4	-\$6.4
Ratio (Sources/Uses)	8.2	8.0
Alert Threshold	4.0	4.0
Fail Threshold	3.0	3.0
Test Result	Pass	Pass
<i>Note: Net Liquidity (Sources less Uses)</i>	\$45.8	\$44.5
<i>Note: 12 Months Benefit Payments (at 4% Annual)</i>	\$4.7	\$4.7

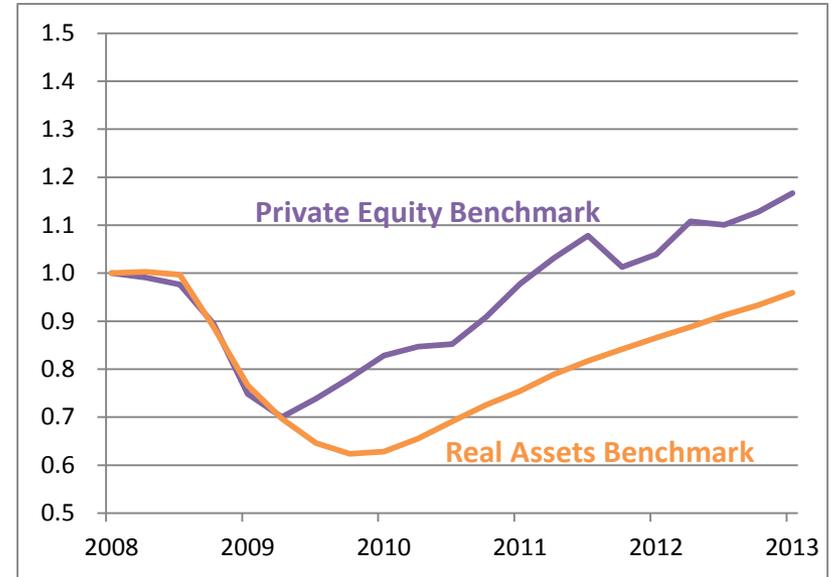
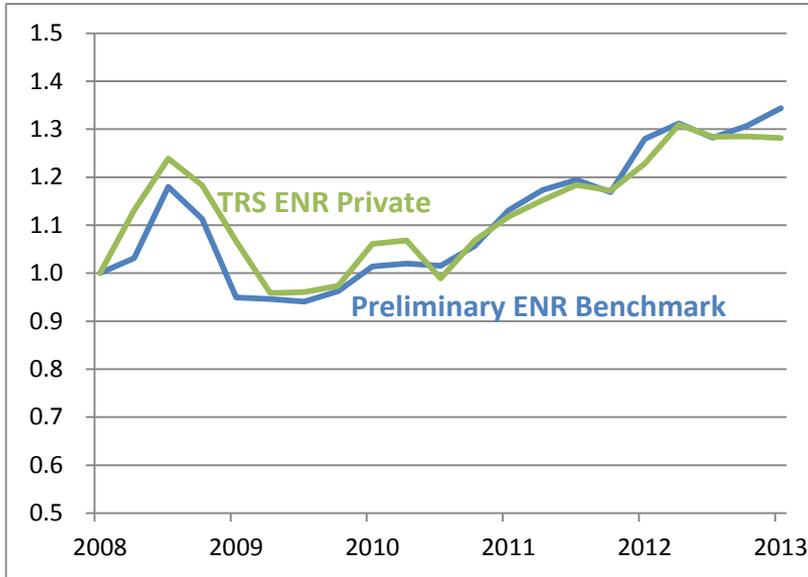
Preliminary Benchmark

- **Preliminary benchmark.** 75% Cambridge Associates Natural Resource Index (Reweighted) plus 25% Consumer Price Index (CPI)
- **Preliminary implementation date.** October 1, 2013
- **ENR benchmark is difficult to define.**
 - The asset class is not well defined
 - Institutional investing in natural resources is a newer discipline
 - There is no standard for the industry and no one does it particularly well
- **Composition/Return/Volatility.** An appropriate benchmark will be established that reflects the asset composition, expected return and volatility of the ENR investment strategy. Candidates include:
 1. Private-based: An index of private natural resources funds funds
 2. Equity-based: Publicly traded MLPs and MSCI ACWI commodity producers industries
 3. Commodities-based: S&P Goldman Sachs Commodities Indices (GSCI)
 4. Inflation-based: Consumer price index (CPI)

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Preliminary Benchmark

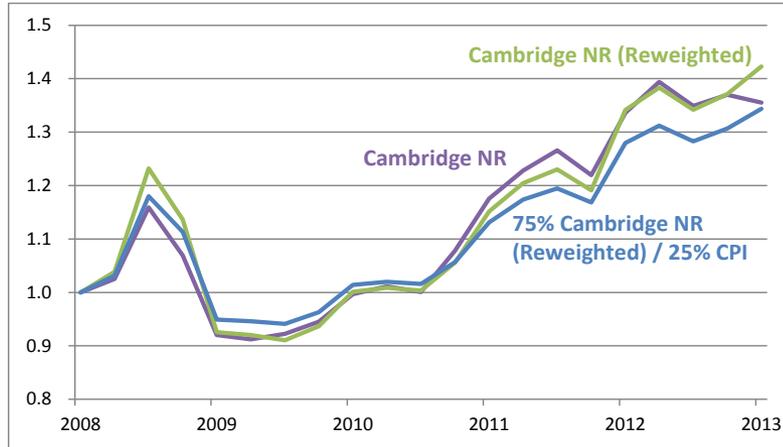
Preliminary Benchmark for ENR Portfolio



Key	Asset Class	Index	June 2008 to March 2013 Annualized	
			Return	Volatility
	Preliminary ENR	75% Cambridge NR (Reweighted) / 25% CPI	5.8%	11.7%
	TRS ENR Private		4.8%	12.6%
	Private Equity	State Street Private Equity Index	3.0%	12.3%
	Real Assets	NCREIF ODCE	-0.8%	11.5%

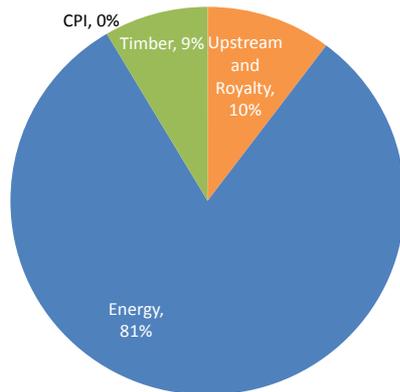
Preliminary Benchmark

Cambridge Natural Resources Index

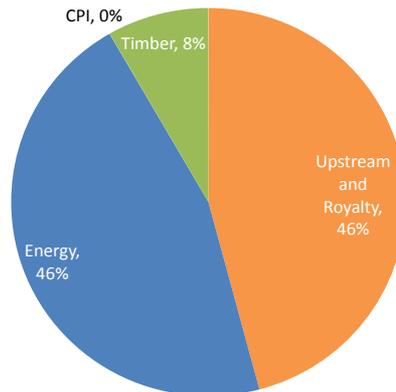


Key	Index	June 2008 to March 2013 Annualized	
		Return	Volatility
—	Cambridge Natural Resources	6.0%	12.3%
—	Cambridge Natural Resources (Reweighted)	6.9%	15.1%
—	75% Cambridge NR (Reweighted) / 25% CPI	5.8%	11.7%

Cambridge Associates Natural Resources Index

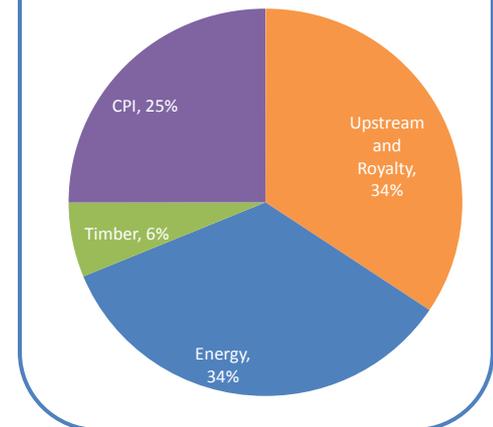


Cambridge Associates Natural Resources Index (Reweighted)



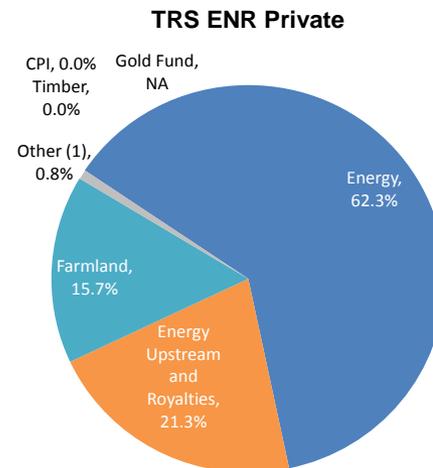
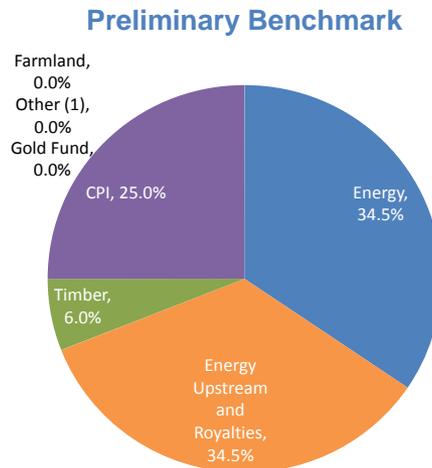
Preliminary Benchmark

75% Cambridge Associates Natural Resources (Reweighted) / 25% CPI



Preliminary Benchmark

Preliminary Benchmark Weights



As of 3/31/2013	Preliminary	Actual TRS ENR	
	ENR Benchmark	Private	Private + Gold
Energy	34.5%	62.3%	43.6%
Energy Upstream and Royalties	34.5%	21.3%	14.9%
Timber	6.0%	0.0%	0.0%
Farmland	0.0%	15.7%	11.0%
Gold Fund	0.0%	NA	30.0%
Other (1)	0.0%	0.8%	0.5%
<u>CPI</u>	<u>25.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total	100.0%	100.0%	100.0%

(1) Other includes water, steel, fertilizer

Source: TRS Calculations, State Street



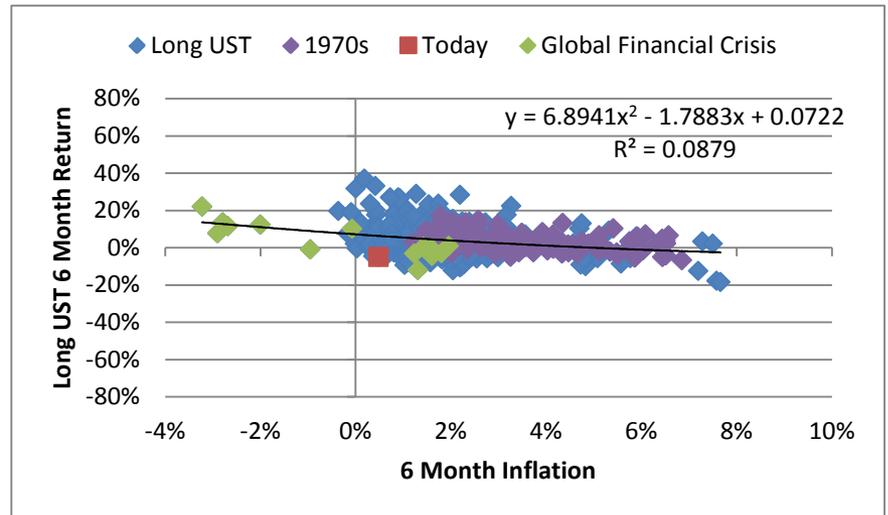
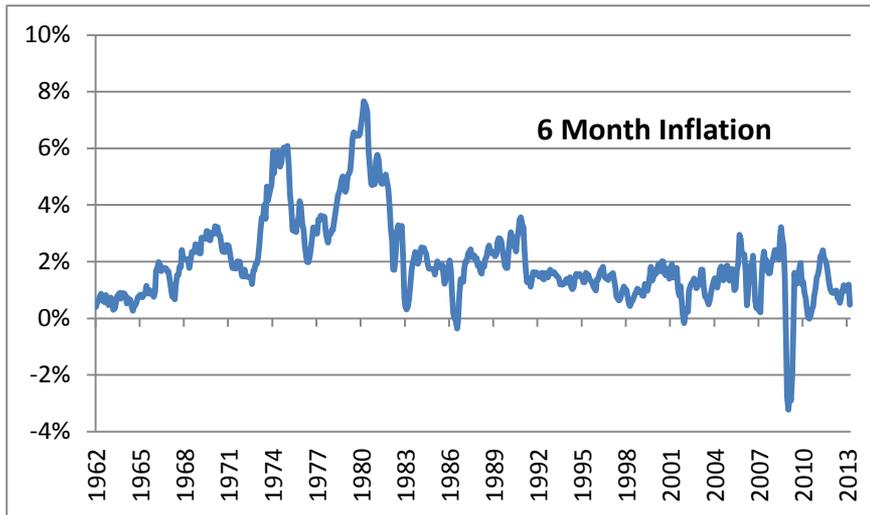
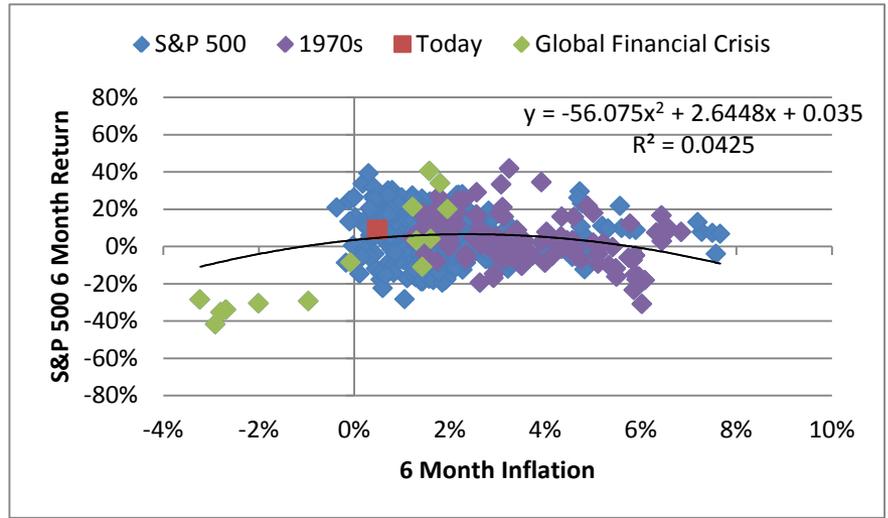
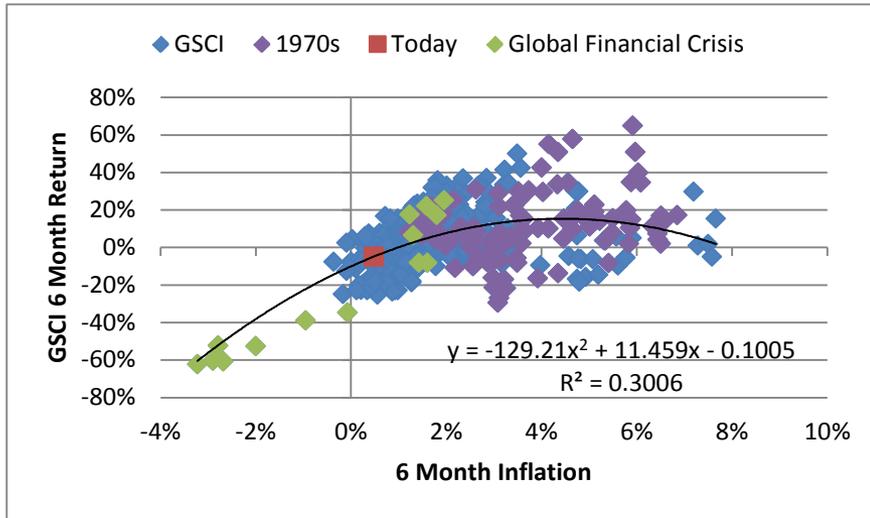
Conclusion

- A 3% allocation to Natural Resources will have a neutral effect on the VaR and tracking error measures of the Trust while providing the Trust a more effective hedge against rising inflation
- An increased allocation to 5% will either be neutral (if funded from equity) or marginally risk additive (if funded from US TIPS)
- Natural Resources benchmarks are very difficult to specify
 - A preliminary benchmark comprised of 75% Cambridge Natural Resources Index (Reweighted) and 25% Consumer Price Index reduces tracking error and better matching the existing and proposed investments in the new allocation

APPENDIX

Inflation Sensitivity

1962 to Today – Investment Returns versus Inflation



Inflation Sensitivity

2007 to Today – MSCI ACWI Sub-Industries

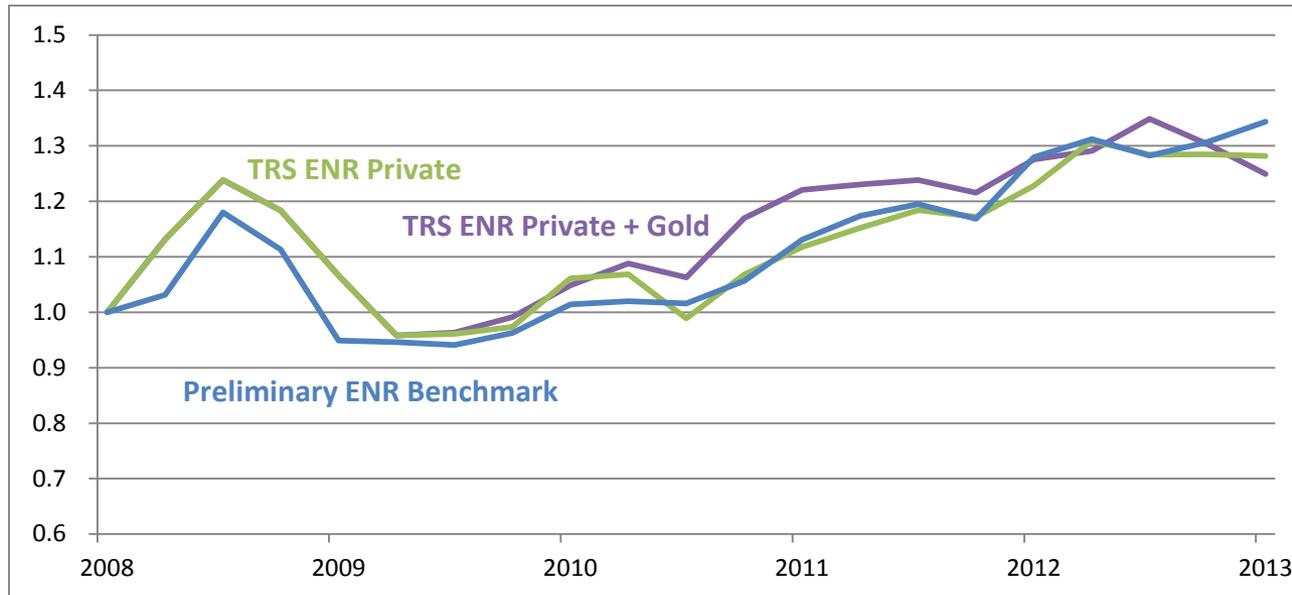
ACWI Coal and Consmbl Fuel	14.5	ACWI House Appliances	8.9	ACWI Human Res and Empl Svc	7.2	ACWI Health Care Distr	4.9
ACWI Real Estate Svc	13.7	ACWI Motorcycle Manufact	8.9	ACWI Altern Carriers	7.1	ACWI Air Frght and Logistics	4.8
ACWI Aluminium	13.6	ACWI Asset Mgmt and Cust B	8.9	ACWI	7.1	ACWI Air Frght and Logistics	4.8
ACWI Divers Metals and Mng	13.5	ACWI Cons Electronics	8.8	ACWI Specialty Chemicals	7.0	ACWI Aero and Defense	4.8
ACWI Precious Met and Mnrl	12.7	ACWI Health Care Fcltys	8.6	ACWI Ind Gases	7.0	ACWI Automotive Retail	4.8
ACWI Catalog Retail	12.5	ACWI Broadcasting	8.6	ACWI Computer Hardware	6.7	ACWI General Merch Store	4.8
ACWI Electronic Mfg Svc	12.0	ACWI Airport Svc	8.5	ACWI Apparel Retail	6.7	ACWI Wirel Telecom Svc	4.6
ACWI Real Estate Dev	11.9	ACWI Hotel Resort and Cruise	8.5	ACWI It Consltng and Oth Svc	6.7	ACWI Security and Alarm Svc	4.5
ACWI Steel	11.7	ACWI Semiconductors	8.5	Custom Upstream/Royalty MLP	6.5	ACWI Health Care Suppl	4.5
ACWI Auto Parts and Equip	11.7	ACWI Ind Machinery	8.4	ACWI Elec Equip and Instr	6.5	ACWI Reinsurance	4.4
ACWI Oil and Gas Equip and	11.2	ACWI Department Stores	8.4	ACWI Office Reit	6.5	ACWI Food Distributors	4.4
ACWI Oil and Gas Drilling	11.2	ACWI Marine Ports and Svc	8.4	ACWI Oil and Gas Stor and Trans	6.4	ACWI Railroads	4.3
ACWI Industrial Reit	10.9	ACWI Constr and Engin	8.4	ACWI Movies and Entertainmnt	6.3	ACWI Intgrtd Telecom Svc	4.2
ACWI Divers Banks	10.8	ACWI Trad Comp and Distr	8.2	ACWI Personal Products	6.3	ACWI Packg Foods and Meats	4.1
ACWI Other Divers Fin Sv	10.8	ACWI Forest Products	8.2	ACWI Specialty Stores	6.2	ACWI Home Ent Software	4.0
ACWI Real Estate Oper Co	10.7	ACWI Multi-Sector Hldgs	8.2	ACWI Computer and Elec Retl	6.2	ACWI Tobacco	4.0
ACWI Investmnt Bnk and Brkr	10.5	GSCI	8.2	ACWI Cable and Satellite	6.1	ACWI Water Utilities	4.0
ACWI Divers Chemicals	10.3	ACWI Technology Dtrib	8.2	ACWI Homefurnishing Retl	6.0	ACWI Mortgage Reit	4.0
ACWI Divers Capital Mkts	10.3	ACWI Home Furnishings	8.1	ACWI Metal and Glass Cont	6.0	ACWI Specialized Cons Svc	3.9
ACWI Const and Farm M and	10.3	ACWI Marine	8.1	ACWI Thrifts and Mortg Fin	6.0	ACWI Gold Companies	3.9
ACWI Consumer Finance	9.9	ACWI Diversified Reit	8.1	ACWI Life Sci Tools and Svc	6.0	ACWI Multi-Utilities	3.9
ACWI Semiconductor Equip	9.7	ACWI Internet Soft and Svc	8.1	ACWI Health Care Tech	5.9	ACWI Envirmntl and Fclts Svc	3.9
ACWI Life and Health Ins	9.7	ACWI Building Products	8.1	ACWI Residential Reit	5.9	ACWI Electric Utilities	3.7
ACWI Comp Stor and Periph	9.4	Silver	8.0	ACWI Publishing	5.9	ACWI Soft Drinks	3.7
ACWI Fertilizer and Agr Chen	9.3	ACWI Homebuilding	8.0	ACWI Systems Software	5.8	ACWI Hypermkt and Super Cntr	3.6
ACWI Automobile Manufact	9.3	ACWI Electrcl Comp and Equip	8.0	ACWI Brewers	5.8	ACWI Gas Utilities	3.4
ACWI Multi-Line Ins	9.3	ACWI Ind Conglom	7.9	ACWI Specialized Reit	5.7	ACWI Food Retail	3.3
ACWI Commodity Chemicals	9.3	ACWI Elec Components	7.9	ACWI Office Electronics	5.7	ACWI Leisure Facilities	3.3
ACWI Heavy Elec Equip	9.2	ACWI Highways and Railtrack	7.9	S&P 500	5.5	ACWI Health Care Svc	3.3
ACWI Tires and Rubber	9.2	ACWI Retail Reit	7.8	Alerian MLP	5.4	ACWI Property and Cslty Ins	3.1
ACWI Housewares and Spect	9.2	ACWI Advertising	7.7	ACWI Integrated Oil and Gas	5.4	ACWI Pharmaceuticals	2.8
ACWI Casinos and Gambling	9.2	ACWI Comml Printing	7.5	ACWI Office Svc and Suppl	5.4	ACWI Restaurants	2.6
ACWI Textiles	9.2	ACWI Distributors	7.5	ACWI Drug Retail	5.4	ACWI Regional Banks	2.2
ACWI Divers Real Est Act	9.1	ACWI Commn Equip	7.5	ACWI Leisure Products	5.3	ACWI Insurance Brokers	2.1
ACWI Apparel Acc and Lux Gd	9.1	ACWI Oil and Gas Ref and MI	7.4	ACWI Managed Health Care	5.3	ACWI Home Improvmnt Retl	2.0
ACWI Photographic Prod	9.1	ACWI Paper Packaging	7.4	ACWI Data Proc and Outsc Svc	5.3	ACWI Biotechnology	1.9
ACWI Oil and Gas Expl and Pi	9.1	ACWI Applic Software	7.4	ACWI Airlines	5.3	ACWI Household Products	1.7
ACWI Internet Retail	9.0	ACWI Divers Support Svc	7.4	ACWI Distillers and Vintners	5.3	Gold	1.4
ACWI Special Finance	9.0	ACWI Trucking	7.3	ACWI Footwear	5.1	ACWI Diver Comm and Prof Svc	0.1
ACWI Constr Mater	8.9	ACWI Ind Pwr Prod and En Tr	7.2	ACWI Health Care Equip	4.9	ACWI Education Svc	-1.8
ACWI Paper Products	8.9	ACWI Agricultural Prod	7.2	ACWI Rsch and Consltng Svc	4.9	Long UST	-2.1

Source: TRS Calculations, MSCI, Bloomberg



Preliminary Benchmark

Preliminary Benchmark for ENR Portfolio



Key	Asset Class	Index	June 2008 to March 2013 Annualized	
			Return	Volatility
—	Preliminary ENR	75% Cambridge NR (Reweighted) / 25% CPI	5.8%	11.7%
—	Actual TRS ENR Private + Gold		4.3%	12.2%
—	Actual TRS ENR Private		4.8%	12.6%

ENR Target and Current Allocations

		Expected Return			
Returns SAA		4%-8%	8-12%	12-16%	16%+
		0%	20%	40%	40%
Inflation Sensitivity	High (Inflation Beta > 1.0)	80%	20%	40%	40%
		Zone 1	Zone 2	Zone 3	Zone 4
		<p>0% / 13% Target / Current</p> <ul style="list-style-type: none"> • Gold 	<p>16% / 22% Target / Current</p> <ul style="list-style-type: none"> • Agriculture • Timber • Proven Reserves • Gold Miners 	<p>32% / 24% Target / Current</p> <ul style="list-style-type: none"> • Enhanced Reserves • Upstream Mezzanine • Aggregates 	<p>32% / 28% Target / Current</p> <ul style="list-style-type: none"> • Upstream PE • Energy Services & Technology
	Medium (0.5 < Inflation Beta < 1.0)	20%	40%	40%	40%
		Zone 5	Zone 6	Zone 7	Zone 8
				<p>10% / 5% Target / Current</p> <ul style="list-style-type: none"> • Midstream Stabilized • Power Generation • MLPs • Refining 	<p>10% / 7% Target / Current</p> <ul style="list-style-type: none"> • Midstream & Power Development
	Low	0%	40%	40%	40%
		Zone 9	Zone 10	Zone 11	Zone 12
		<p>Stable Value</p>			

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Energy & Natural Resources Plan

Vaughn Brock

Director

June 2013

Agenda

- I. Natural Resources Across the Trust
- II. ENR Organization
- III. Investment Plan
- IV. Implementation Timeline
- V. ENR Investment Process
- VI. Conclusions
- VII. Appendix

NATURAL RESOURCES ACROSS THE TRUST

Defining Energy and Natural Resources

Value Chain

Upstream

Midstream

Downstream

Services & Technology

Energy



Exploration



Production



Storage



Pipeline



Refining



Fracking

Power



Generation



Renewables



Transmission



Distribution



Smart Meters

Mining



Extraction



Coal



Transportation



Smelting



Equipment Leasing

Ag/
Timber



Crops



Forests



Storage



Milling



Seed

Water



Sourcing



Distribution



Wastewater



RO Technology

Dedicated to sourcing natural resources

Dedicated to storing, transporting, and processing natural resources (includes infrastructure)

Dedicated to refining and distributing natural resources (includes infrastructure)

Used in supporting natural resource utilization

Why Establish ENR and Why Now?

TRS Portfolio

- Returns from Natural Resources are projected to be the 6th highest earning portfolio in the Trust over the next 10 years
- Natural Resources provides a differentiated source of returns increasing overall diversification to the Trust
- No single investment area had Natural Resources as a primary focus

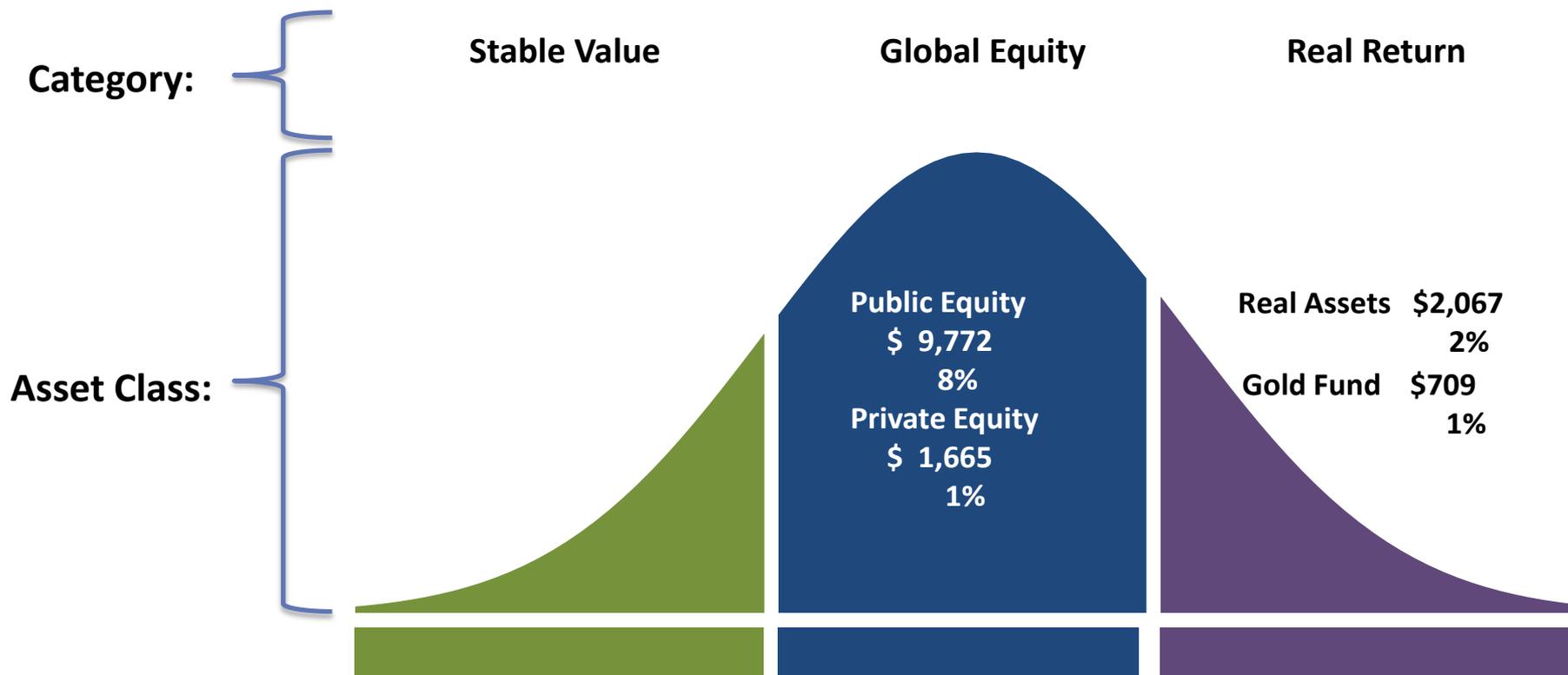
Industry Opportunity

- Energy and other Natural Resource industries have a market cap of \$7.9 trillion, which comprises more than 19% of the MSCI All Country World Index (ACWI)
- The technical nature of the investments requires specialized knowledge and expertise

Natural Resources Investments in the Trust

Across Multiple TRS Strategies

TRS has holdings in Natural Resources across the Trust in the following groups:



For Period Ending March 31, 2013

Total TRS Assets In Natural Resources: \$ 14.2 Billion NAV

\$ 16.8 NAV plus Committed/Unfunded

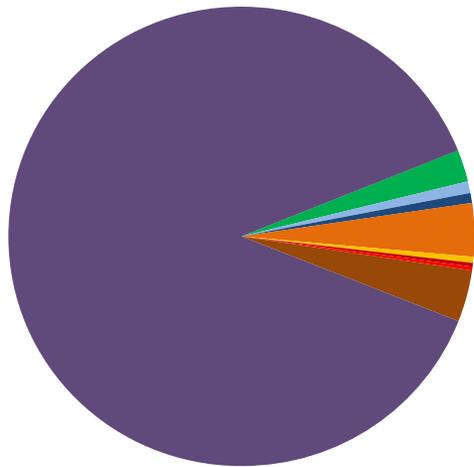
Percent of Trust: 12.0% NAV

Natural Resources Investments in the Trust

Period Ending March 31, 2013

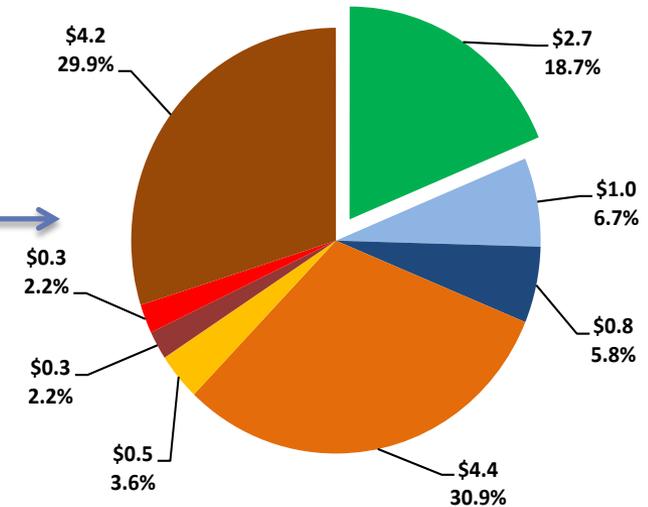
Natural Resource Investments across the TRS Trust are
\$14.2 Billion NAV which is **12%**

Total TRS Investments to Natural Resources
\$14.2 Billion (12% of Trust)



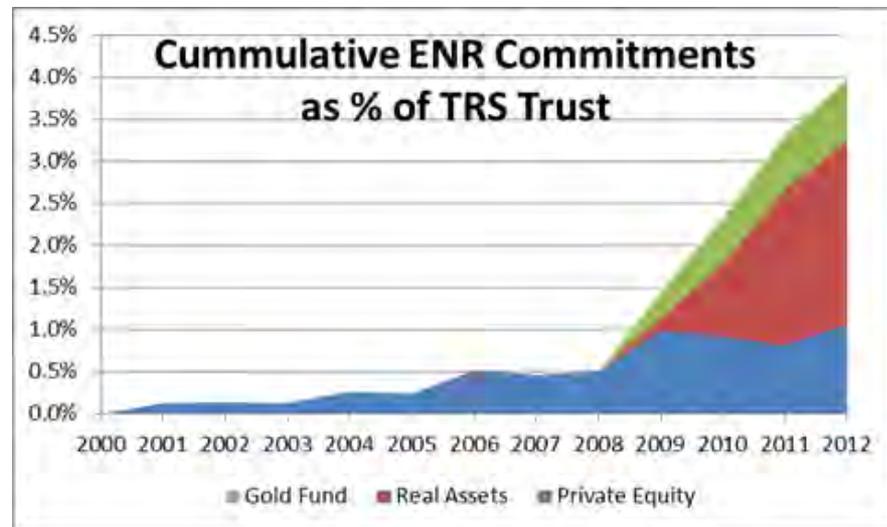
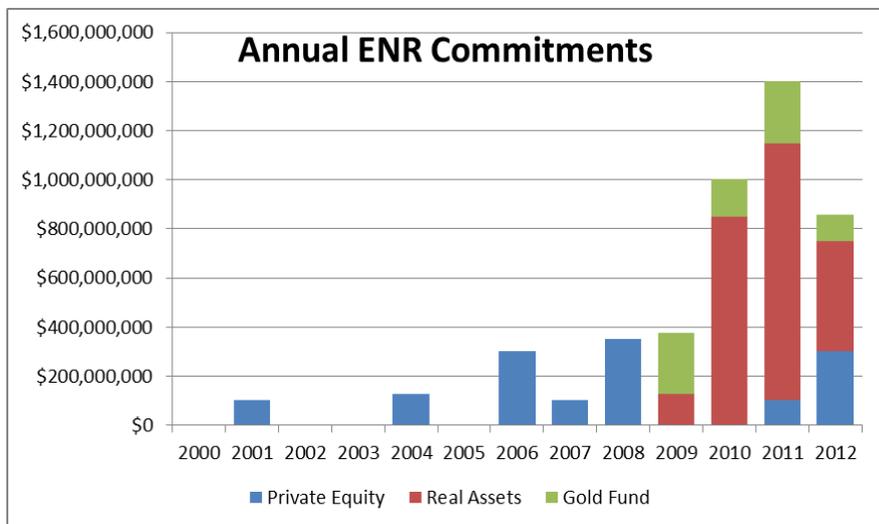
Natural Resources Investments by Portfolio

- ENR
- Private Equity
- Real Assets
- EPU LO
- SPN
- SAA
- TAA
- GBI
- Rest of Trust



\$ in Billion

Historical Evolution of Natural Resources Investments



Period Ending March 31, 2013

	Managers	Funds	Co-Inv	NAV	Unfunded*	Projected Returns
ENR Real Assets	7	7	1	\$1,244	\$1,391	12% Net
ENR Private Equity	4	6	1	\$706	\$338	20% Net
ENR Precious Metals & Mining	Internally Managed			\$710	NA	4-8%
Total ENR Assets	8 ^a	13	2	\$2,660	\$1,729	
Other RA Resources	Exposure in Infrastructure Funds			\$824	\$169	12% Net
Other PE Resources	Generalist PE Exposure			\$959	\$680	20% Net
Total Private Resources				\$4,443	\$2,578	
Resource Public Equity	Internally / External Managed			\$9,772	NA	4-5%**
Trust Resource Exposure				\$14,215	\$2,578	

* Unfunded for PE and RA assume unfunded amounts are inline with current investment allocation

**Assumes that Resource equities have a beta of 1 to broad equity (medium term estimates: GMO 1.1%, GS 6.5%, MS 4.3%)

a Note that three managers have funds in both Real Assets and Private Equity



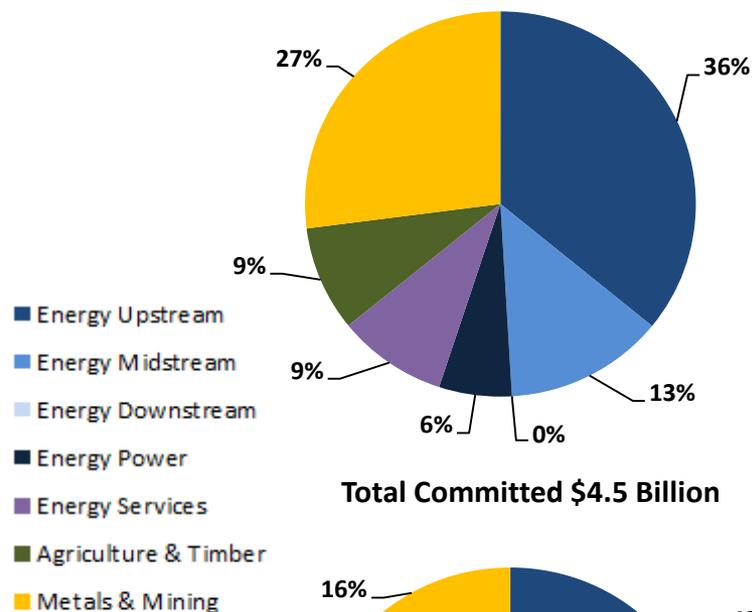
Source: TRS

Allocation of ENR Investments

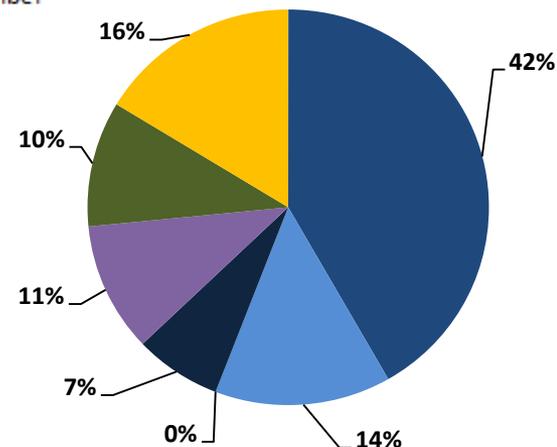
Period Ending March 31, 2013

(\$ in millions)	Total Committed	NAV	Unfunded
Energy			
Upstream	1,859	954	985
Midstream	633	350	312
Downstream	0	0	0
Power	312	160	125
Services	470	241	131
Total Energy	3,274	1,705	1,553
Agriculture/Timber	457	235	176
Metals/Mining	727	719	0
Total ENR	4,458	2,659	1,729

Total NAV \$2.7 Billion (2.3% of Trust)



Total Committed \$4.5 Billion



TRS Assets in the Natural Resources Value Chain

NAV for Period Ending March 31, 2013

Upstream

ENR \$1,965
TRS \$8,858

Midstream

ENR \$350
TRS \$1,421

Downstream

ENR \$103
TRS \$1,994

Services & Tech

ENR \$241
TRS \$1,941

TOTAL

ENR \$ 2,659
TRS \$14,214

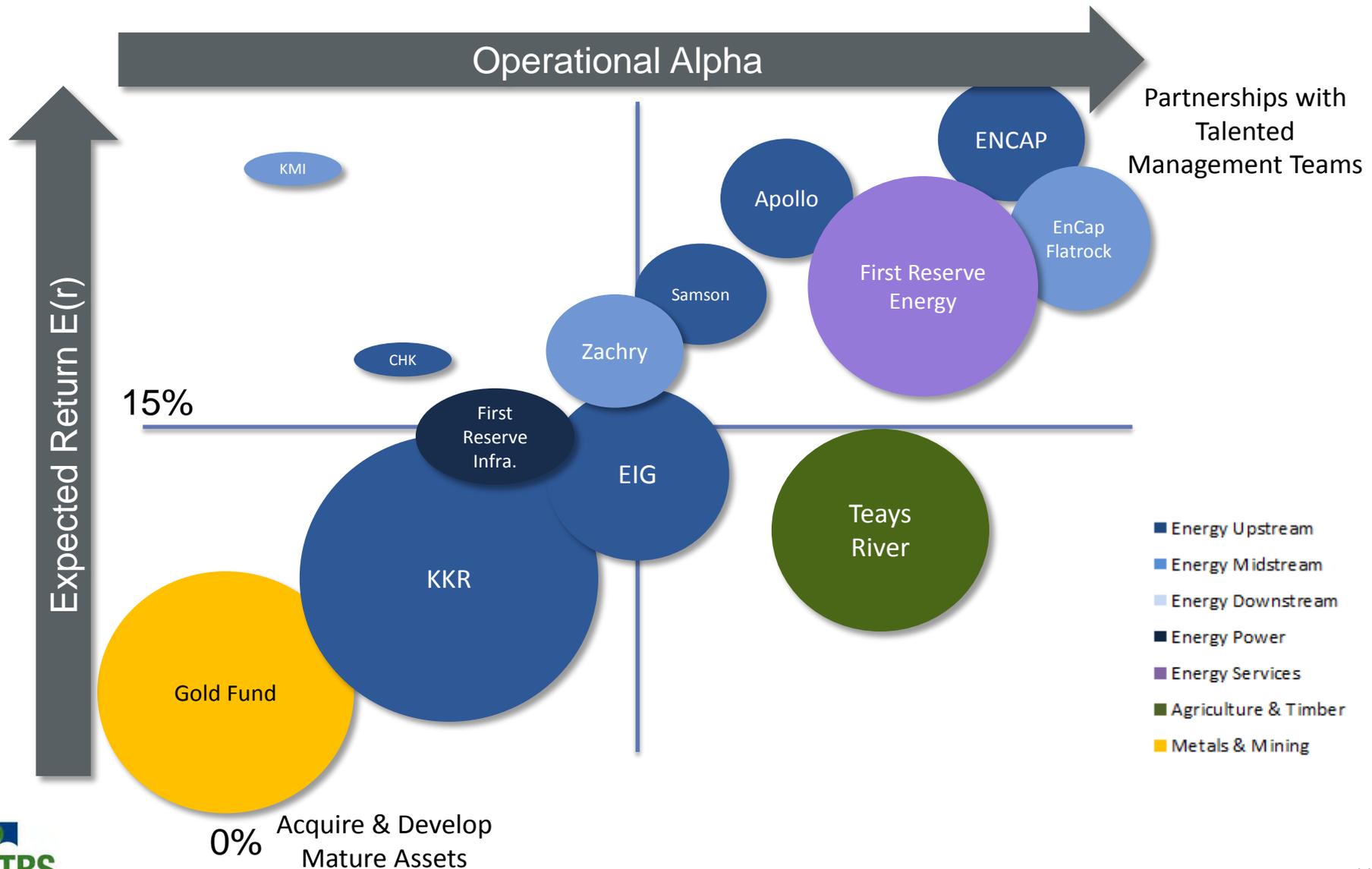
1st Tier Opportunities

\$ in Millions

Category	Sub-Category	ENR	Private	Public	Trust	ENR	Private	Public	Trust	ENR	Private	Public	Trust	ENR	Private	Public	Trust	ENR	Private	Public	Trust			
Energy	Exploration & Production	\$ 954	450	4,041	\$ 5,446	\$ 350	195	299	\$ 844	---	254	386	\$ 639	\$ 241	182	614	\$ 1,038	\$ 1,546	---	---	---	---	\$ 7,967	
	Storage & Pipelines																							
Power	Generation	\$ 160	279	378	\$ 817	---	81	378	\$ 458	---	---	378	\$ 378	---	---	---	---	---	---	---	---	---	---	\$ 160
	Transmission																							\$ 1,653
Mining	Extraction	\$ 719	211	1,332	\$ 2,262	---	47	---	\$ 47	---	---	685	\$ 685	---	---	---	---	---	---	---	---	---	---	\$ 719
	Transportation																							\$ 2,994
Ag/ Timber	Crops & Forests	\$ 132	24	164	\$ 320	---	---	---	---	\$ 103	---	164	\$ 267	---	---	903	\$ 903	---	---	---	---	---	---	\$ 235
	Storage																							\$ 1,491
Water	Sourcing	---	---	12	\$ 12	---	60	12	\$ 72	---	---	25	\$ 25	---	---	---	---	---	---	---	---	---	---	\$ 0
	Distribution																							\$ 109

Current Portfolio Characteristics

Expected Return vs. Expected Alpha



Purpose of Energy and Natural Resources (ENR)

- Aggregate Trust's Energy and Natural Resources investments
- Improve planning for approaching environment
- Specify diversification framework
- Target investments primarily to future inflation
- Increase IMD expertise and focus on a major investment area

ENR ORGANIZATION

ENR Organization Chart



Vaughn Brock
Director
BS, Ohio University
MBA, Harvard



John Ritter, CFA
Director
BBA, MBA, JD, UT Austin



Caroline Hansard
Contractor
BS, MBA, UT Austin



Robin Rosi
Contractor
BA, Texas A&M
MPA, Trinity University



Malorie Harding
Contractor
BBA, Baylor
MBA, St. Edwards

Advisors and Consultant

Hamilton Lane (Fund Advisors)

Hewitt EnnisKnupp (GP Consultants)

Internal Advisory Team

Ashley Baum, Stable Value Passive

Brian Baumhover, Real Assets

Tom Cammack, Internal Public Markets

Mark Cassens, Internal Public Markets

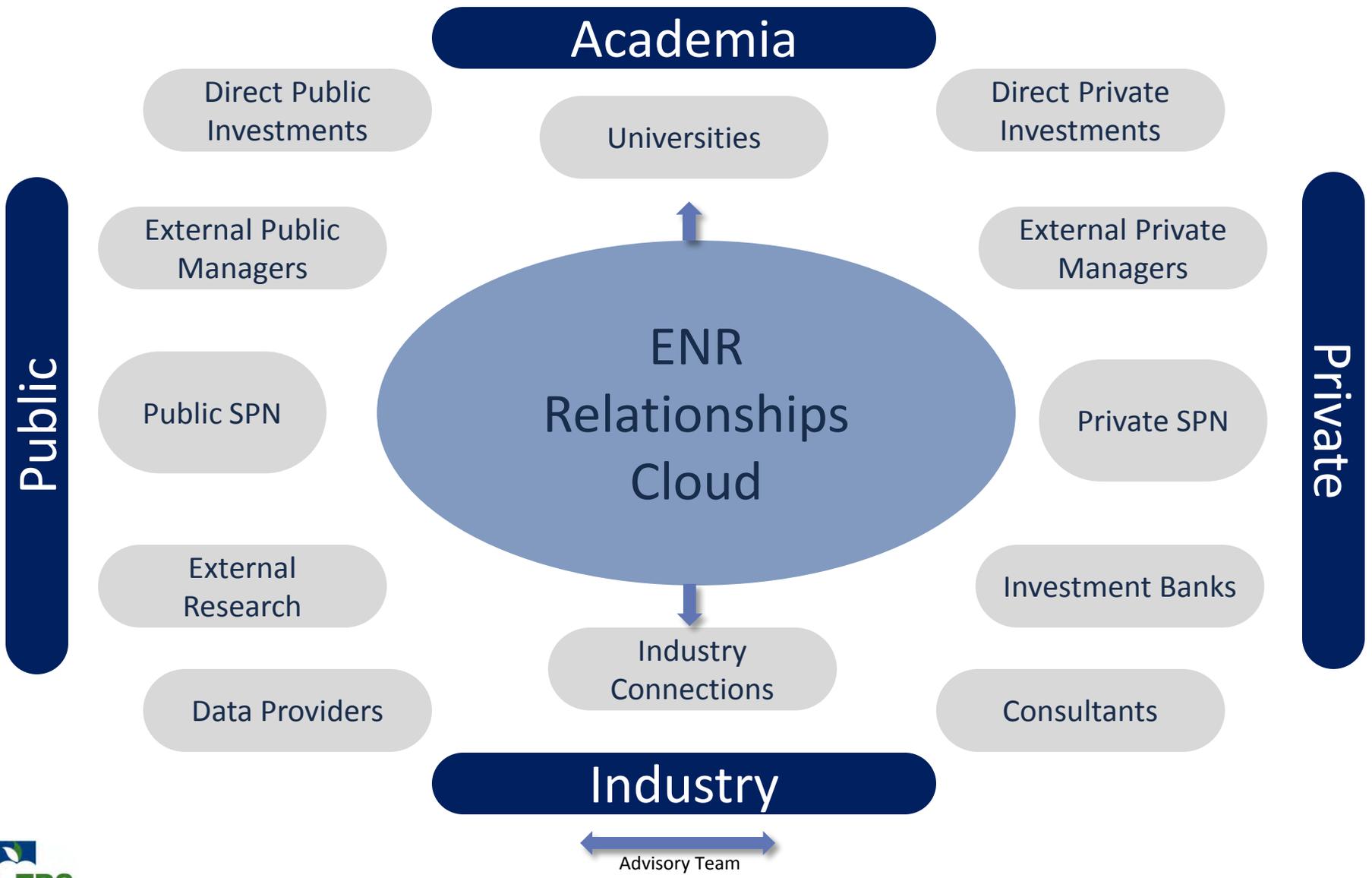
Mike Lazorik, Private Equity

Ralph Linn, Internal Public Markets

Shayne McGuire, Internal Public Markets

Scott Ramsower, Private Equity

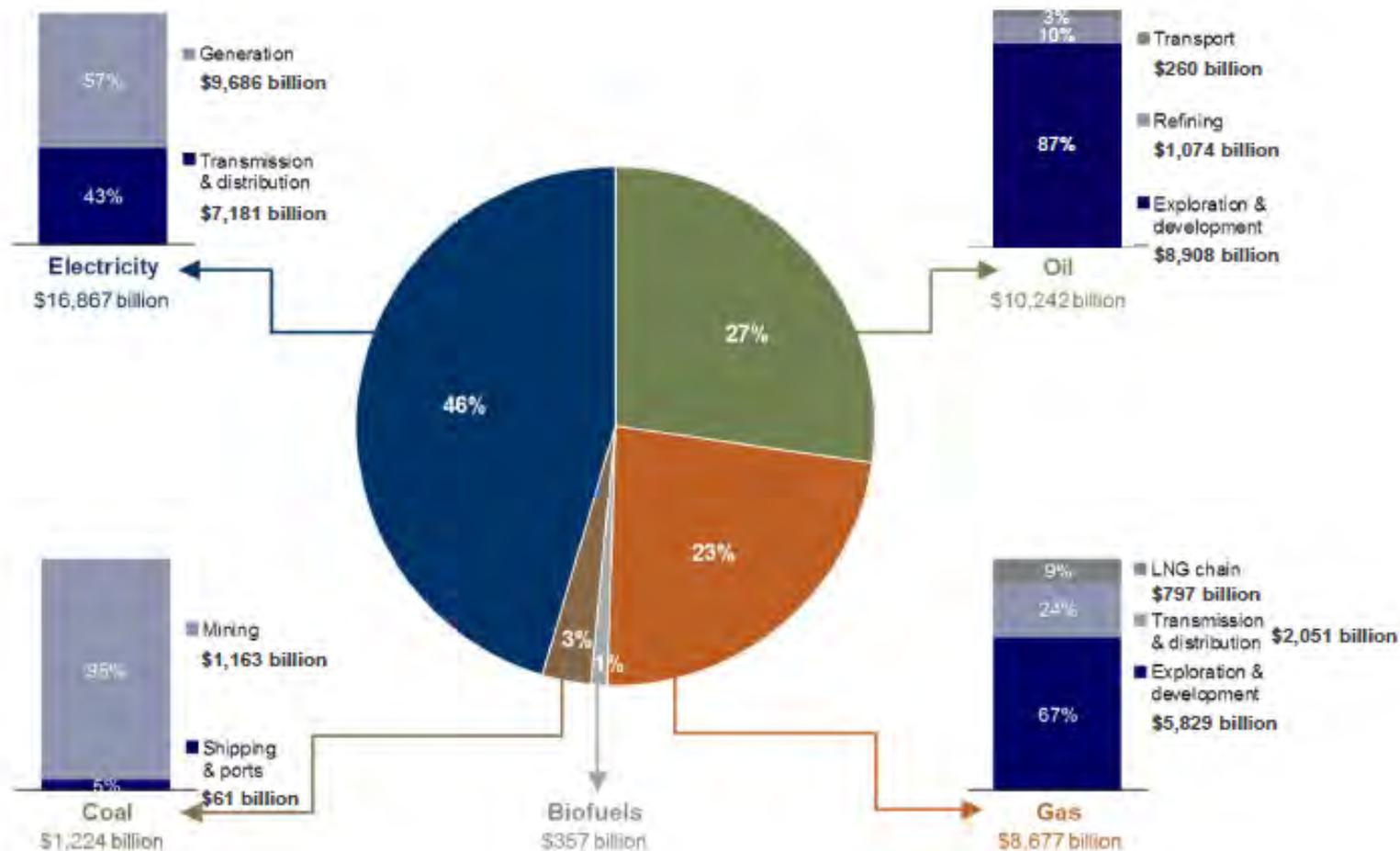
ENR External Relationships



INVESTMENT PLAN

Energy Market Opportunity

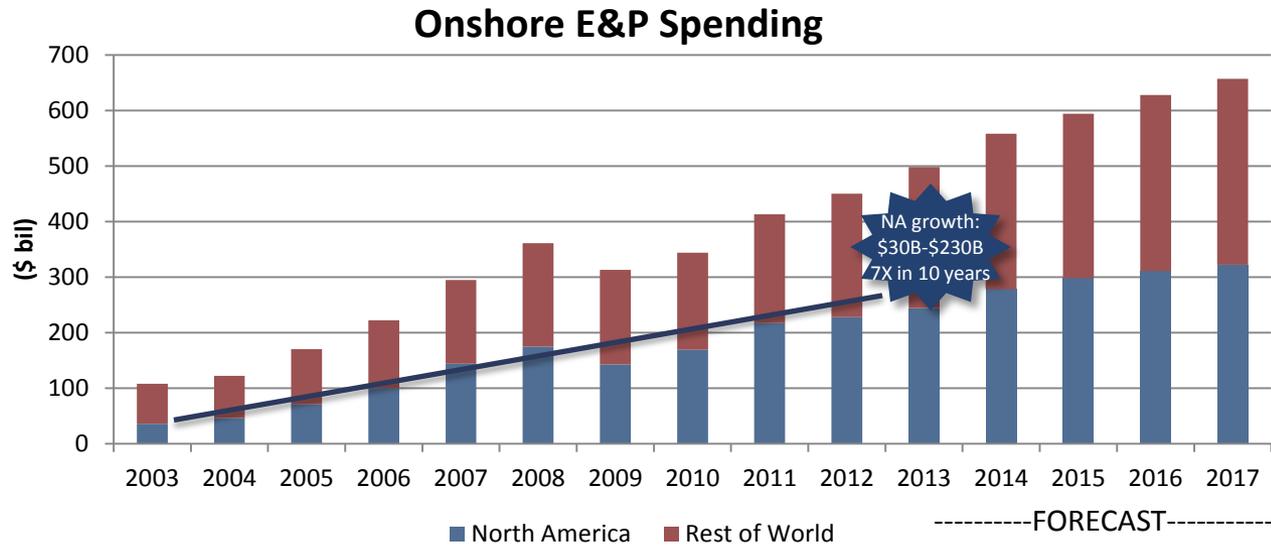
The International Energy Agency (IEA) projects that \$37.4 trillion of cumulative investment will be required in global energy supply



Sources: EIG, IEA

Energy Market Opportunity

Historical Evolution: Three Distinct Time Periods in North America



	Conventional Era	Unconventional "Land Grab"	Execution Phase
RESOURCE	Flat to Declining	PUD - Significant discovery, but economics are uncertain	PDP - Technical Data available to validate tremendous resource potential
CAPITAL REQUIREMENTS	Less Capital Intensive	Significant capital for high land prices and drilling cost	Significant capital needed to develop identified resource
SOURCES OF CAPITAL	Cash Flow Public Equity Traditional Debt	High Yield Debt Public Equity Joint Ventures (eg Sovereign Wealth) Asset Sales	Conventional Asset Sales Mezzanine High Yield Joint Ventures

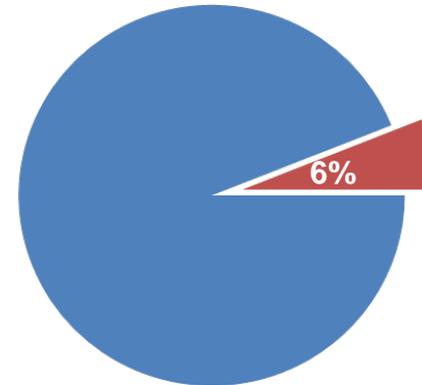
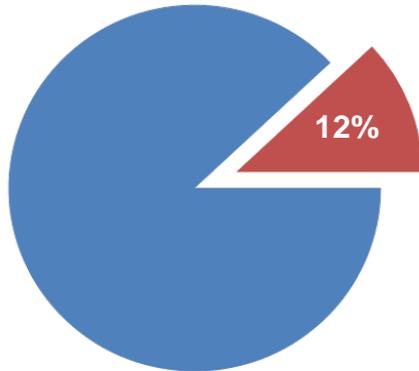
Energy Market Opportunity

Growth in the US Energy Opportunity

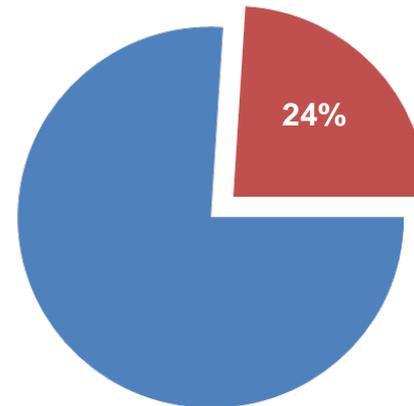
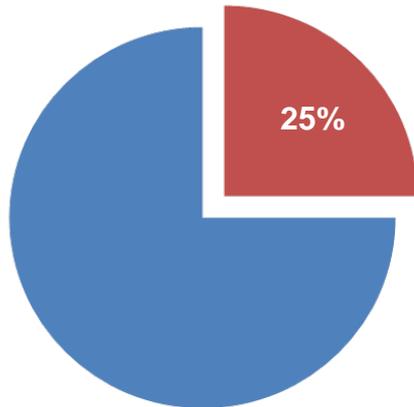
US Energy M&A Activity
as % of Total

US Up-Stream Cap-Ex as % of
Total Cap-Ex

*Decade
Ago*

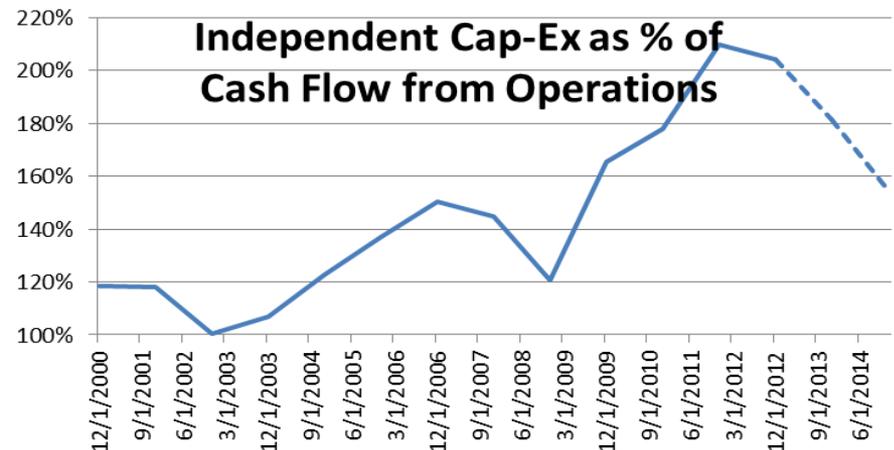
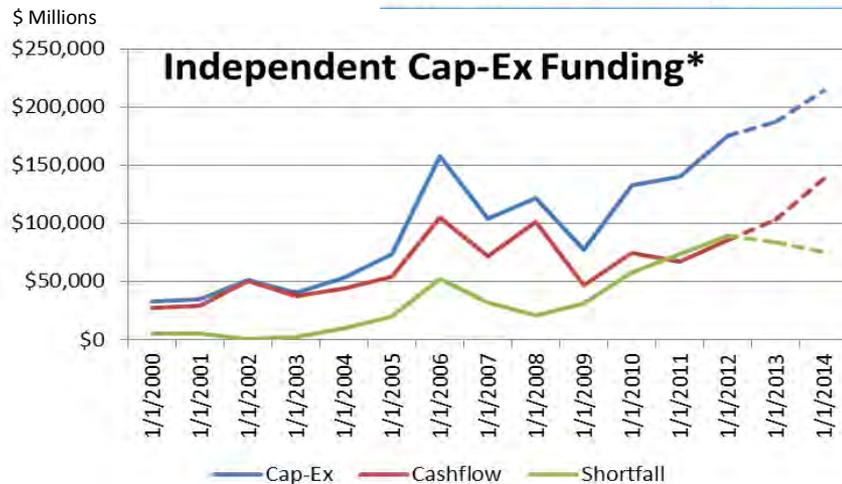
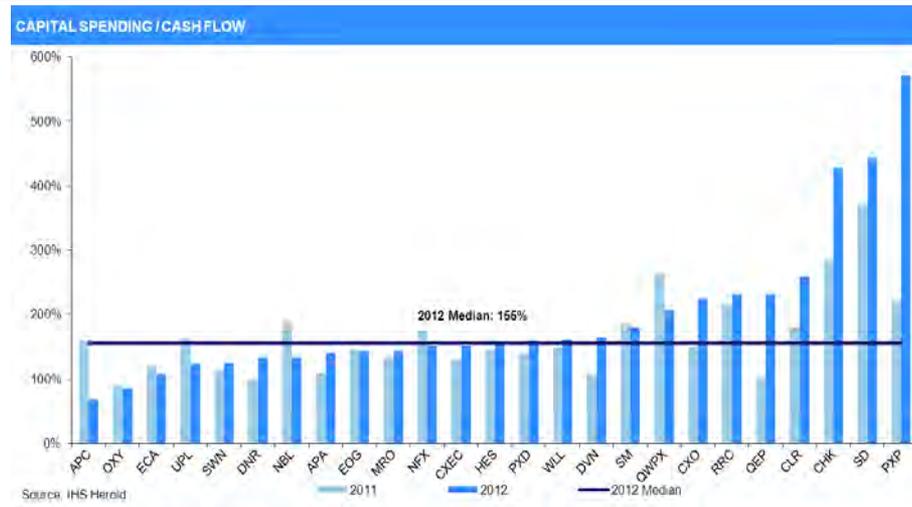


Today



Energy Market Opportunity

Cash Flow Shortfall is Creating Capital Demands



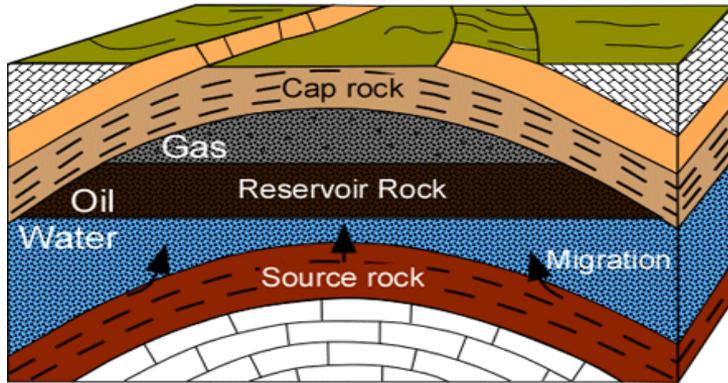
*Top 50 North America Ind. E&P Co.s in Bloomberg Industries: Includes off-shore and Int'l spending

- Annual cash flow short fall has increased from roughly \$5 billion in 2000 to \$90 billion today
- Cash flow is expected to accelerate with Cap-Ex leveling off, resulting in a narrowing funding gap

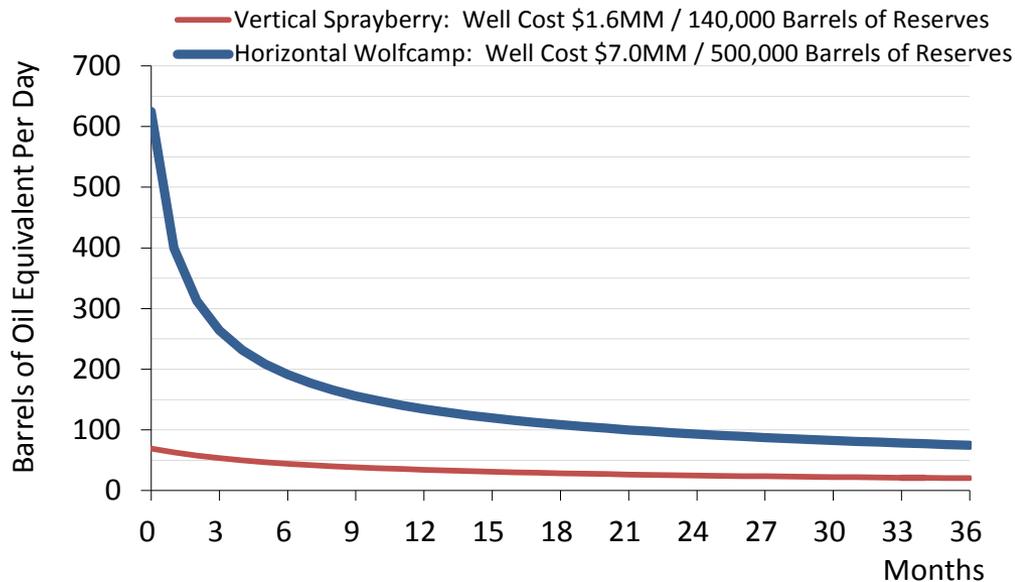
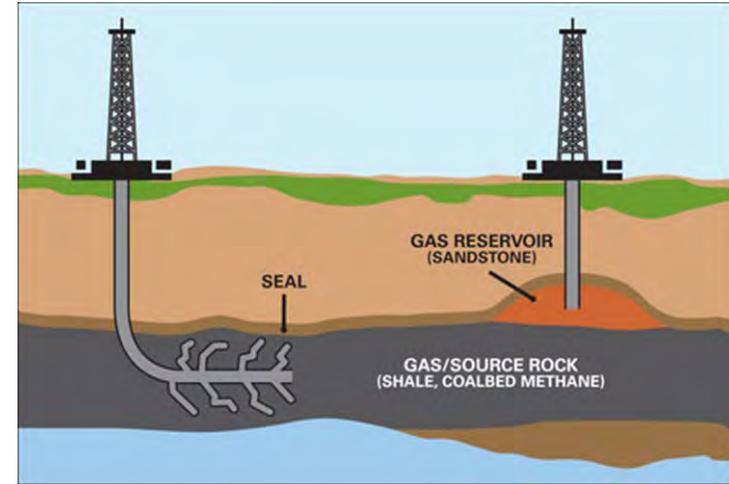


Energy Market Opportunity

Outlook for Energy Markets: What's Different Now



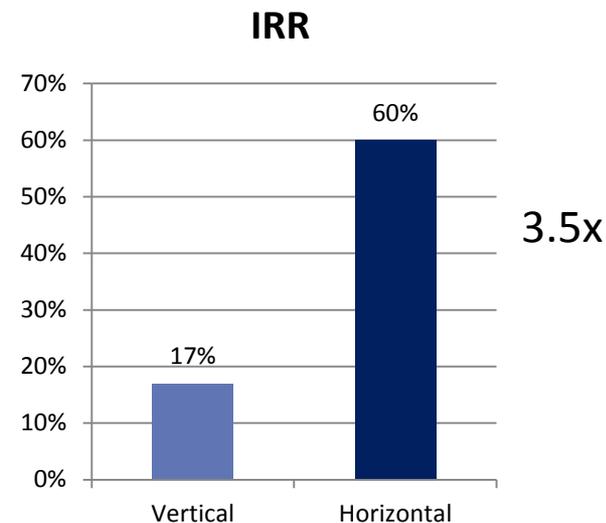
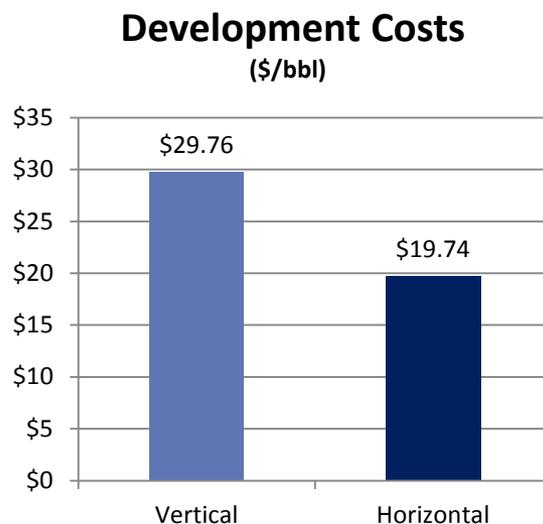
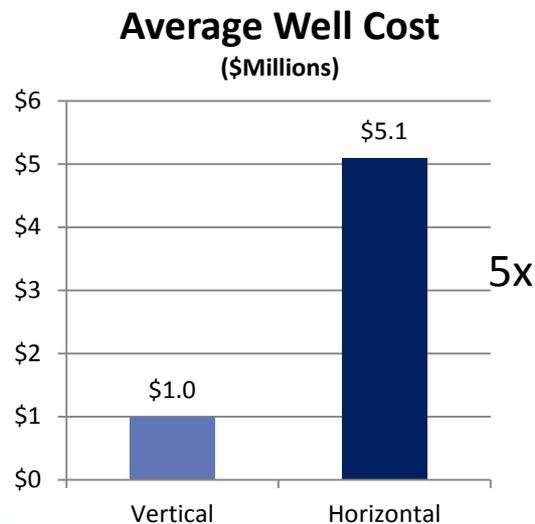
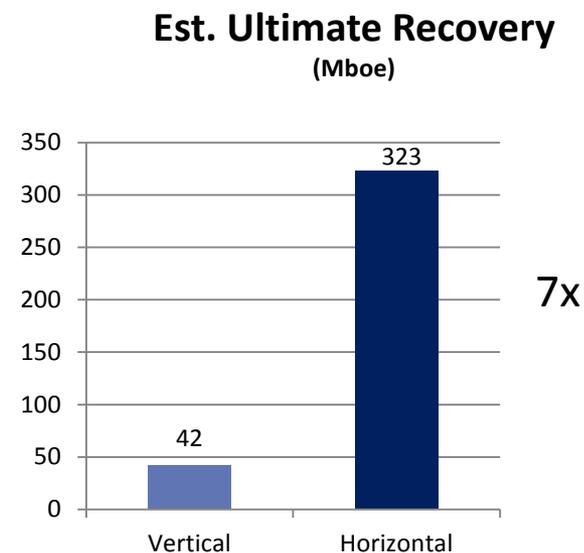
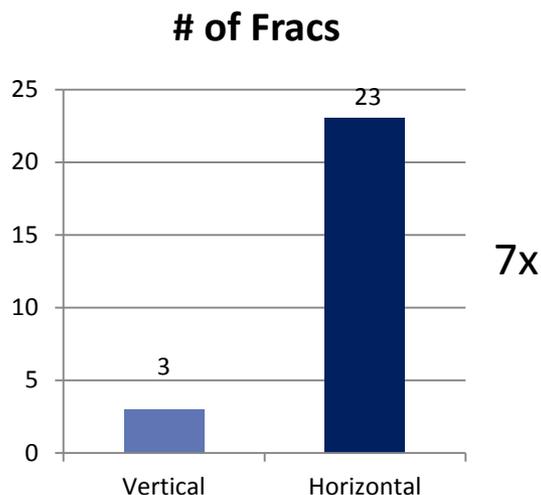
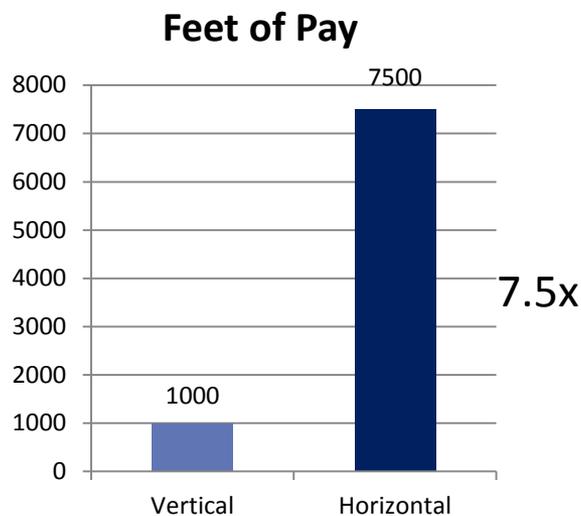
Anticline Trap



The success rate on horizontal / shale wells today is approximately 85% compared to 20%-35% in “conventional” wells drilled before shale

Energy Market Opportunity

Well Economics for Vertical vs. Horizontal Drilling Permian Basin



Source: EnCap

Energy Market Opportunity

Basin-Level Analysis: the Geological Opportunity

Lower 48 State Shale Plays



- More places to drill due to the “shale revolution”
- Each basin has factors that impact break even costs: unique price realizations, hydrocarbon mix, infrastructure needs, and service availability costs
- Acreage values dependent on several variables
- All oil and gas reservoirs are not created equal

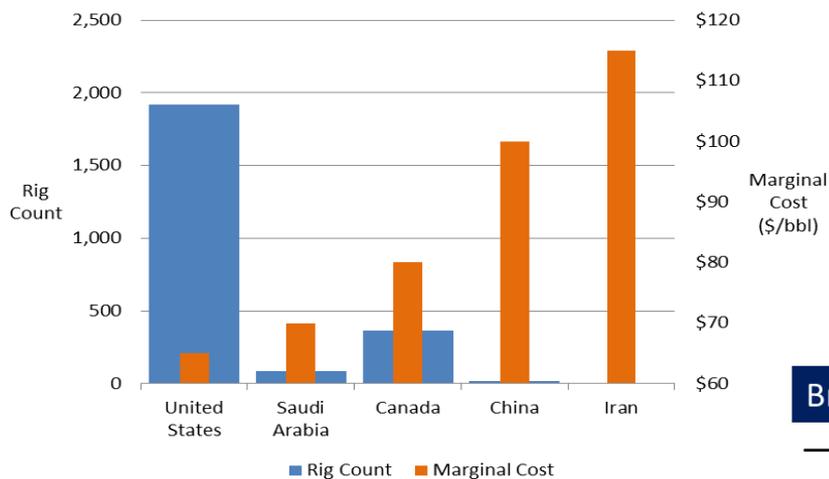


Source: TPH Asset Management, Energy Information Administration based on data from various published studies.
Update: May 9, 2011



Energy Market Opportunity

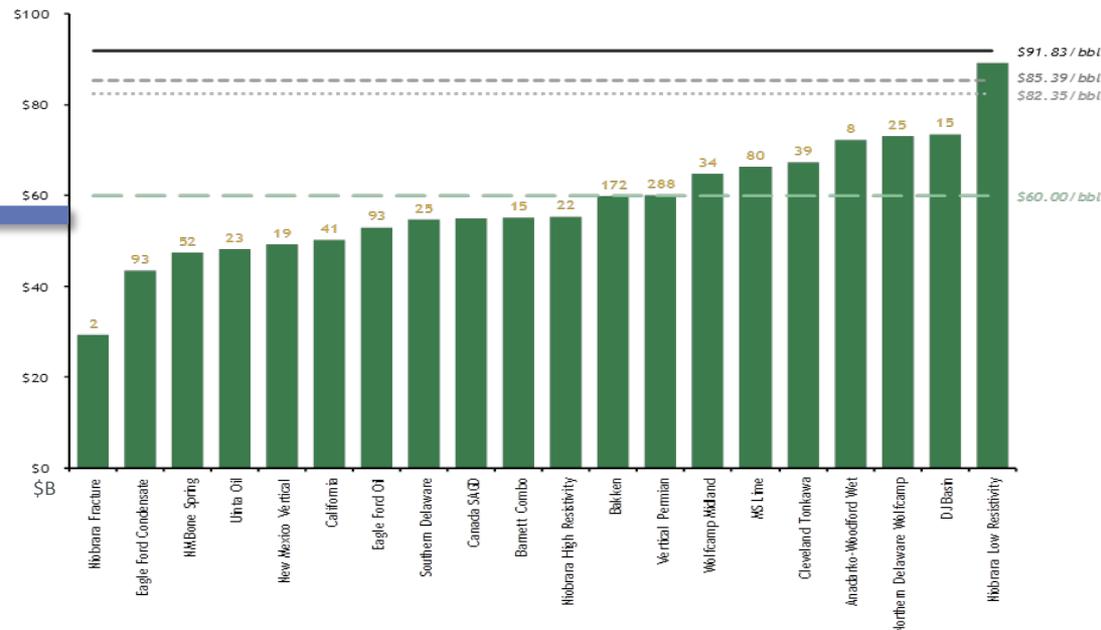
US is an Energy Powerhouse



- The US currently has the greatest rig count in operation amongst the oil producing countries
- This is directly correlated to its lowest marginal cost of production

Breakeven WTI Price (\$/bbl)

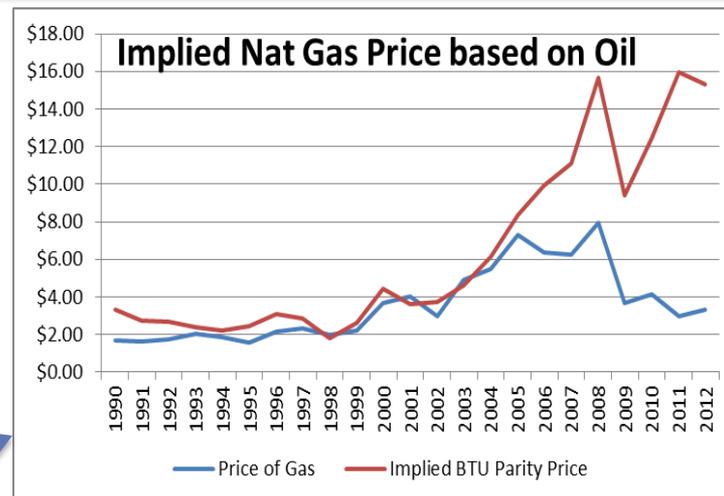
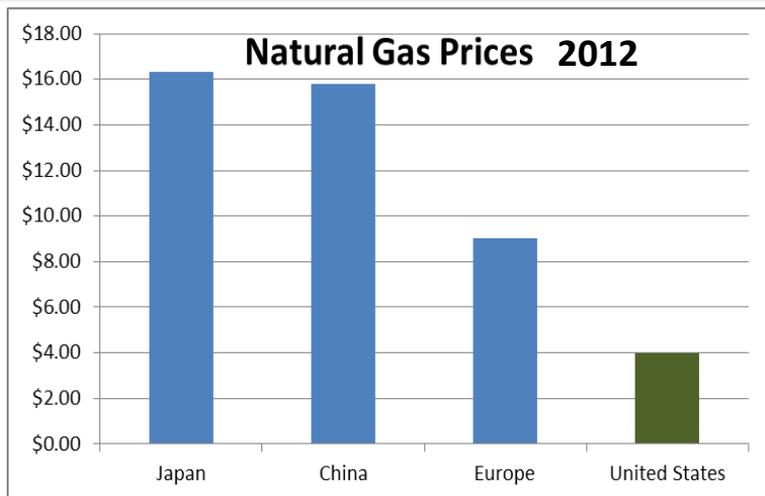
— Current Price (Feb. 28) - - - 2016 Avg Price ····· 2021 Avg Price - - - \$60/bbl Dec. '12 Rig Count



- At \$80/bbl oil, the North American Oil & Gas business will likely spend approximately \$1.7 trillion over the next 10 years drilling and completing wells (\$170 billion/year)
- At \$60/bbl oil, the North American Oil & Gas business will likely spend approximately \$1.0 trillion over the next 10 years drilling and completing wells (\$70 billion/year vs. \$80/bbl case)
- 60% of activity would continue at \$60/bbl

Energy Market Opportunity

US Gas is a Value Story



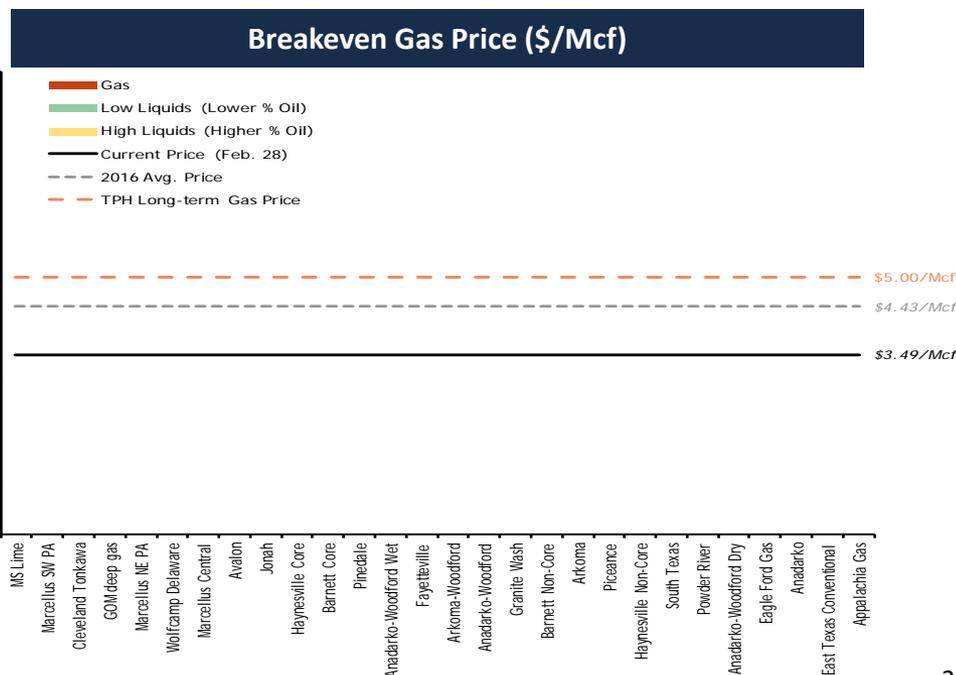
Natural Gas in the US is cheap in comparison to:

- Global natural gas prices
- BTU content parity price vs. Oil

In addition, other factors to consider are the changing landscape of consumption:

- Coal to Gas switching for Power
- New chemical facilities
- Export (LNG / Pipeline)
- Use as a transportation fuel

While gas is uneconomical to produce in many basins at the current prices, increased demand will push up prices and bring on new production



Sources: RS Securities, TPH, Bloomberg

Competitive Advantage

TRS Competitive Advantage

- Larger Transactions
- Longer Time Horizons
- “Excess Liquidity”
- Not Levered

How the ENR Team Adds Alpha

- Creating Network of Industry Specialists
- Identifying Cycles and Dislocations
- Optimizing Capital Structure

Competitive Advantage

Description of Optimal Capital Structure

Dual Nature of Structured Finance

Secured Debt Like Return

Short-term (3-year) mezzanine debt
secured by hard assets

Upside Potential

Long-term (20-year) equity tail
via overriding royalty interest



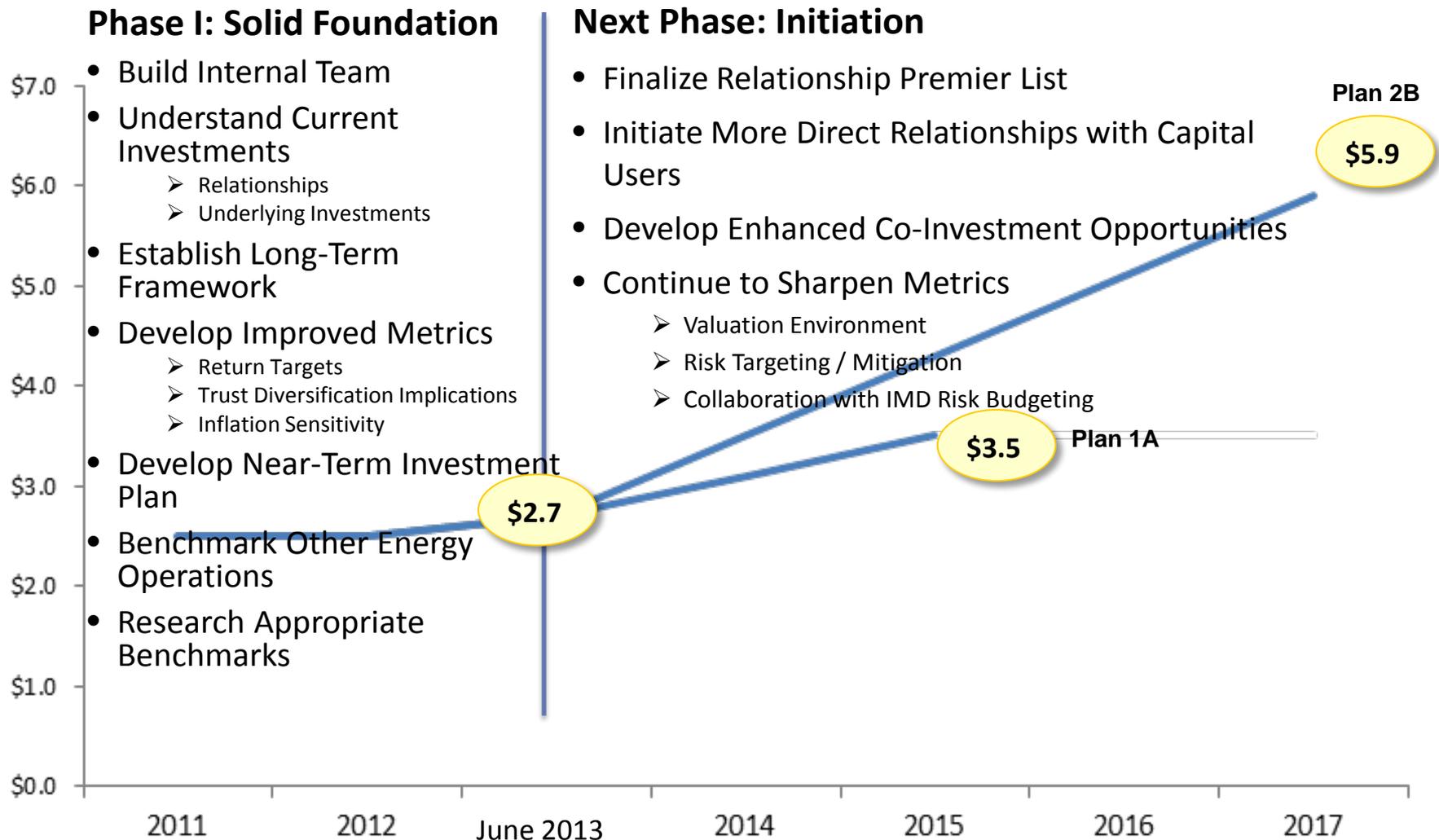
The aggregate deal flow for the mezzanine space is expected to be \$100 billion over the next 2-3 years

Target and Current Allocations

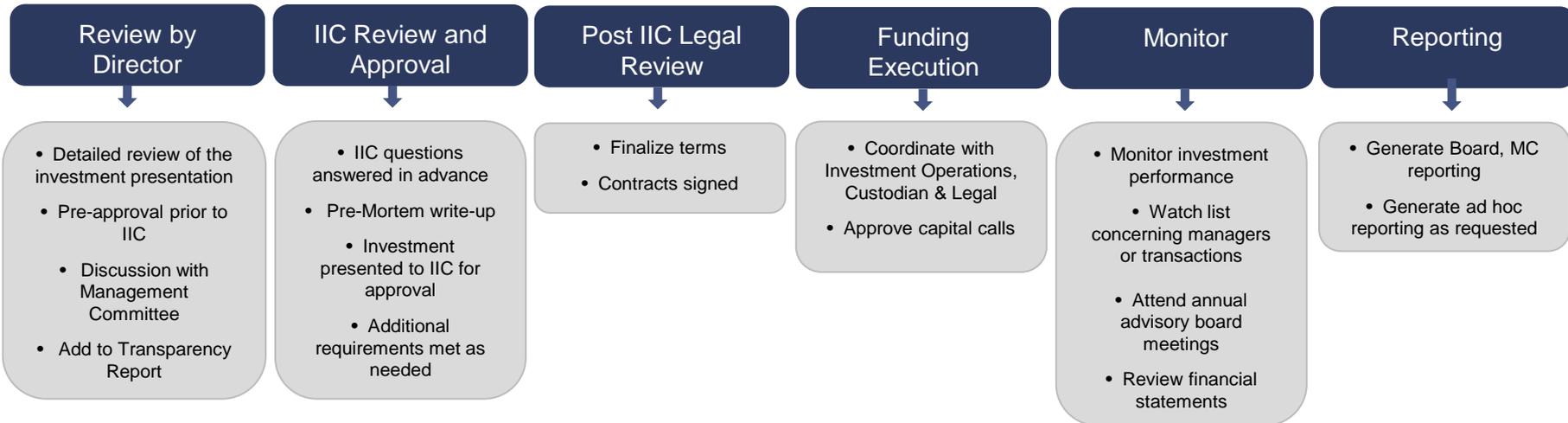
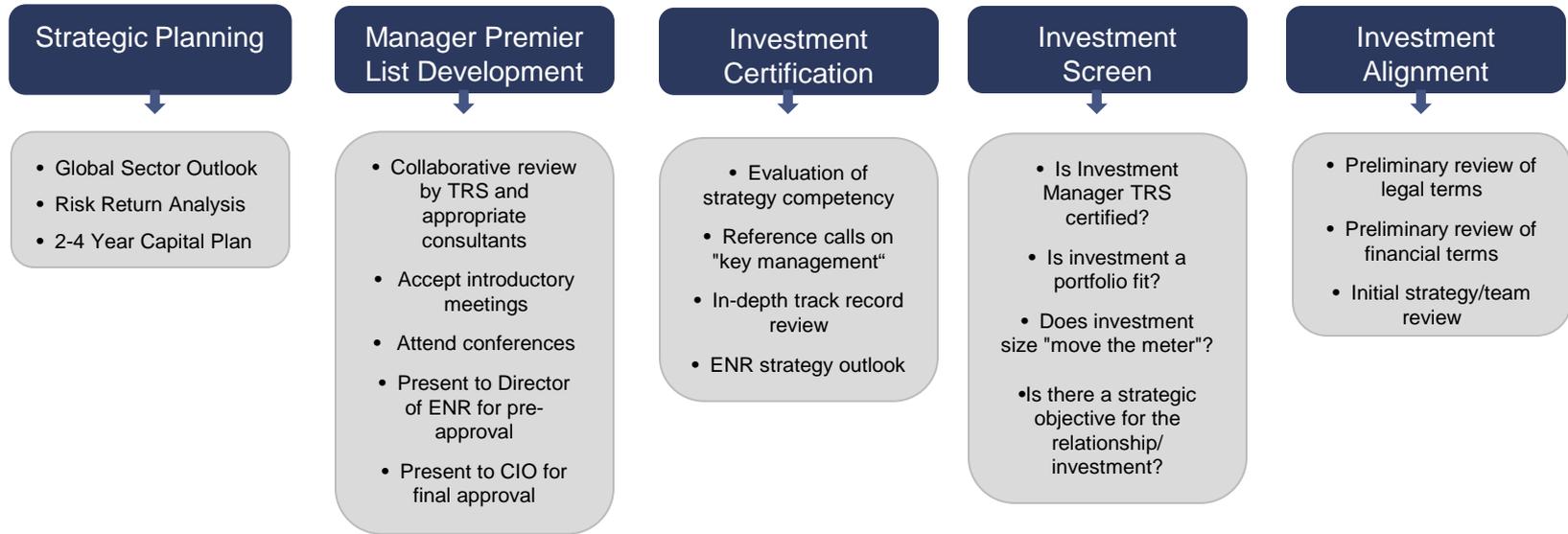
		Expected Return			
Returns		4%-8%	8-12%	12-16%	16%+
Risk		6%	8%	10%	16%
SAA		0%	20%	40%	40%
Inflation Sensitivity	High (Inflation Beta > 1.0)	Zone 1a 0% / 13% Target / Current <ul style="list-style-type: none"> • Gold 	Zone 1 16% / 22% Target / Current <ul style="list-style-type: none"> • Agriculture • Timber • Proven Reserves • Gold Miners 	Zone 2 32% / 24% Target / Current <ul style="list-style-type: none"> • Enhanced Reserves • Upstream Mezzanine • Aggregates 	Zone 3 32% / 28% Target / Current <ul style="list-style-type: none"> • Upstream PE • Energy Services & Technology
	Medium (0.5 < Inflation Beta < 1.0)	Zone 4 Portfolio Expected Return E(r) Current: 14.2% Target: 15.9%		Zone 5 10% / 5% Target / Current <ul style="list-style-type: none"> • Midstream Stabilized • Power Generation • MLPs • Refining 	Zone 6 10% / 7% Target / Current <ul style="list-style-type: none"> • Midstream & Power Development
	Low	Zone 7		Zone 8	Zone 9
		Stable Value			

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Implementation Timeline



ENR Investment Process



Conclusions

Phase One is Complete

- Risk assessment
- Team and organizational structure
- Initial investor network
- Allocation framework
- Initial Capital Plan

Capital Plan

- We are moving to a 3% NAV within the next 2 years
- Thereafter likely to move to 5%, with additional assets reallocated from public markets
- Investment opportunities in 2013 are estimated at \$900 million - \$1.9 billion

Investment Focus

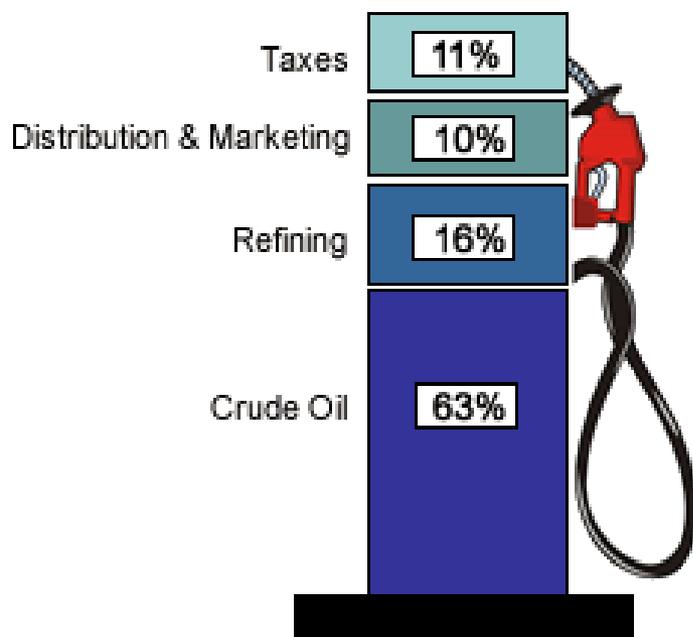
- Tier One: Upstream/Midstream sector of the energy complex
- Tier Two: Full spectrum of energy complex and upstream investments in other areas
- Early activity focused primarily on “Zone 3” and “Zone 4” investments
- Investments consistent with TRS set of competitive advantages

APPENDIX

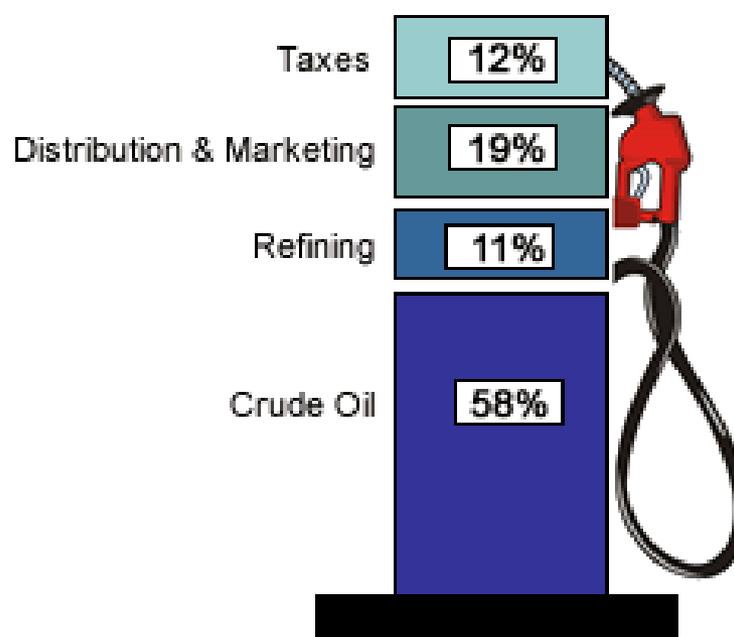
Energy Value Chain

Value Chain of Refined Fuel Products

Regular Gasoline (March 2013)
Retail Price: \$3.71/gallon



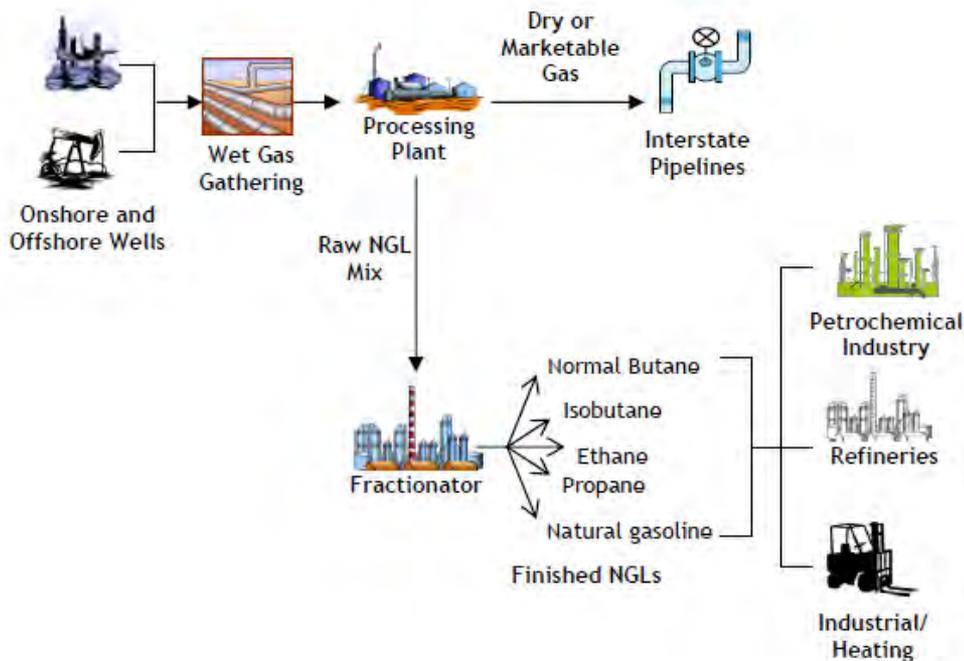
Diesel (March 2013)
Retail Price: \$4.07/gallon



Energy Market

Natural Gas Value Chain

Natural Gas Value Chain



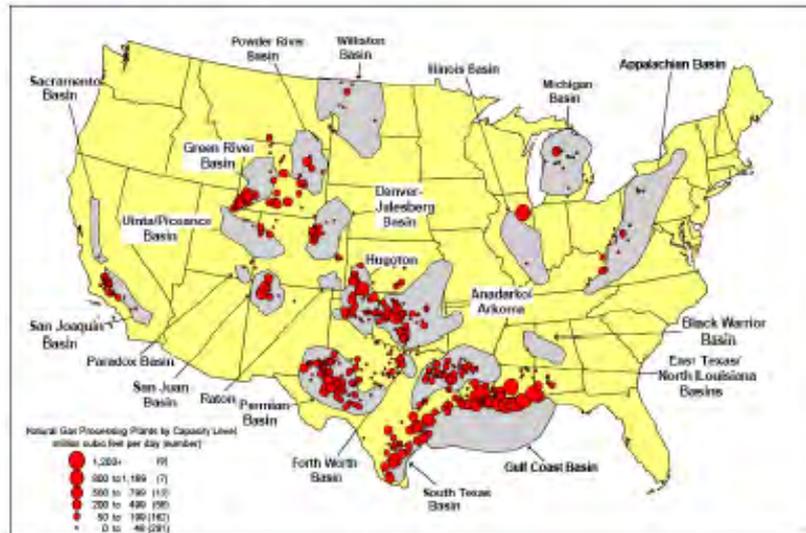
- Natural gas is comprised of two parts – a light gas component and a heavier liquids component. The light gas consists of methane, while the liquids consist of ethane, propane, n-butane, iso-butane and natural gasoline. These natural gas liquids (NGLs) are used in the petrochemical industry, as refinery blend-stock, in home heating, and in many other common applications
- Most wellhead gas does not meet the quality standards required by interstate pipelines, so it must be processed, removing contaminants and the heavier components (propane+)
- After the NGLs and the contaminants are removed, what is left is marketable gas (or dry gas), consisting of methane with some ethane. That gas is then ready to be delivered to interstate gas pipelines
- The raw NGLs are then sent to large fractionators to break the stream into usable components (ethane, propane, etc.)

Energy Value Chain

Gas Processing Plants

Processing Plants Follow Major Producing Areas

U.S. Gas Processing Plants



Source: EIA/DOE

- There were 539 gas processing plants and 32 fractionators operating in the US as of January 1, 2008
- About 33% of US gas processing capacity is located along the Gulf Coast but the bulk of new additions are planned for the Rockies (currently 11% of capacity) and AR/LA/TX (20% of current capacity)
- About 80-85% of fractionation takes place along the Gulf Coast; the NGLs are produced close to the primary end users – petrochemical companies
- The average gas processing plant is getting larger and more efficient

Energy Value Chain

Natural Gas Liquids

The typical NGL “barrel” looks like this:

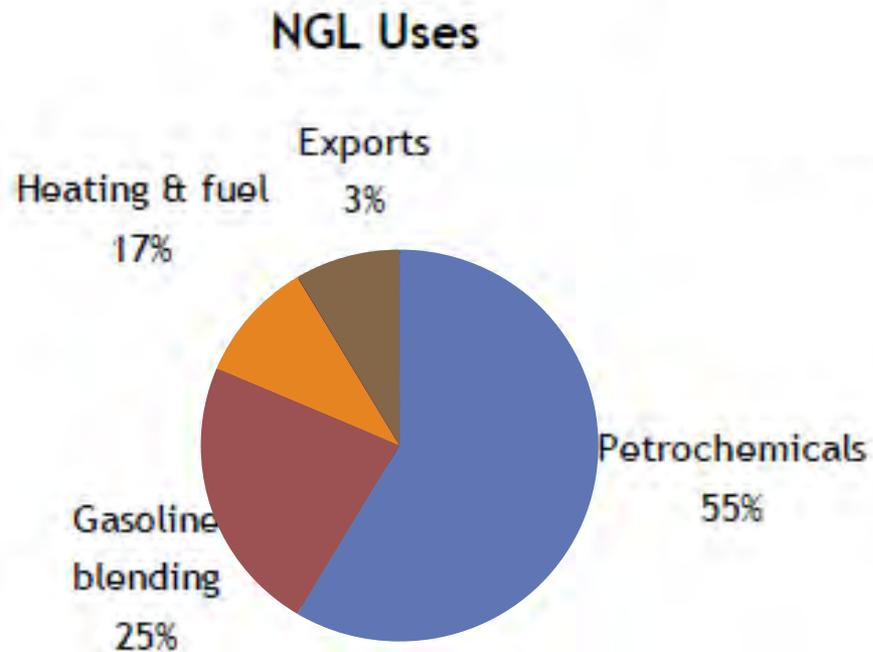
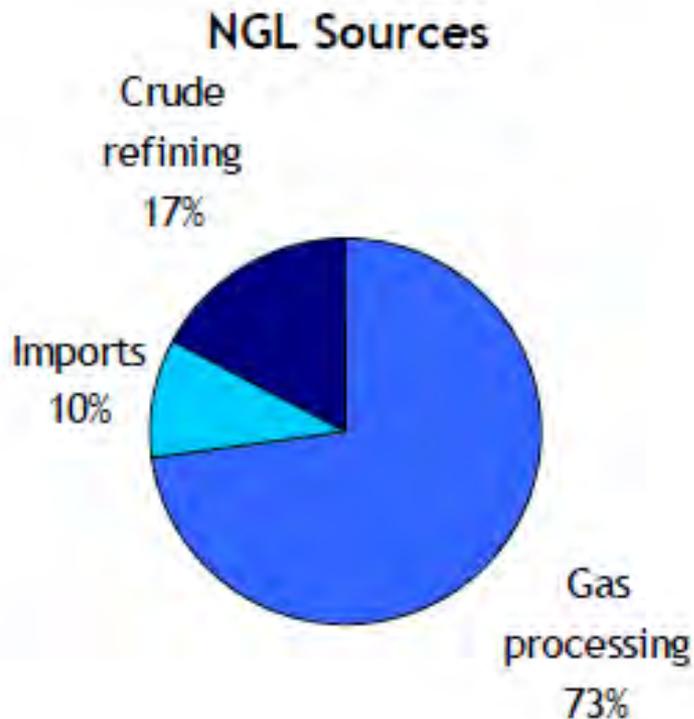


- Propane and heavier components (propanes +), make up approximately 60% of the NGL stream, and have to come out of the wet gas produced from the wellhead. Pipeline specs mandate it
- Ethane is “discretionary,” meaning producers/processors can opt to keep it in the stream or remove it, depending on economics
- Keeping ethane in the stream is called “ethane rejection” (it is the opposite of what is intuitive, but think of it from the processors’ standpoint). The amount of Btu's is always the same – it is just the state of matter that is different.

Ethane rejection = more gas, fewer NGLs
Normal processing = less gas, more NGLs

Energy Value Chain

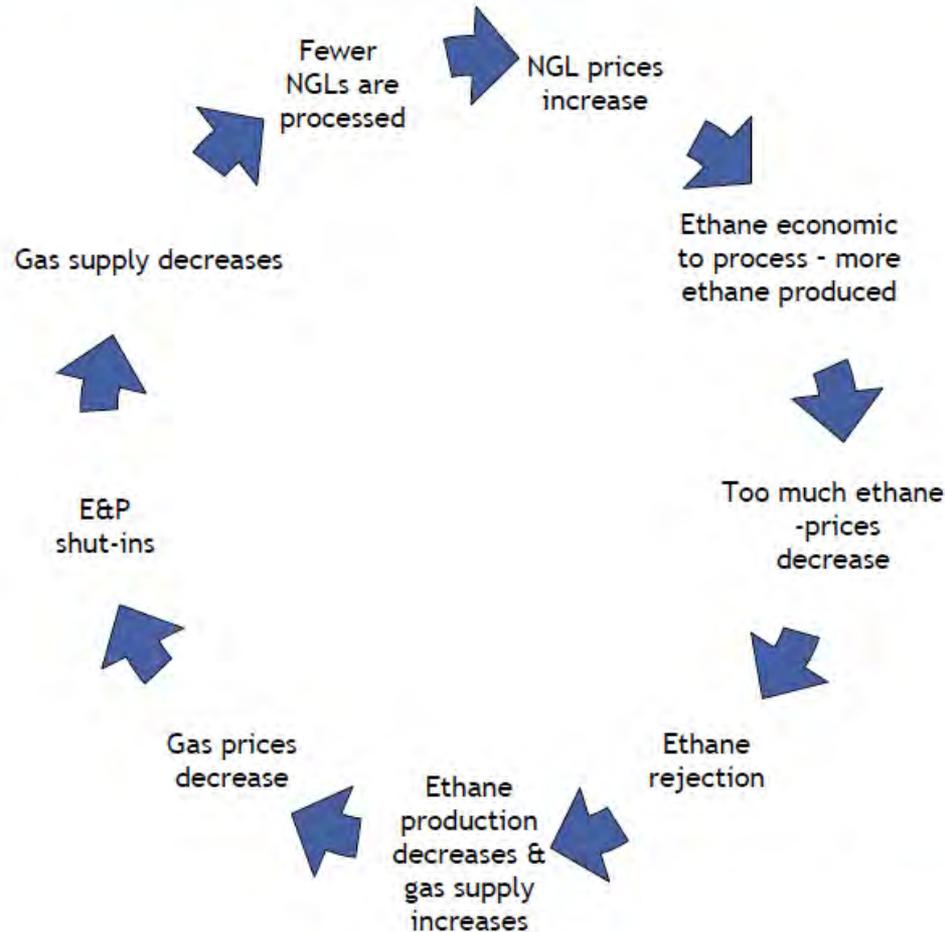
NGL Sources and Uses



Energy Value Chain

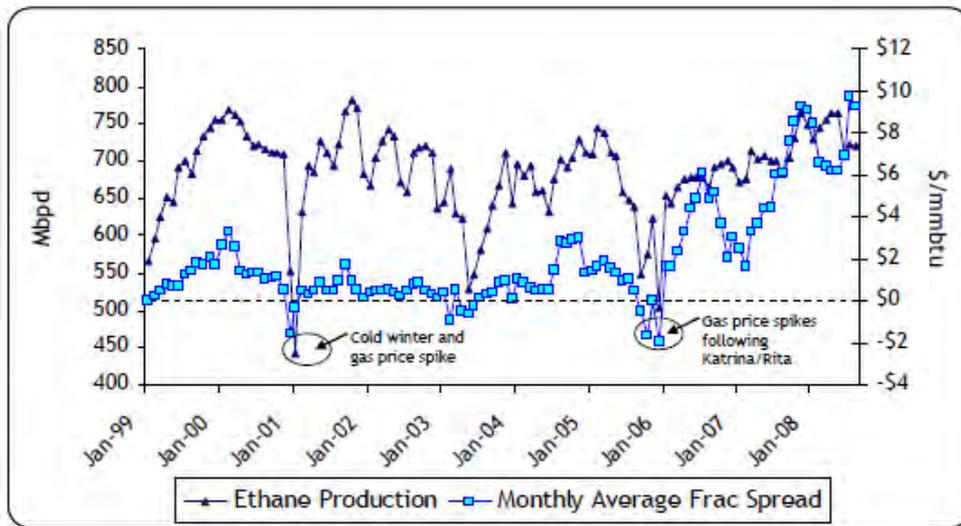
NGL Supply / Demand Balance

Market for Processing is Self-Correcting



Energy Market

Frac Spread vs Ethane Production



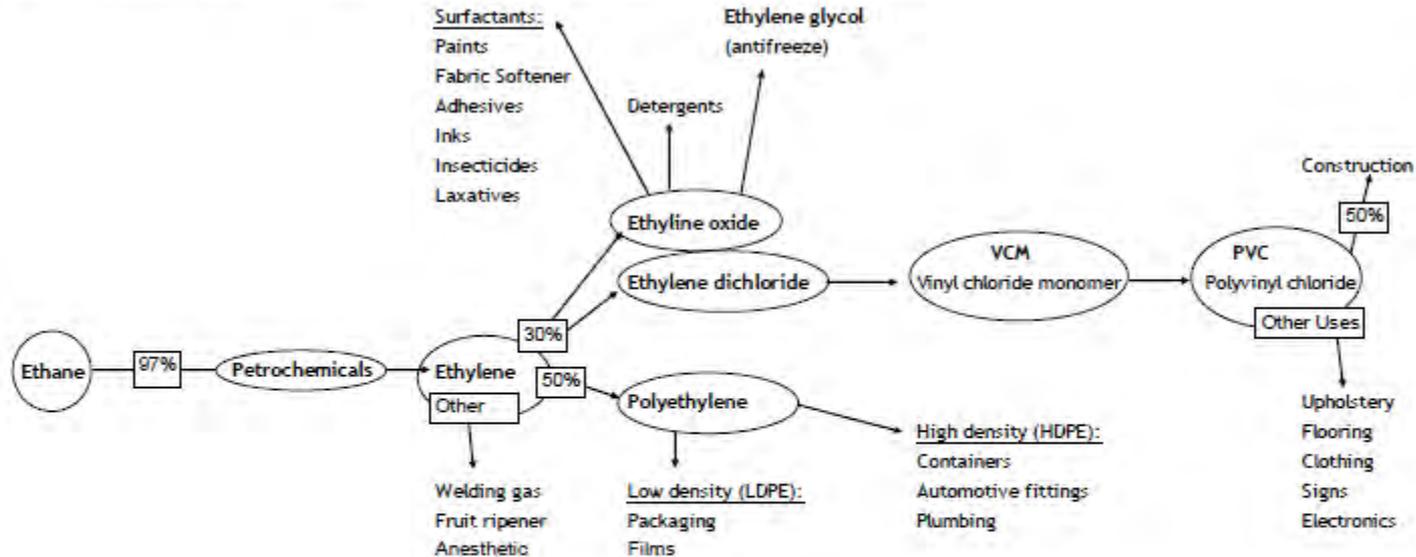
Source: EIA/DOE, Tudor, Pickering, Holt & Co.

- If frac spreads go negative, processors will reject ethane (approx. 35 – 45% of stream) keeping it in the gas
- Gas supply then increased, gas prices go down, feedstock becomes cheaper and markets correct
- If frac spreads go negative, most processors have “conditioning language,” which allows them to at least cover costs

Energy Value Chain

Demand Drivers for NGLs: Ethane & Ethylene

Uses of Ethane & Ethylene

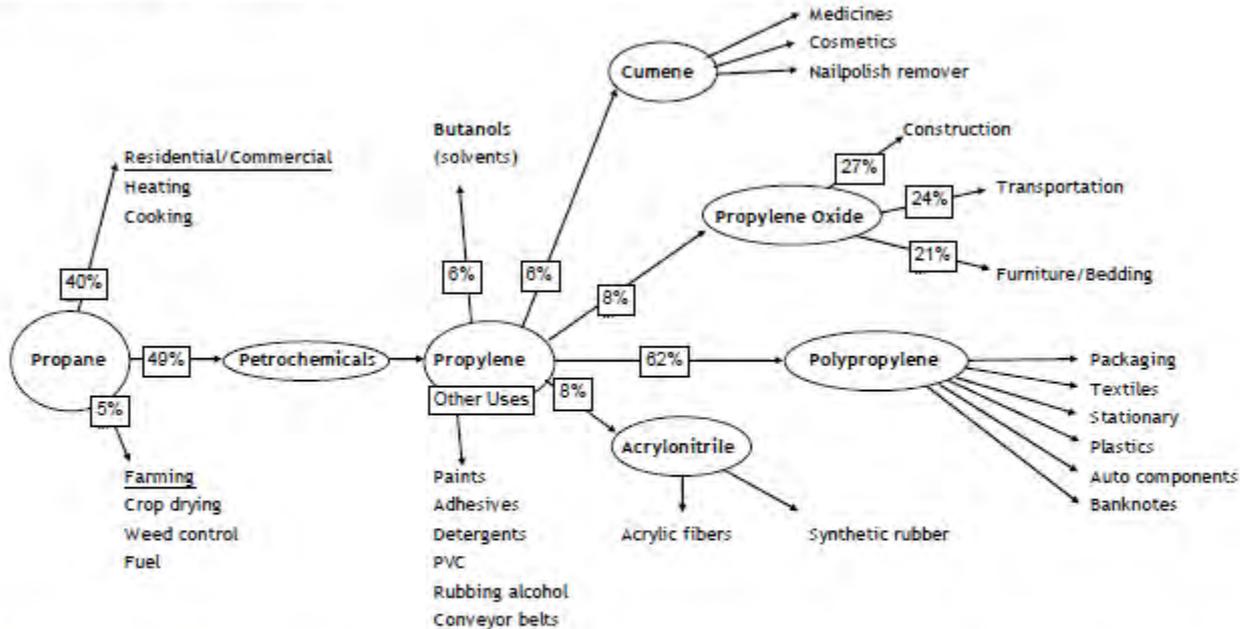


- Ethylene is the simplest alkene and the most widely produced organic compound in the world. 97% of ethane is used for ethylene production
- About 50% of ethylene is polymerized into polyethylene. This polymer is used most commonly to form lightweight packaging products (i.e. shopping bags) from low-density polyethylene (LDPE) and as a medium for injection molding (to make products like plastic containers) from high-density polyethylene (HDPE)

Energy Market

Demand Drivers for NGLs: Propane & Propylene

Uses of Propane & Propylene

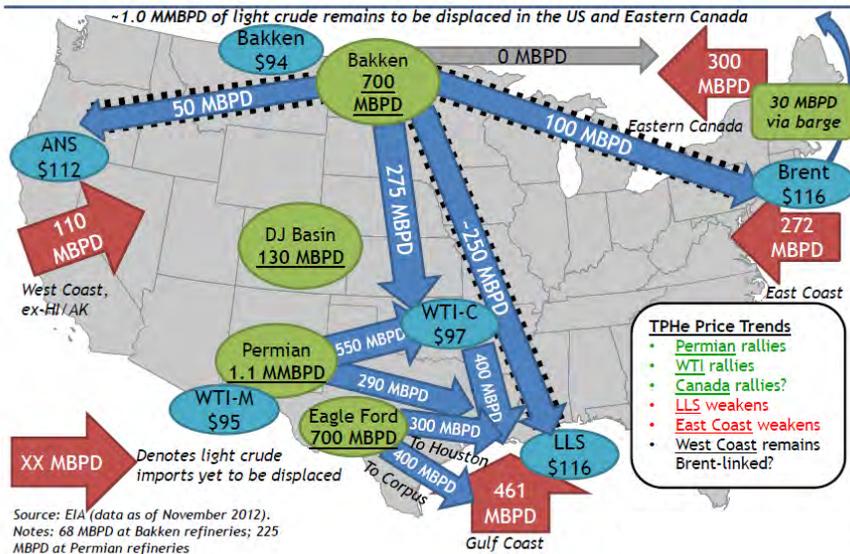


- Propylene is the second simplest alkene and is most commonly produced as a by-product in ethylene production. About 62% of propylene is polymerized into polypropylene. This polymer is most commonly used as a medium for injection molding (for plastic products like containers) and in the fibers market (i.e. carpeting, textiles)
- Propane demand has two seasonal offsets. Residential/commercial demand (40% of total) peaks during the winter heating season and troughs in the summer. Petrochemical demand (40%) peaks during the summer when propane prices are lower, as the petrochemical industry switches between feedstocks depending upon price

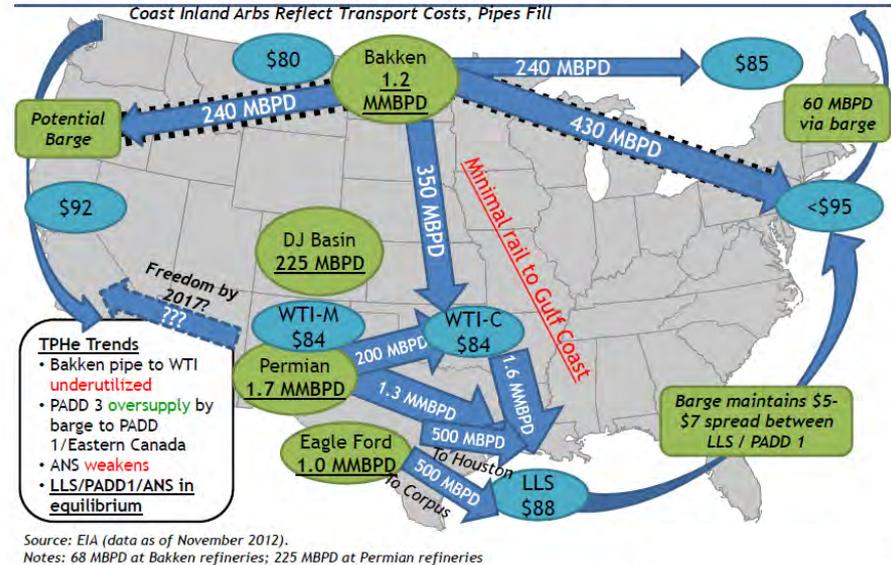
Energy Market

North American Crude Bottlenecks

2013 Crude Quick Look: Before Saturation



2014-15: Light Imports Displaced



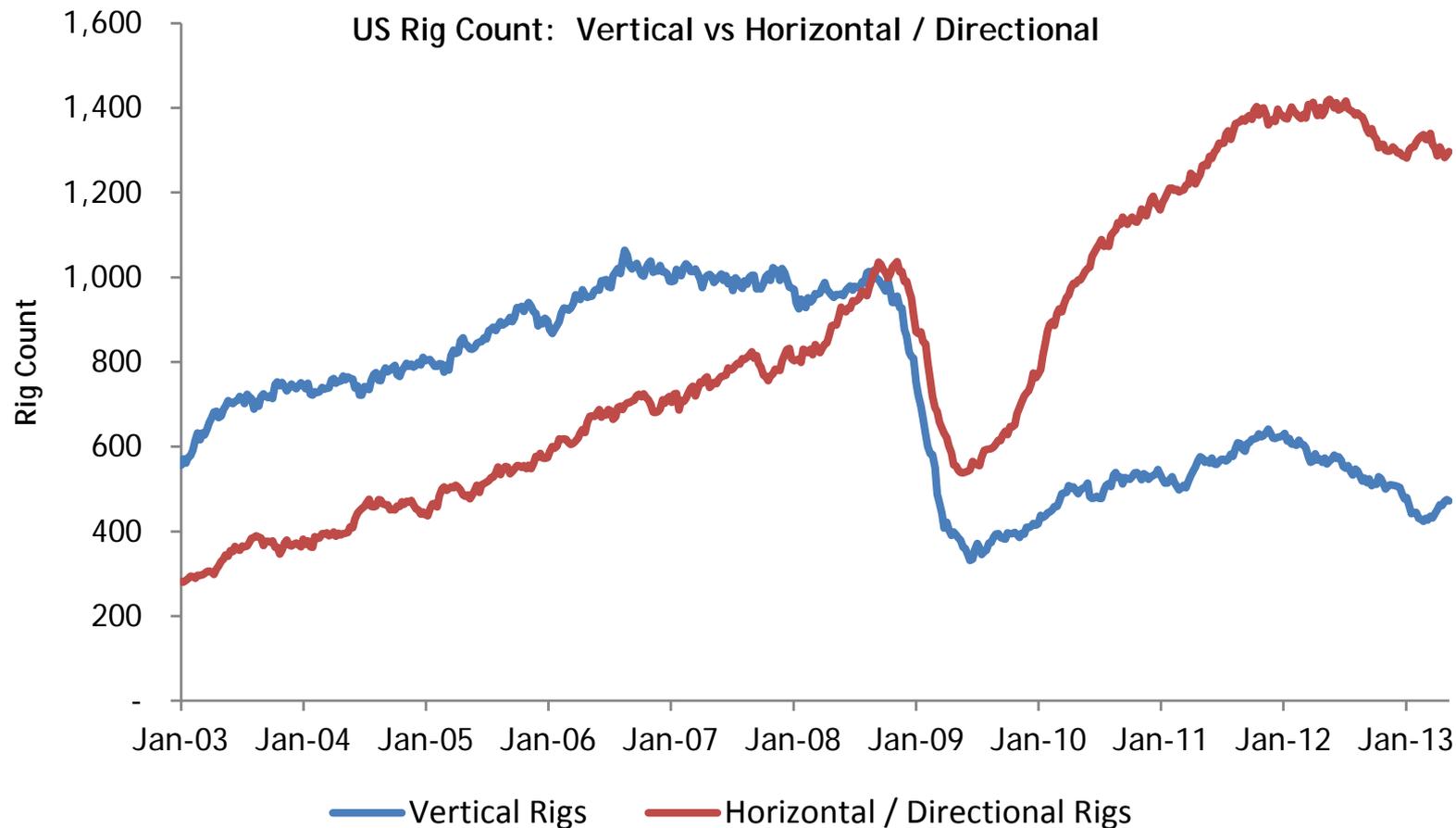
Energy Market

US Crude Imports by Region				
Region	Light		Heavy/Medium	
	2010	2012	2010	2012
Asia Pacific	30	23	34	14
Canada	258	315	1,705	2,115
Europe	113	34	32	18
Former Soviet Republics	123	102	220	43
Latin America	75	53	1,738	1,707
Middle East North Africa	494	447	1,568	1,947
Mexico	208	188	939	756
West Africa	825	320	793	473
Total	2,125	1,482	7,038	7,073

Notes: All values are thousand barrels per day
 2012 values through August
 Light > 35 API

Energy Markets

US Rig Counts



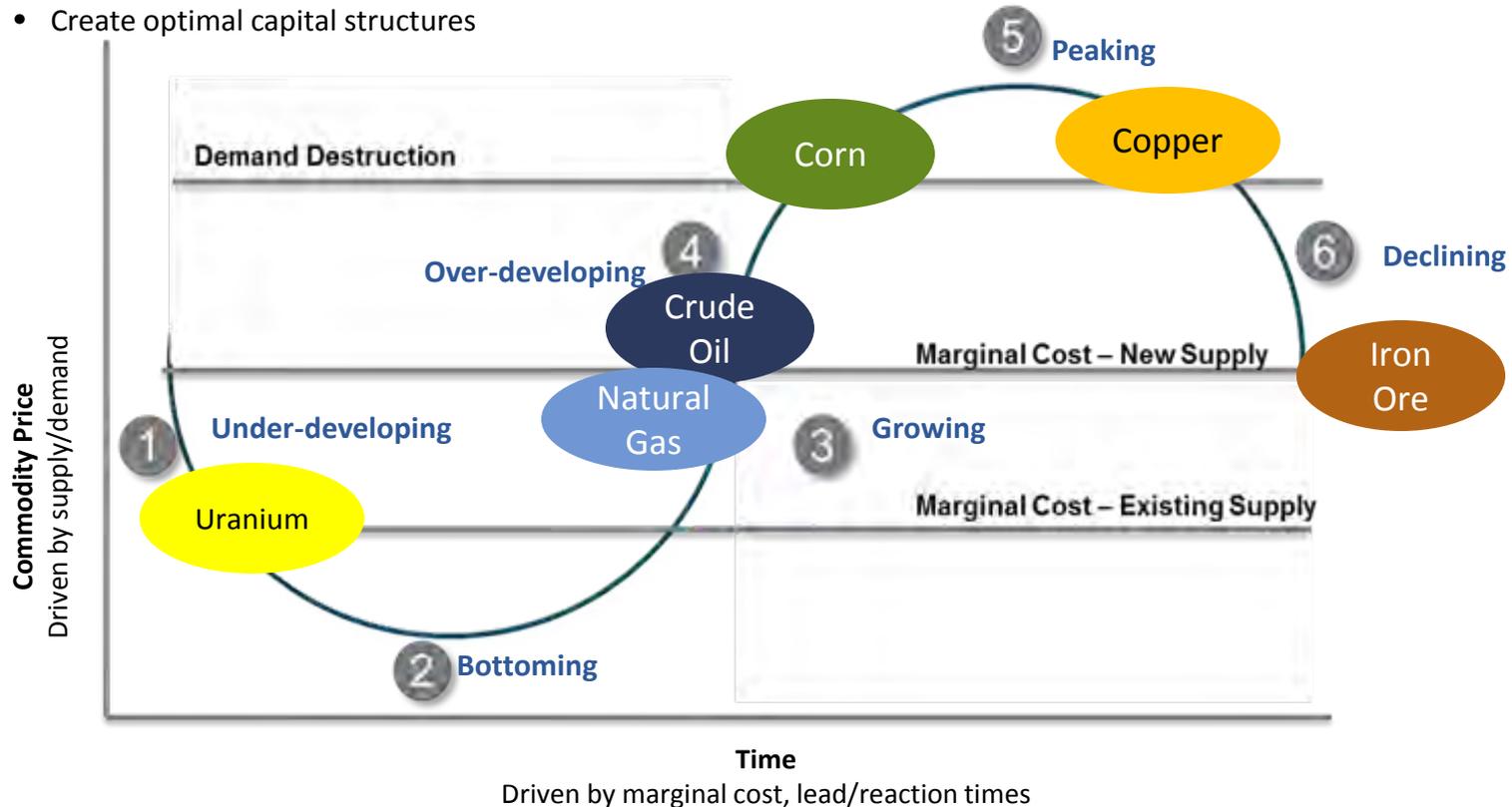
ENR Competitive Advantage

The natural resources industry is:

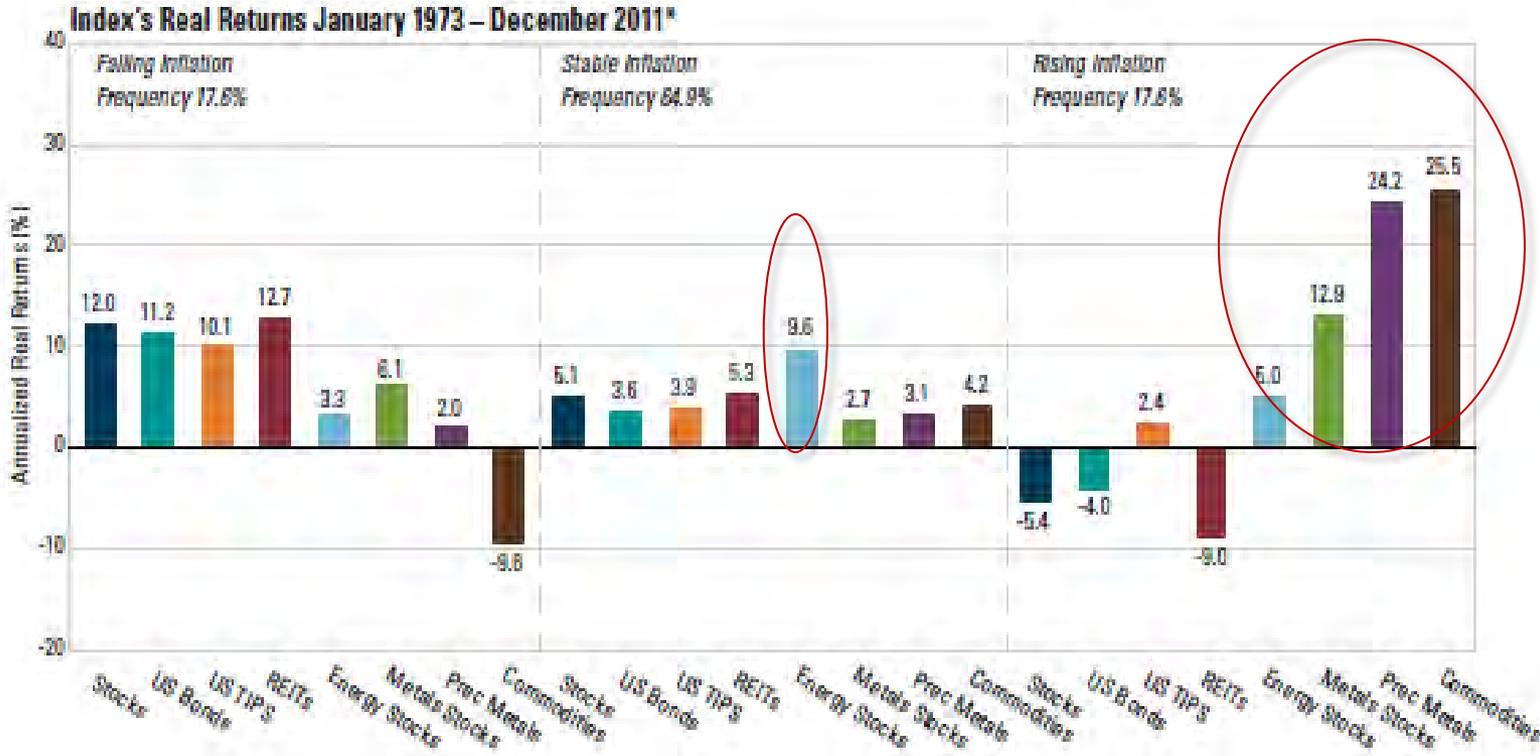
- Cyclical
- Volatile
- Capital Intensive

ENR has the ability to:

- Identify cycles and dislocations in the market
- Create optimal capital structures



Natural Resources Investments Provide Inflation Protection



Source: Wellington Asset Management

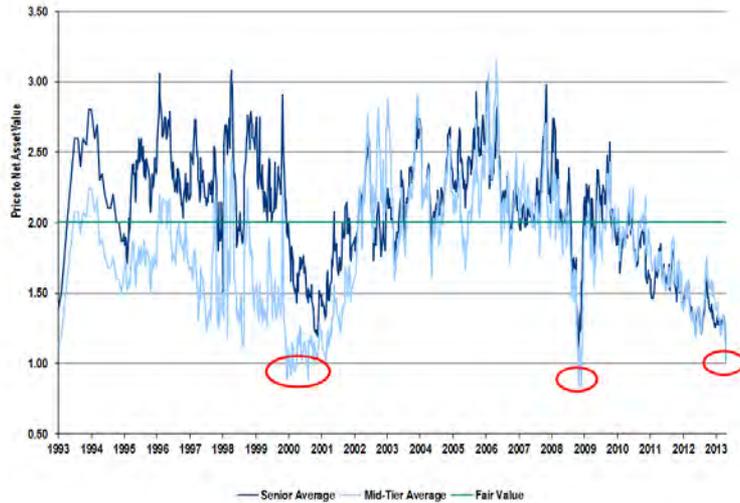
Always an Opportunity in ENR

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GSCI Energy 44.8%	Ind Metal 110.5%	Fertilizer 82.3%	Refining 77.1%	GSCI Metals 60.9%	Fertilizer 108.2%	GSCI Prec. 0.5%	Ind Metal 199.9%	Ind Metal 49.2%	MLPs 7.3%	Refining 77.2%
GSCI Prec. 23.5%	GSCI Metals 40.0%	Refining 66.6%	E&P 61.0%	Ind Metal 47.3%	Ind Metal 67.7%	GSCI Ag -28.9%	GSCI Metals 82.4%	Refining 42.5%	GSCI Prec. 6.6%	Timber 49.0%
GSCI Ag 10.4%	Refining 39.9%	E&P 34.8%	Ind Metal 59.7%	Water 35.3%	Services 43.1%	E&P -37.7%	MLPs 61.9%	GSCI Prec. 34.5%	GSCI Energy 4.9%	Fertilizer 29.3%
Fertilizer 7.2%	MLPs 35.1%	Services 34.4%	Services 50.0%	Fertilizer 33.6%	E&P 42.2%	S&P 500 -38.5%	Services 60.7%	GSCI Ag 34.2%	Refining 0.4%	Water 18.0%
E&P 2.6%	Fertilizer 34.7%	Water 30.7%	Fertilizer 37.6%	GSCI Prec. 24.1%	GSCI Energy 41.9%	Fertilizer -40.1%	E&P 43.7%	Services 32.7%	S&P 500 0.0%	S&P 500 13.4%
GSCI Metals 0.7%	Water 30.5%	GSCI Metals 27.5%	GSCI Metals 35.8%	MLPs 19.2%	Refining 30.8%	Water -40.4%	Timber 40.9%	MLPs 27.4%	Timber -1.4%	GSCI Ag 6.5%
Ind Metal -2.1%	Timber 30.1%	GSCI Energy 26.1%	GSCI Energy 31.1%	S&P 500 13.6%	GSCI Ag 28.3%	MLPs -41.5%	Water 28.2%	GSCI Metals 16.7%	Fertilizer -4.2%	GSCI Prec. 6.2%
Services -2.8%	S&P 500 26.4%	Ind Metal 24.2%	GSCI Prec. 18.6%	GSCI Ag 13.3%	GSCI Prec. 27.9%	GSCI Metals -49.0%	GSCI Prec. 25.1%	E&P 12.8%	E&P -8.1%	GSCI Metals 1.4%
Timber -8.3%	E&P 25.5%	MLPs 9.5%	Water 16.8%	Services 12.1%	Water 12.2%	GSCI Energy -52.4%	Fertilizer 25.0%	S&P 500 12.8%	Water -9.3%	E&P 0.7%
Water -9.0%	GSCI Energy 24.6%	S&P 500 9.0%	S&P 500 3.0%	Timber 6.5%	MLPs 6.4%	Timber -58.5%	S&P 500 23.5%	Water 12.6%	Services -10.6%	Services 0.1%
MLPs -10.4%	GSCI Prec. 19.5%	GSCI Prec. 5.6%	GSCI Ag 2.4%	E&P 3.0%	Timber 4.4%	Services -59.1%	GSCI Energy 11.2%	Timber 7.2%	GSCI Ag -15.9%	MLPs -1.2%
Refining -21.1%	Services 14.2%	Timber 5.0%	MLPs 1.2%	Refining -2.7%	S&P 500 3.5%	Refining -63.9%	GSCI Ag 3.8%	GSCI Energy 1.9%	GSCI Metals -22.3%	GSCI Energy -1.4%
S&P 500 -23.8%	GSCI Ag 6.6%	GSCI Ag - 20.2%	Timber -1.3%	GSCI Energy -26.8%	GSCI Metals -5.6%	Ind Metal -75.0%	Refining -17.8%	Fertilizer -1.8%	Ind Metal -36.2%	Ind Metal -3.9%

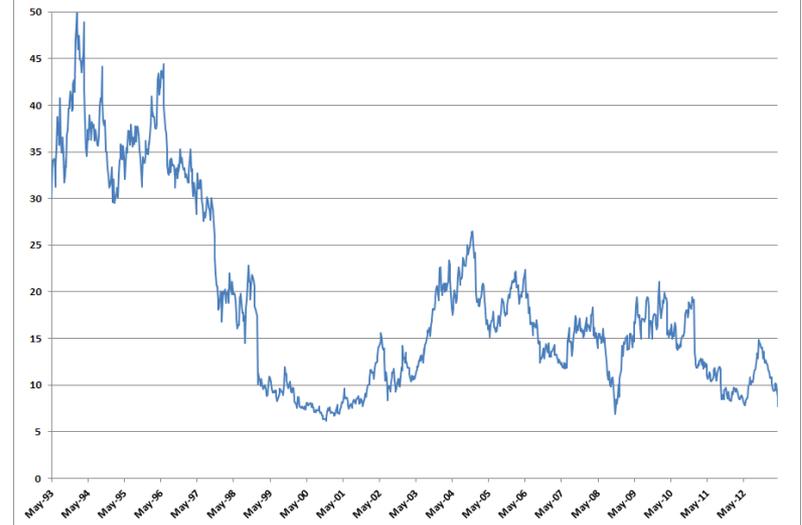
Public Equity Securities
Sorted by annual % returns

Selective Opportunities in Mining

P/NAV for Precious Metals Mining Companies



XAU Price to Cash Flow

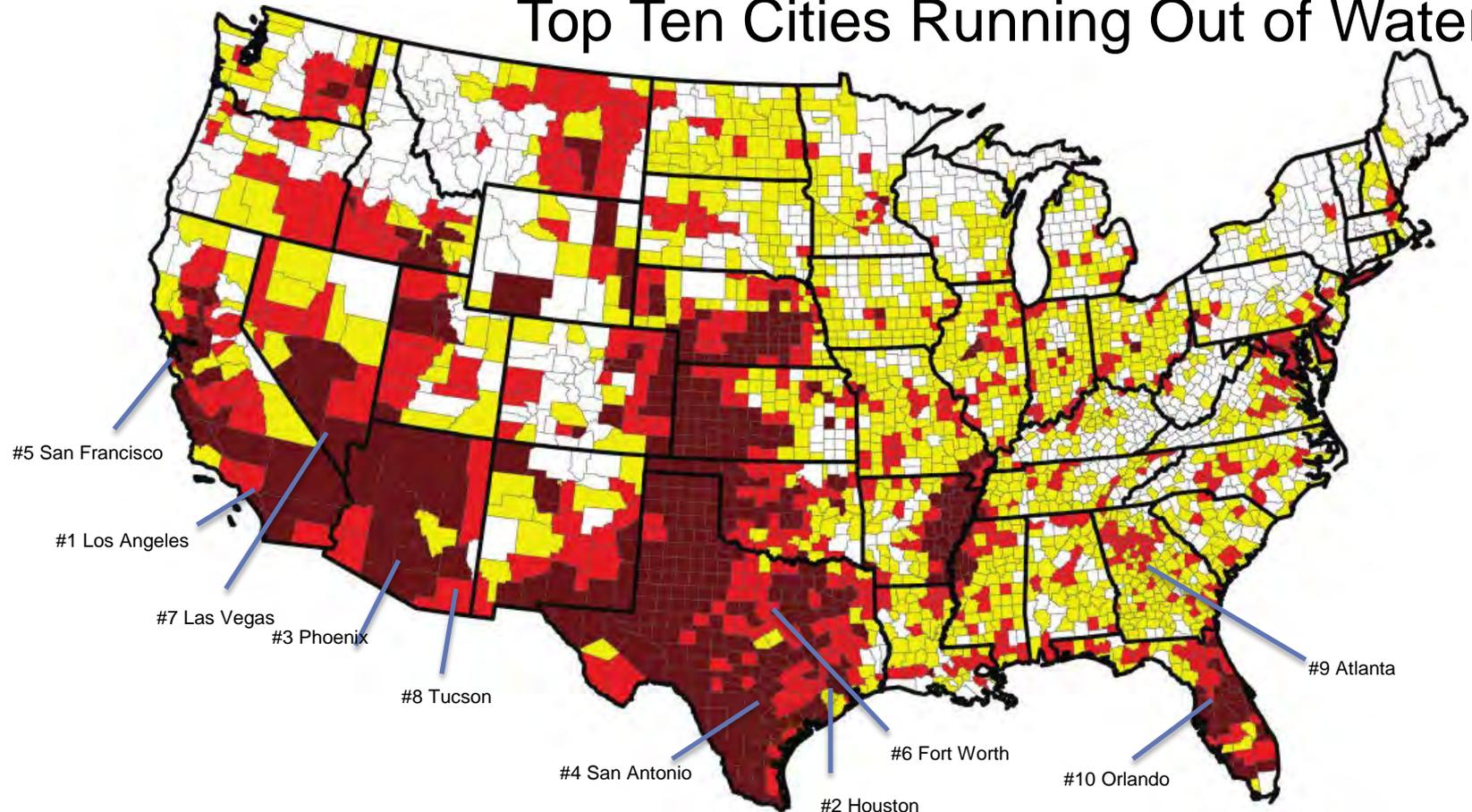


- Dislocations in mining investments relative to underlying metals prices can generate investment opportunities
- Precious metals miners have significantly lagged gold prices in recent years
- Industrial mining equities are trading close to their historical ratio relative to base metals prices

Water Opportunity

Supply Demand Imbalance

Top Ten Cities Running Out of Water



Although the US has ample water supplies in total, populations and economic activity are growing rapidly in areas already stressed, creating supply shortages

US Market Investment Opportunities for Water

Upstream

- Securing access to supply of fresh water

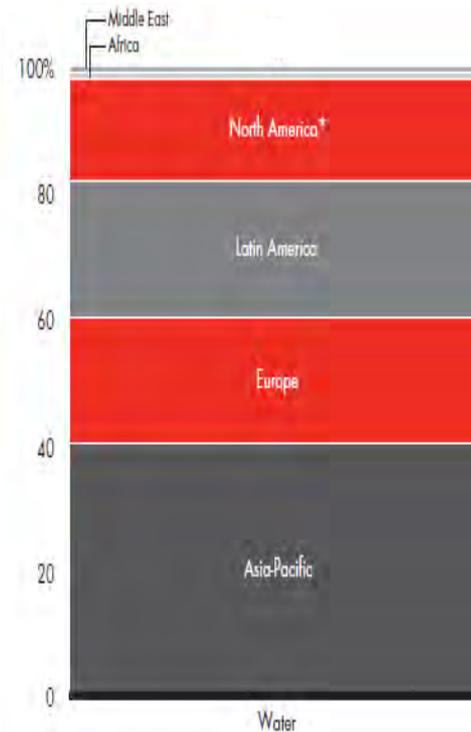
Midstream / Downstream

- Capital expenditures for transmission/storage infrastructure expected to be \$22 trillion by 2030, with approximately 20% in North America.

Services & Technologies

- Membrane technologies
- Conservation / Recycling

Projected cumulative
infrastructure spending,
2005 – 2030
\$22 trillion



*Mexico is included in Latin America in this analysis

Note: Investment needed to modernize obsolescent systems and meet expanding demand

Sources: Cohen & Steers, *Global Infrastructure Report 2009: The \$40 Trillion Challenge*; OECD *Infrastructure to 2030* (2006)