DBL INVESTORS
DOUBLE BOTTOM LINE VENTURE CAPITAL

NACUBO

Beyond Campus Conflict:

How Impact Venture Capital Can Address Student Concerns While Furthering Endowment Investment Goals

National Association of College and University Business Officers

Endowment and Debt Managers Forum

February 6, 2014

Nancy E. Pfund
Founder & Managing Partner

Section 1:
The History of Divestment and Background of the Fossil Fuel Divestment Movement

- Background of the Fossil Fuel Divestment Movement
- Unburnable Carbon & The Carbon Bubble:
  Risks Associated with Fossil Fuel Investments
- Supporters of Clean Energy Investment are Many and Varied
- Continuum of Divestment Options
- Divestment's Impact on Returns
- Impact Venture Capital Defined

Fossil Fuel Divestment is a Modern, Growing Movement

Fastest growing divestment movement in history

- 305 campuses in 18 months v. 165 over 10 years with anti-apartheid
- 5 universities have completely divested

Social media is a major catalyst

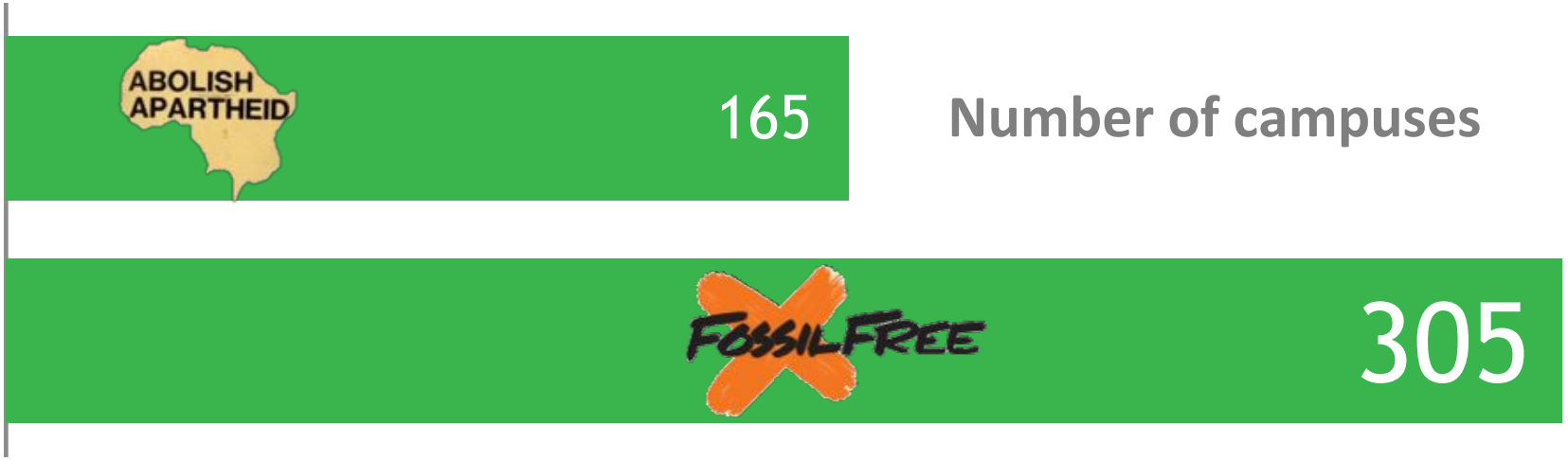
- Twitter utilized in a manner similar to the Arab Spring

Municipalities and other organizations have followed

- Commitments to divest within 5 years from 4 universities, 22 cities, 2 counties, and 20 religious organizations

17 family foundations controlling $1.8B in assets among the first to divest

- Schmidt Family Foundation, Russell Family Foundation, Wallace Global Fund, and The John Merck Fund announced last week they are divesting from fossils*



Source: *Responsible Endowments Coalition, *dealbook.nytimes.com 1/29/2014.*

Fossil Fuel Divestment Movement Initiated by Students Has Begun to Influence Institutional Investors' Thinking

- Nationwide student movement
- Sparked by Bill McKibben's *Rolling Stone* article which led to a 15-city "Do the Math Tour"

- Carbon Asset Risk Initiative, a group of 70 investors with $3T including CalPERS, demanded in Oct. 2013 that oil and gas, coal and electric power companies plan for low-carbon future

CalPERS

Thomas P. DiNapoli
State Comptroller
Office of the New York State Comptroller

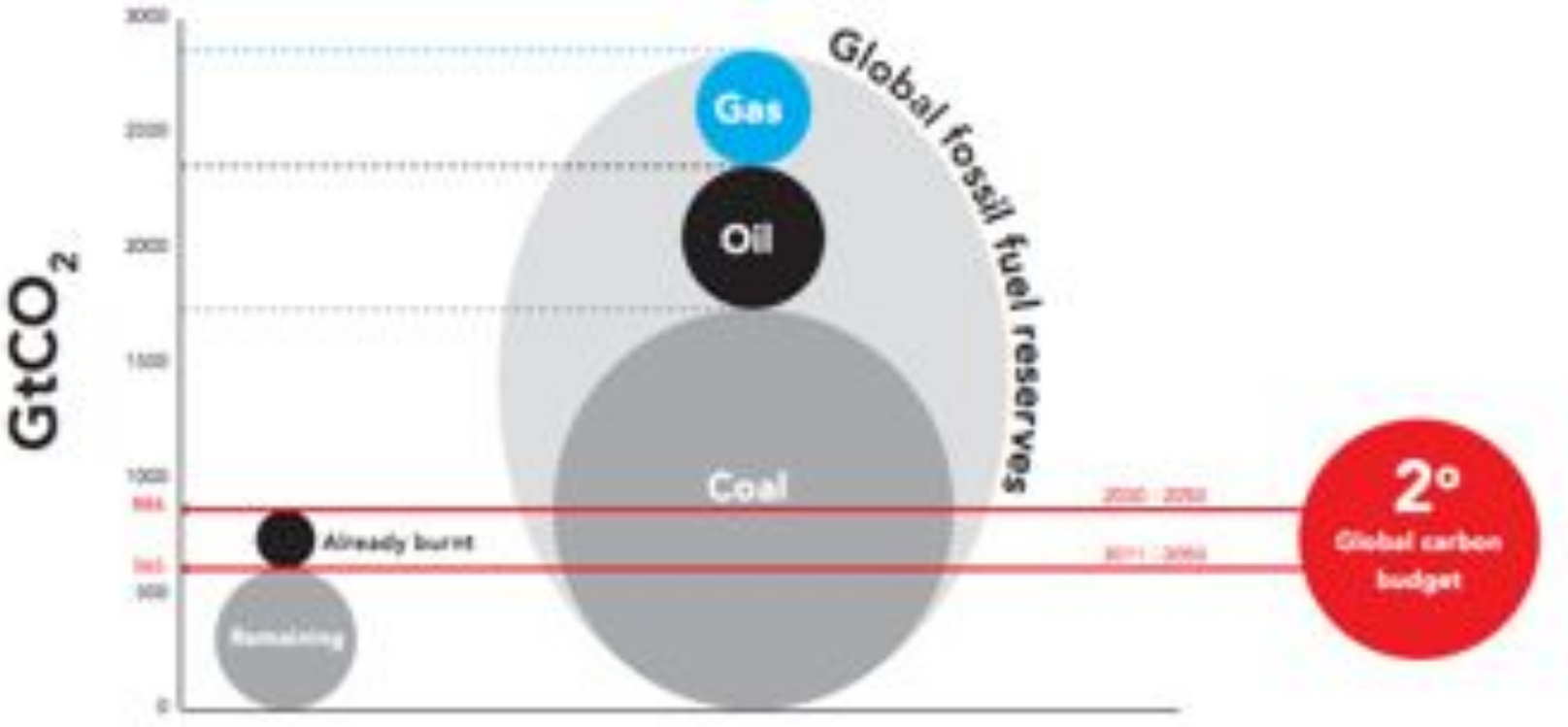
SCOTTISH WIDOWS INVESTMENT PARTNERSHIP

CALSTRS

Sources: *Fossil Free, Oxford's Stranded Asset Report and Ceres 10/2013*

Fossil Fuel Stocks' Value Based on Assets Likely to be Stranded

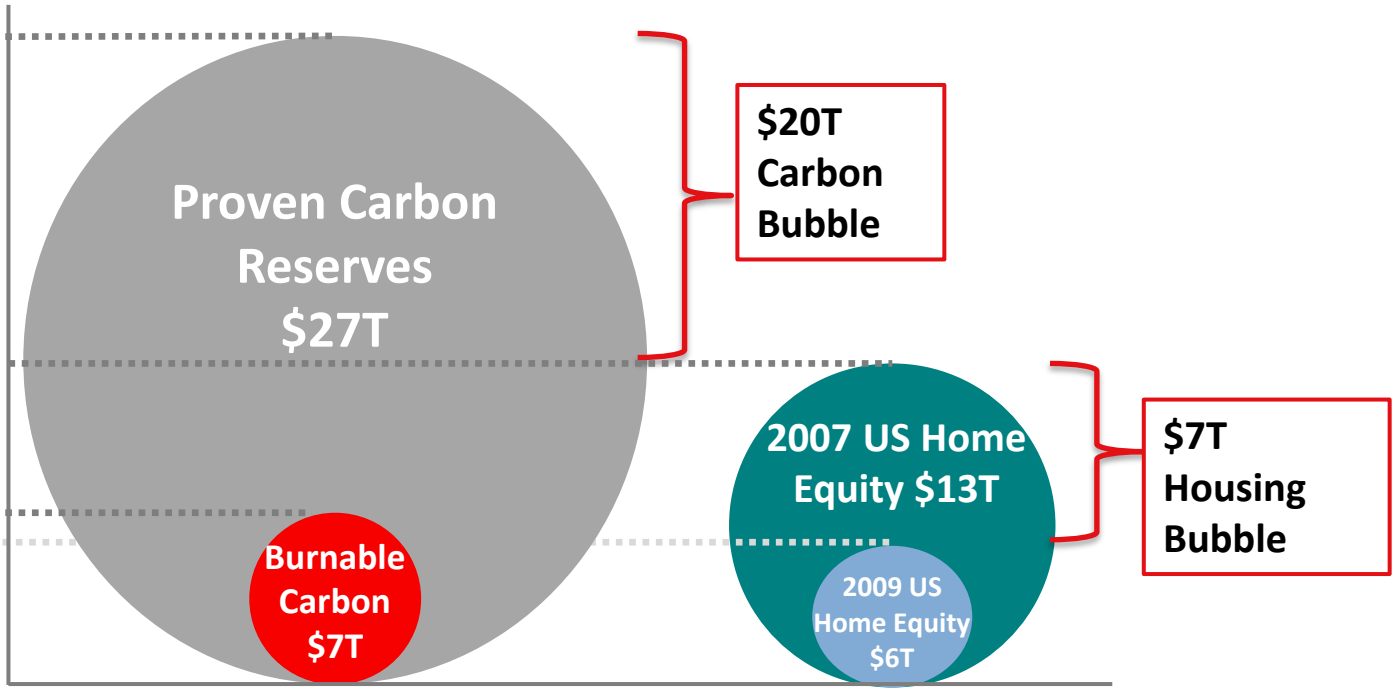
- UN budgeted allowable carbon at 2°C through 2050: "Carbon Cliff" takes us over budget
- 80% of carbon is "unburnable" and these assets will be "stranded"
- Global fossil fuel reserves on which the stocks are valued far exceed this limit, creating a huge pool of stranded assets and risk for those who hold these stocks



Source: *Carbon Tracker Initiative*

$20 Trillion Carbon Bubble from Stranded Assets Creates Portfolio Risk

- Fossil fuel stocks are potentially mispriced as they neglect the discrepancy between burnable carbon and proven reserves
  - Difference between burnable carbon and proven carbon reserves amounts to $20T
  - By comparison, in the 2007-2009 timeframe the US home equity bubble was $7T
- Fossil fuel companies spend $674B/year discovering new reserves, many of which are likely to be stranded
- Future price on carbon is also not reflected in current fossil fuel stocks



Sources: *Carbon Tracker Initiative, Associated Press, Freddie Mac, Federal Reserve Flow of Funds Report*

The Canary in the Coal Mine: Evidence Suggests Bubble May Have Already Popped

- Downward spiral of coal stocks suggests the bubble is beginning to pop
- Tight credit conditions for carbon-intensive projects

Market Vectors Coal ETF (KOL) 36-month Performance

Coal Mining Company Bankruptcies

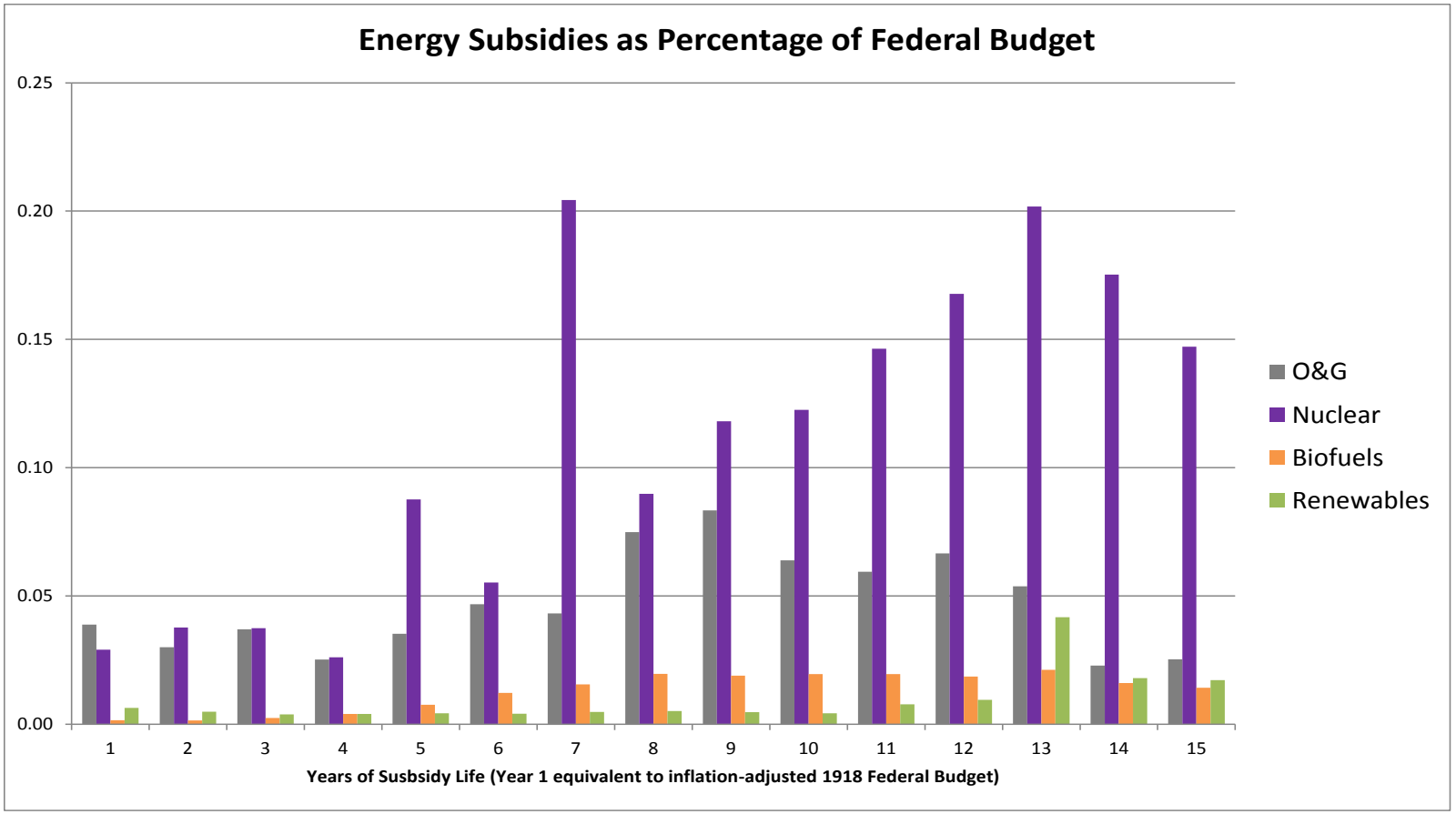
Company Name	Filing Year	Petition Date Assets ($ Mil.)	Outcome
America West Resources Inc.	2013	33	Unresolved
Patriot Coal Corp.	2012	3,777	Unresolved
Americas Energy Co.	2011	25	Unresolved
Clearwater Resources, L.P.	2009	100	Not Available
Consolidated Energy, Inc.	2007	26	Case Dismissed
James River Corp.	2003	N.A.	Emerged—Private
AEI Resources, Inc.	2002	330	Emerged—Private
Anker Coal Group	2002	167	Acquired
Pen Holdings, Inc.	2002	292	Emerged—Private

- Market Vectors Coal ETF (tracks Stowe Coal Index) has dropped from >$45 to <$20 in the past three years
- Five coal mining bankruptcy filings between 2007 and 2013 equating to nearly $4B in assets

Source: *Fitch Ratings, Bankruptcydata.com*

Federal Subsidies Have Historically Favored Oil & Gas Over Renewables

- U.S. Oil & Gas subsidies up to 5X support for Renewables
- In addition to the uncertain future for fossils, profits from this industry have historically been heavily subsidized



Source: *Pfund & Healey, "What Would Jefferson Do?" 10/2011*

And Yet… Renewables are Winning the Crowd

- 29 states, Washington, DC and 2 territories have renewable portfolio standards and 8 states and 2 territories have goals*
- In Nov. 2013, ~200 people signed up to speak on behalf of rooftop solar in Arizona before the AZ Corporation Commission and a ~1000 gathered to show support
- 448% increase in electric vehicle purchases from 2012 to 2013**
- 99% of the energy capacity added in October 2013 in the U.S. was renewable†
- MN Judge ruled solar power is a better deal than natural gas††

TUSK
TELL UTILITIES SOLAR WON'T BE KILLED

Sources: **DSIREusa.org, **Shahan- Cleantechnica.com 1/6/14, † FERC, †† Cleantechica FERC 10/13 Energy Infrastructure Report, † † Shahan- Cleantechnica.com 1/4/14*

Fossil Fuel Divestment is a Story of Stranded Assets, Mispriced Stocks and Burgeoning Innovation

- Although divestment may currently be a student movement, it is founded on sound math
- The coming Carbon Cliff will likely render the majority of fossil fuel assets stranded and unburnable
- The financial system built on the expectation that all carbon is burnable is unsustainable
- Fiduciaries will need to reposition themselves due to this substantial and mispriced portfolio risk, irrespective of any ethical view on fossils

ZURICH

General and life insurance products (market cap $39.6B) with more than 170 clients and >$200B in capital

Zurich is exposed to many of the risks associated with climate change, competition for scarce natural resources, and extreme poverty. We believe that impact investments, which can have a targeted, positive, and measurable effect on society and the environment, while generating a financial return commensurate with the risks they entail, are one way to help mitigate and address the exposure to such risks

Risk and Tracking Error of Various Divestment Options

- Building a carbon-free portfolio does not imply a high risk or high volatility allocation
- Fossil fuel investments make up only 4% of portfolios, on average
- Key demands of student movement: freeze new investments, divest over 5 years, 5% reinvestment in community and energy
- Continuum of divestment options:

	Exclusion of "Filthy Fifteen" Coal Stocks	Exclusion of Oil & Gas and Fuels Stocks	Exclusion of All Carbon-Intensive Stocks
Market Risk (Russell 3000)	17.6657%	17.6657%	17.9500%
Screened Portfolio	17.6662%	17.6758%	17.9633%
Incremental Risk	0.0006%	0.0101%	0.0133%
Theoretical Return Penalty	**0.0002%**	**0.0034%**	**0.0044%**

Broad Carbon Exclusion means all Oil, Gas and Consumable Fuels, Metals and Mining, Electric Utilities, Independent Power Producers and Energy Traders, and Multi-Utilities

Sources: *Barra Aegis and Aperio Group, Oxford Stranded Asset Report, Responsible Endowment Coalition. Numbers may not total due to rounding. Estimates as of November 30, 2012.*

Back to My Beginning – The 1977 Stanford Anti-Apartheid Divestment Movement

- Historically, most student-initiated divestment movements have resulted in national policy action even if divestment goal was not achieved
- Student movements are a leading indicator of social change
- Universities are key incubators for disruptive ideas
- Disruption produces new paradigms and new winners
- Both social and technical disruptions favor those ahead of the curve
- In its own way, the anti-apartheid era helped to shape my own investment approach and view of innovation

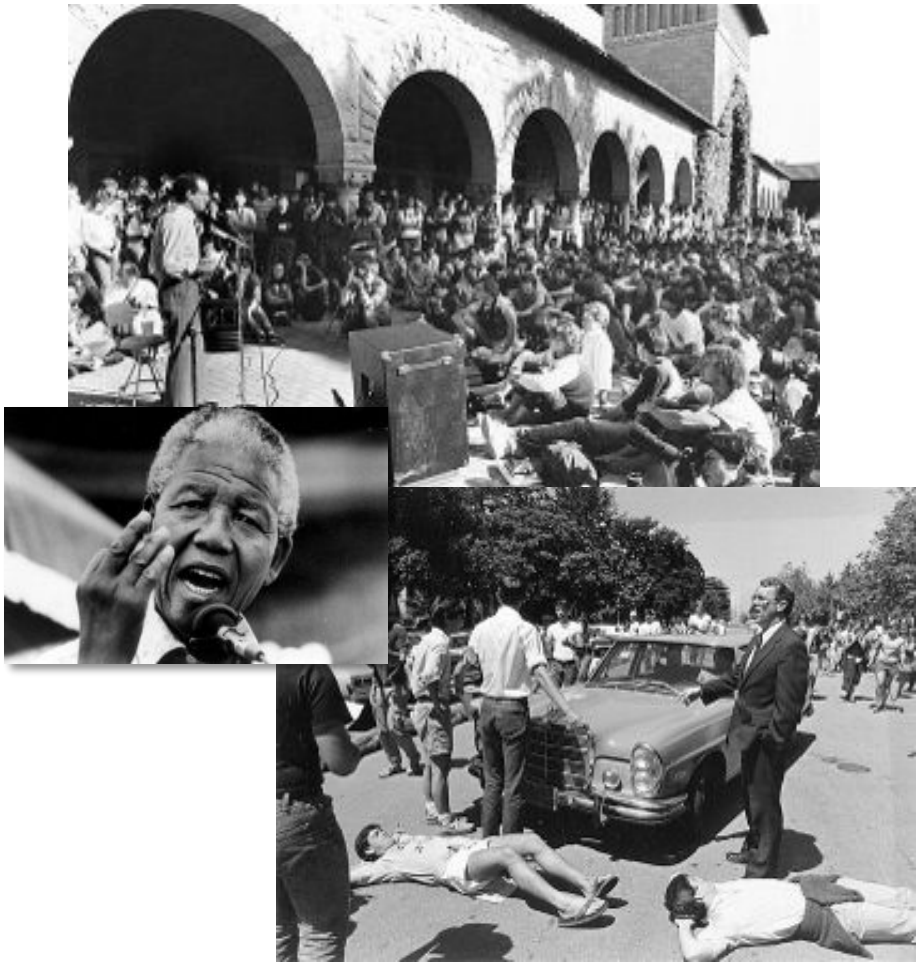


Image Source: *Stanford Daily Archives*

Investing capital for top-tier venture capital returns while enabling social, environmental and economic benefits

Generating a competitive advantage for double bottom line companies

What is Impact Venture Capital?

Active selection for impact and proactive support

FivePrime

view

SolarCity

POWERLIGHT SOLAR ELECTRIC SYSTEMS

TESLA

EcoScraps NO CHEMICALS | NO POOP® ORGANIC 100% Safe

PANDORA

revolution FOODS

ecologic packaging the earth can live with

Section 2:
Innovation Cycles

- Innovation Drives Returns
- Cyclical Themes Are Present Across Industries

  Cost-Reduction, De-Centralization, Personalization, Transparency, Convenience, On-Demand Service

- Energy Transformation Follows a Similar Pattern
- Increased Carbon Transparency by Corporations to Meet Consumer Expectations and Mitigate Risk
- Energy Innovation Is Driving Investment Opportunities

Huge Opportunities Exist at the Onset of an Innovation Cycle




Computers

Main Frame	Mini Computer	PC	Tablet & Cloud




Telecom

Landline	Wireless Landline	Cell Phones	Smart Phones / VoIP


Radio

Terrestrial Radio	Satellite	Personalized Internet Radio



Automobiles

Gas-Powered / SUVs	Hybrid	Plug-in Electric

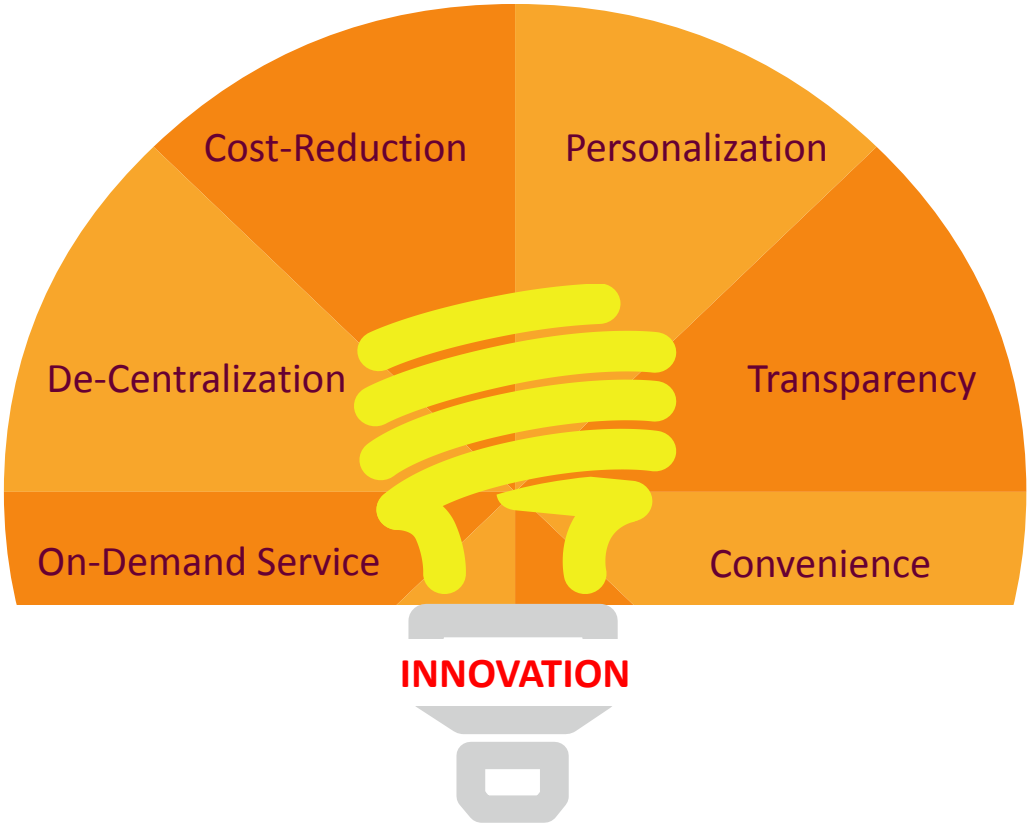
An Example from the DBL Portfolio: Pandora - Transforming Top 40 to Your Top 40 on Any Device

- 200MM Registered Users and 71MM Active
- 8.1% Share of Radio Listening, up from 2.4% at IPO in Q2 2012
- Mobile Share of Revenue is Nearly 80%
- June 2011 IPO, market cap of $6.8B as of 1/17/2014

Source: *Pandora.com*

Energy Industry is in the Midst of an Innovation Cycle Akin to Computers, Telecom, Radio and Autos

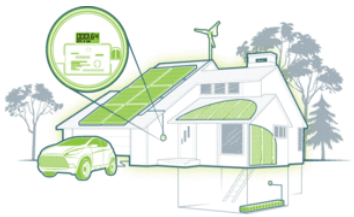
Themes in Innovation Cycles of the Past are Present in the Energy Sector



After 100 years of being a relatively steady state industry, now is the era of transformation for the energy sector

Energy Industry Innovation Cycle Creates Return Opportunities



Centralized Fossil Fuel Plants (e.g. Coal)	Utility-scale Renewables	Distributed Renewables	Fully Integrated MicroGrids

- Concentrated energy investment in fossil fuel stocks creates portfolios that are lacking exposure to innovation within the energy industry
- In 10 years, oil companies will be “energy” companies
  - Masdar Capital spending billions to diversify economic future of Abu Dhabi and the UAE away from fossils*
- Literacy of carbon supply chain is increasing daily and therefore changing consumer behavior
  - Cars, clean electricity, storage, climate control
- Energy price certainty is a major factor in driving renewable energy investment
  - Renewable energy provides energy price security whereas it is reasonable to expect increased volatility in fossil fuels and increased regulation due to the carbon cliff

Source: *Masdar.ae*

An Energy Company Delivering Clean, More Affordable Power Through Distributed Generation

We've seen this movie before: 20 years ago, the telecom services industry was facing the same transformation the energy industry faces today

Risk from Bell Atlantic's 1993 10-K

"Wireless portable telephone services... [allowing] customers to make and receive telephone calls from any location... compete with services currently offered by the Company and could result in losses of revenues"

Risk from Pacific Gas & Electric's 2012 10-K

"Distributed generation and storage, a viable, cost-effective alternative to the Utility's bundled electric service.... [through which] customers could bypass its distribution and transmission system...may result in... loss of customer growth"

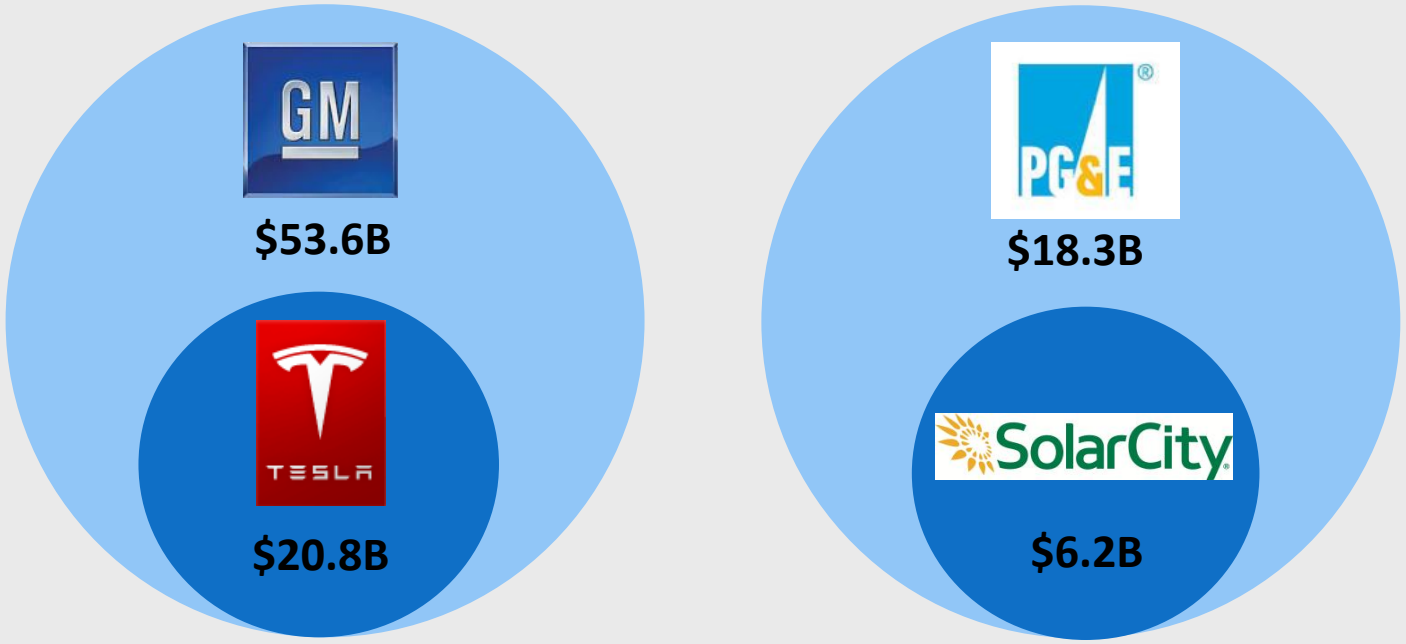
Both provide alternative access and greater independence from traditional networks

Source: *SolarCity.com, Investor Presentation*

Photo Credit: *FreeDigitalPhotos.net, Serge Bertasius*

David is Catching Up With Goliath

Market cap comparison as of January 17, 2014



A century separates the founding of these companies

Corporations Increasingly Transparent about Carbon and Sustainability

- Companies beginning to disclose carbon risks and adopt new accounting practices
  - Puma's environmental P&L*
  - Coke sees climate change as a force that contributes to increased financial risk **
- Part of broader movement towards total supply chain transparency
- Major brands leveraging sustainability as a differentiator
  - Intel manufacturing "conflict-free" microchips
  - McDonald's moving to produce sustainable beef
  - Safeway moving to paper bottles

PUMA

	Water use $ million	GHGs $ million	Land use $ million	Other air pollution $ million	Waste $ million	TOTAL $ million	% of total
	33%	32%	26%	7%	2%	100%	
TOTAL	47	47	37	11	3	145	100%
PUMA operations						8	6%
Tier 1						13	9%
Tier 2						14	10%
Tier 3						27	19%
Tier 4						83	57%

intel

Coca-Cola

McDonald's

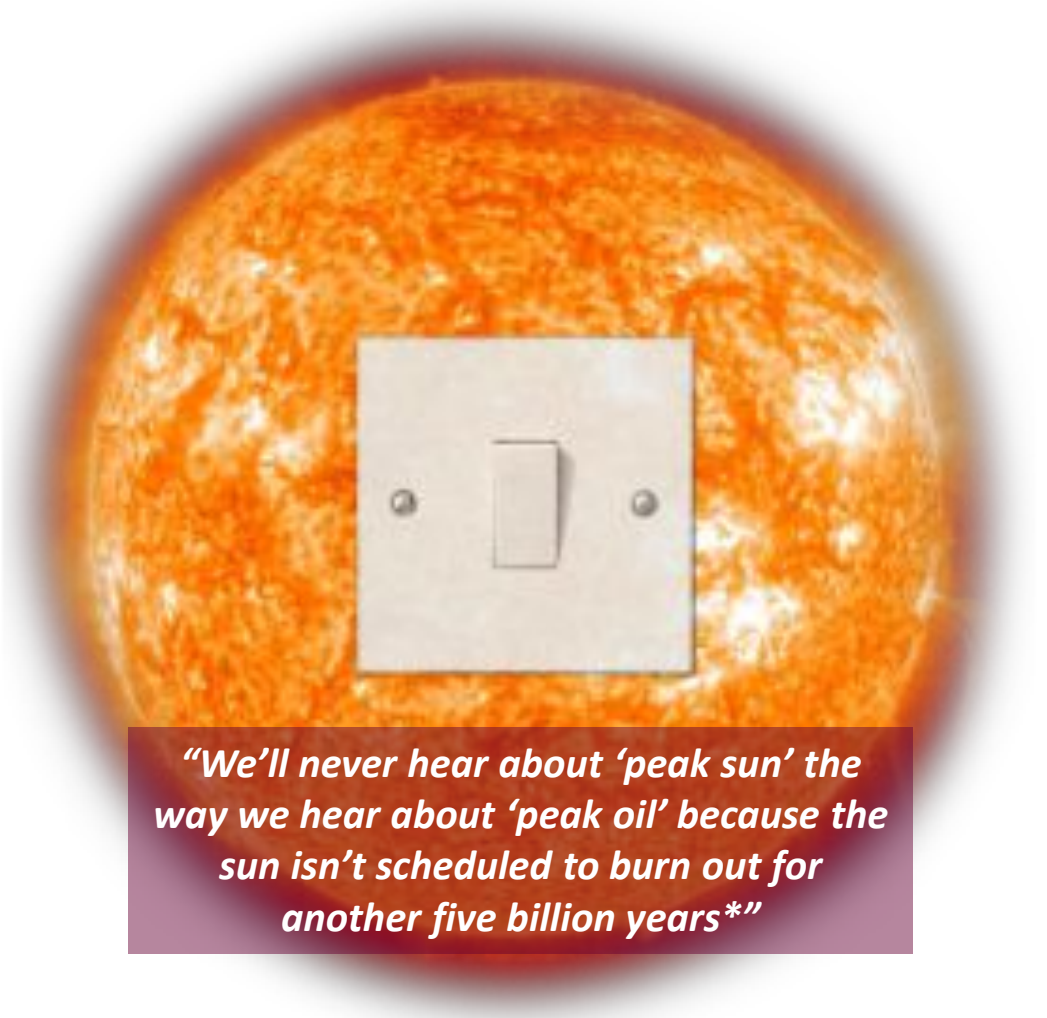
Source: *Puma,**NYTimes.com 1/24/14

The Next Tesla and SolarCity Will Be Built on Advanced Energy Storage

The clean energy sector is loaded with technologies on the cusp of commercialization that have gigantic markets

Advanced Energy Storage

- Today, turning on a light switch could be an on-switch for a natural gas peaker plant
- Advanced energy storage is the holy grail of energy because it eliminates the need for on-demand energy generation and efficiently integrates widespread renewables into the grid



"We'll never hear about 'peak sun' the way we hear about 'peak oil' because the sun isn't scheduled to burn out for another five billion years*"

Source: **Elon Musk, The Washington Post*

Photo Credit: *FreeDigitalPhotos.net, Simon Howden*

Energy's Innovation Cycle Both Unseats Incumbents and Creates Unique Investment Opportunities

Section 3:
Cleantech Investment Thesis

- Cleantech Investments Are Available Across a Spectrum of Risk and Asset Classes
- Cleantech Is Driving Impressive Returns

  Gen2 Cleantech Funds, Public Equities, Fixed Income, Real Assets
- Investor Tools Designed to Increase Carbon Transparency and Assess Carbon Risk
- Today's Green Options Are Often More Sought After Than Carbon-Heavy Alternatives

Cleantech Assets are Now Available Across the Risk Spectrum

Once upon a time, cleantech was largely only available to venture investors and wind project financiers. Today, early companies have matured and exited, creating many asset classes to access this enormous and growing opportunity.

- Traditional institutional investors can now participate across ETFs, Bonds, Private Equity and Real Assets
  - Zurich Insurance Group AG (a $39B company) has invested over $1B in green bonds, making it the largest investor in such clean power securities*
  - The NASDAQ Clean Edge Green Energy Index Fund was up +88.72% in 2013**
- New vehicles are enabling greater financing opportunities for participation in financing clean energy
  - Long awaited securitization of solar leases has begun
  - The power of the crowd is coming to energy: crowdfunding via Mosaic and CommonAssets (acquired by SolarCity)
  - Property Assessed Clean Energy (PACE) could have widespread utilization in CA and other states through a newly proposed insurance product that will make Freddie Mac and Fannie Mae whole in case of foreclosure

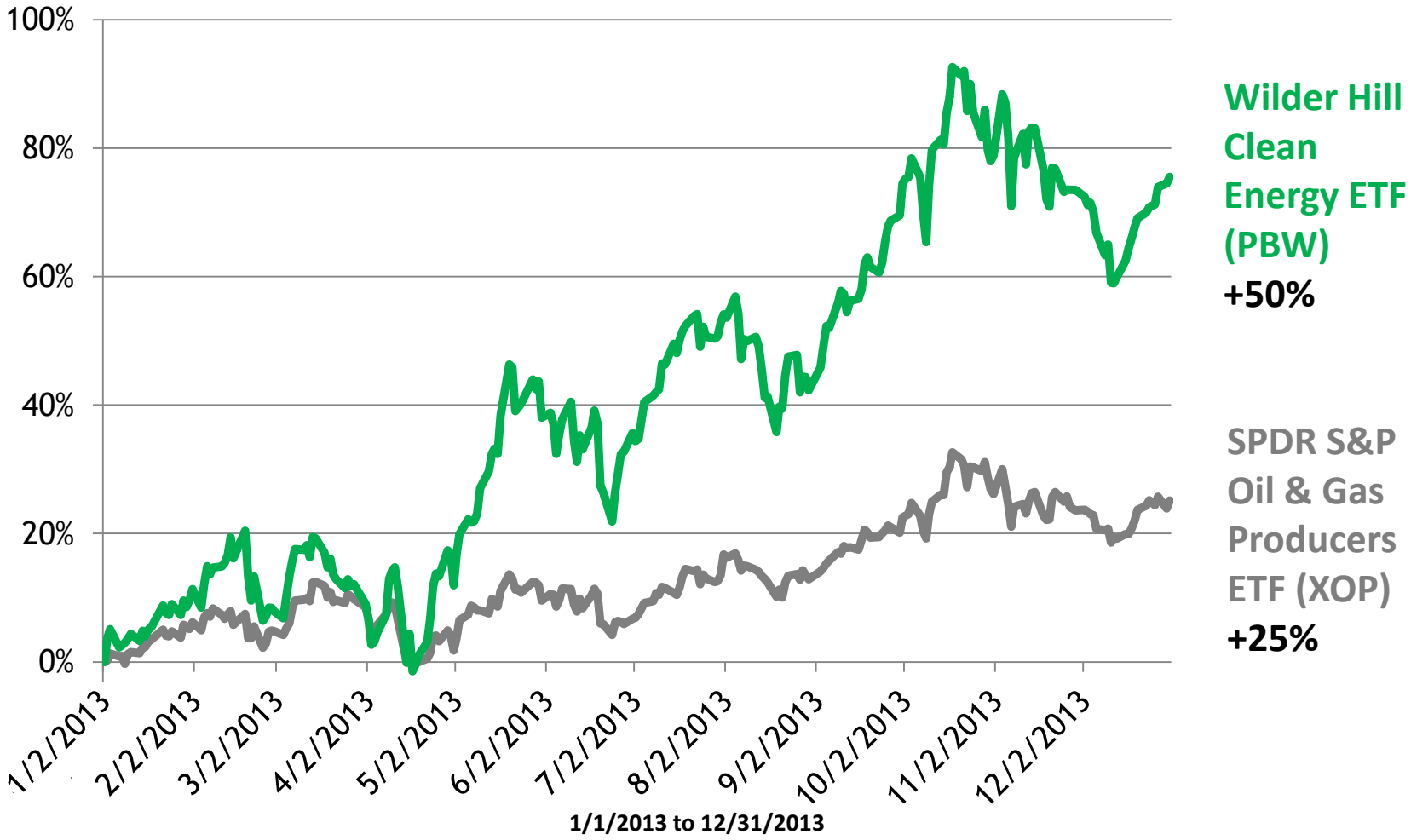
NASDAQ®

SolarCity®

Sources: **CNN Money 11-18-13, **ETFtrends.com 22-1-14*

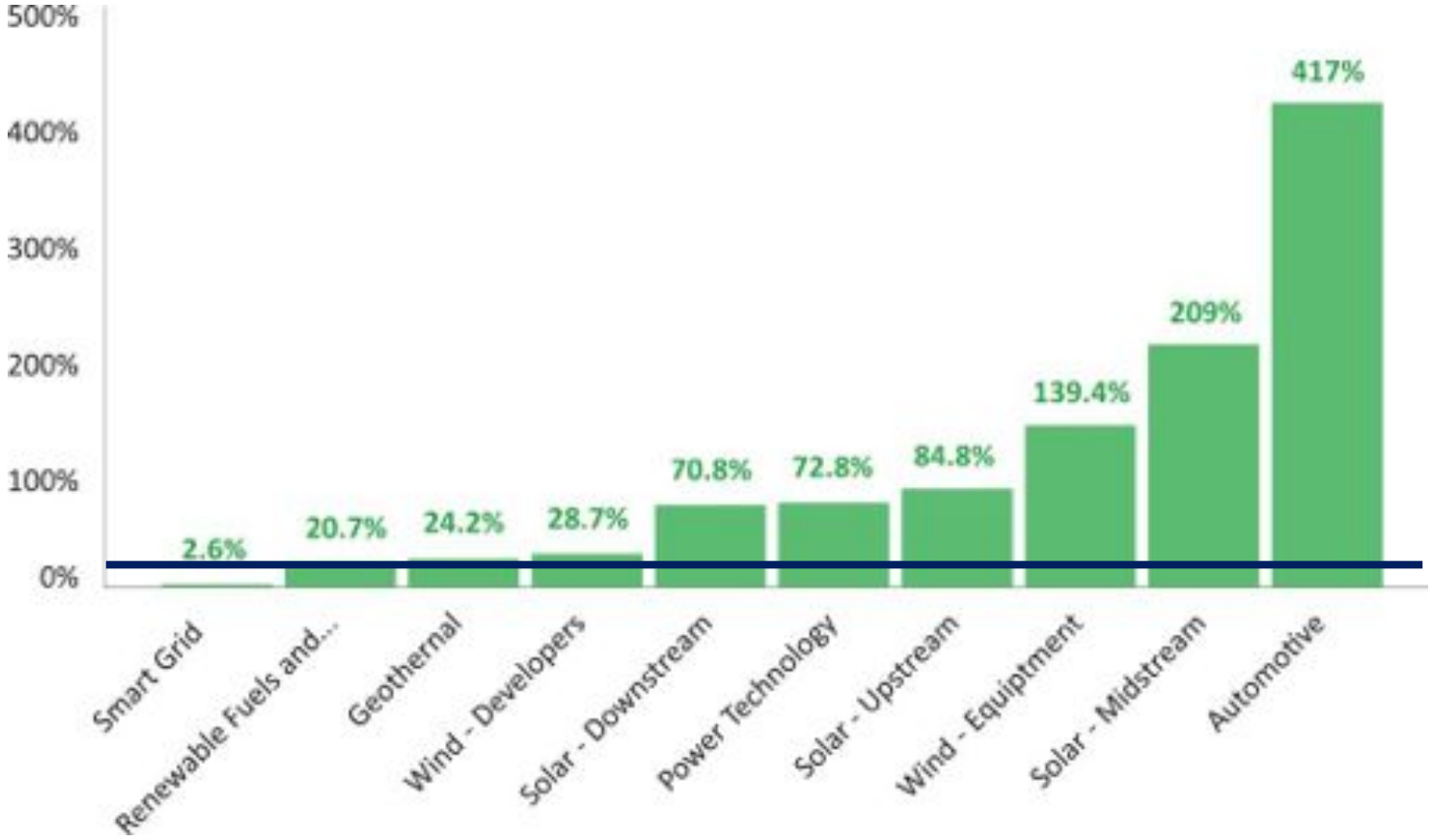
Clean Energy ETF 2X Performance of Oil & Gas Producers & Explorers ETF in 2013

"Although 2013 may have been a good year for equities, it was a great year for 'green' energy equity indexes."- *Report by NASDAQ OMX Global Indexes*



Cleantech Public Equities Post Robust Gains Across Nearly All Sub-sectors

Cleantech sub-sectors outperformed the S&P 500 through Q3 2013 with the exception of Smart Grid equities



2013 YTD S&P 500 as of 9/30/13: +21.5%

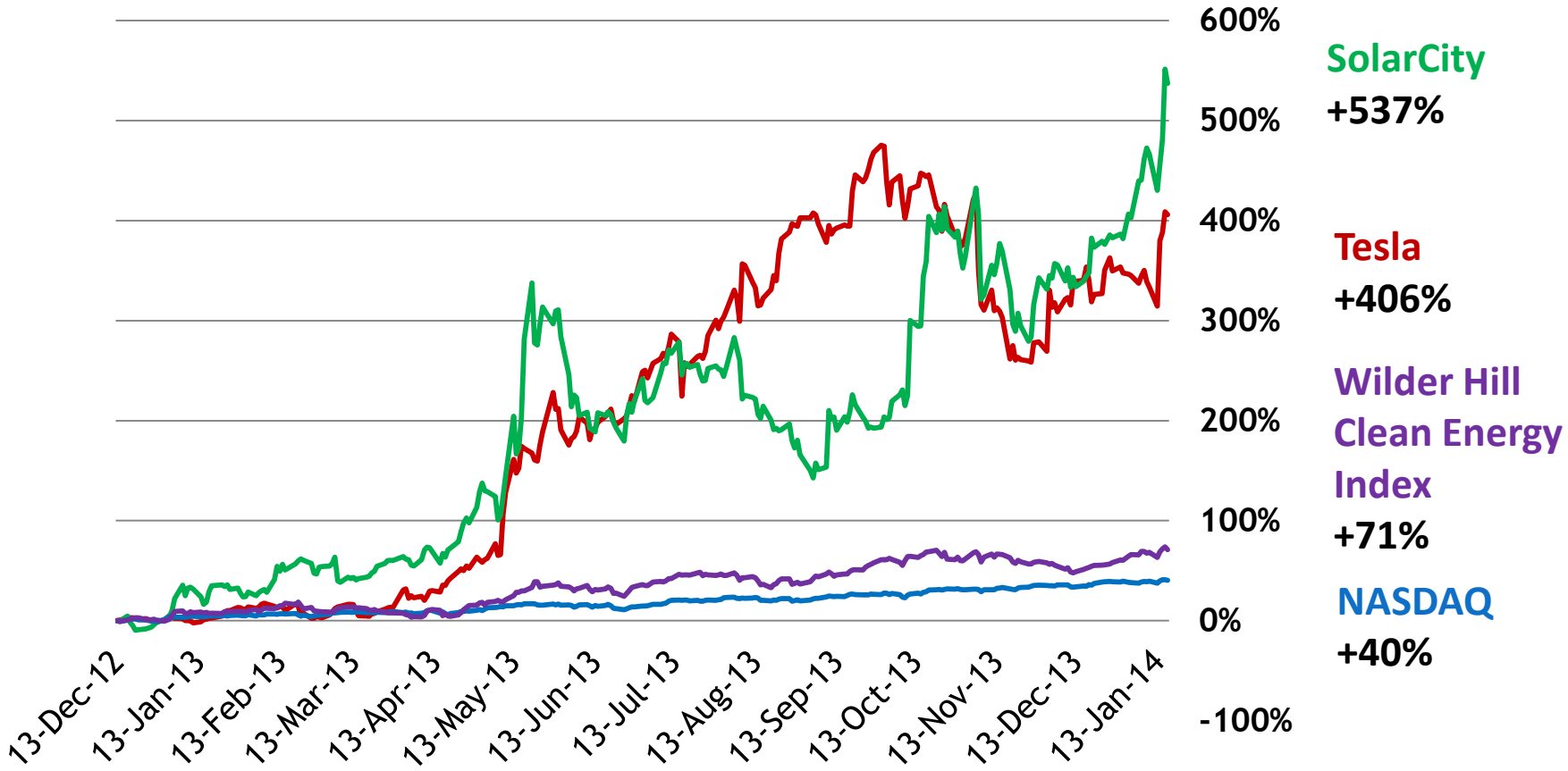
1/1/2013 to 9/30/2013

Source: *Bloomberg, CapIQ*

DBL-Backed Companies Maturing with Record Results

SolarCity and Tesla have dramatically outperformed the NASDAQ and Wilder Hill Clean Energy Index since 12/13/2012, the date of SolarCity's IPO

Share Price Growth (%) of SolarCity, Tesla, NASDAQ, & Wilder Hill Index since Dec. 13, 2012



Share price growth from 12/13/2012 to 1/17/2014

Institutional Investors Are Gaining Awareness of Overexposure to Carbon

- HSBC- Climate Change Centre of Excellence- Analyzing strategic implications of climate change for investors
  - Global peak fossil fuel use by 2020 “implies a 44% reduction in discounted cash flow value of fossil fuel companies” or… a decline in share price of 40-60%*
- Scottish Widows Investment Partnership- U.S. coal market wake-up call
  - A 20% drop in coal demand woke up the Partnership to the danger of overexposure to a class of assets and the fund “reduced exposure to pure play coal companies to nearly zero”
- Funds are reassessing and reallocating to address carbon risks
  - Asset Owners Disclosure Project ranks 1000 largest asset managers by climate risk

HSBC

ASSET OWNERS DISCLOSURE PROJECT

Source: *Andrew Winston, Harvard Business Review Blog 1/24/2014 -*Nick Robins, HSBC Climate Change Center of Excellence at Ceres Investor Summit on Climate Risk, **Craig Mackenzie, Scottish Widows Investment Partnership Fall 2013 speech*

Investment Tools Now Equipped With Carbon Risk Assessment

S&P DOW JONES INDICES

- Sustainable Accounting Standards Board provides standards for public companies to disclose sustainability issues
  - SASB developing standards for more than 80 industries in 10 sectors through Q1 2015
- S&P Dow Jones is creating tools for ETFs which respond to consumer demand for products that help address climate change*
  - S&P U.S. Carbon Efficient Index
  - S&P/IFCI Emerging Markets Carbon Efficient Index

Source: *SASB, *White House Council on Environmental Quality Blog*

2014 Fossil Free Investment Opportunities Abound Across Asset Classes

Green Fixed Income Investments Are Evolving

- Increased Allocations from Leading Asset Managers to Clean Power
- Green Bonds Issued for Renewable Energy Generation Development
  - $20B in Green Bonds Expected in 2014*
- Innovative Financing Mechanisms Designed to Reduce Risk
- Municipal Bonds for Distributed Solar on Public Buildings

***Sources:** *BNEF,* *cnn.com 11/18/13, Ceres, CEBFI "Reduce Risk Increase Clean Energy Report" 8/13*

***Photo:** FreeDigitalPhotos.net*

Sustainable Real Assets Have Outperformed Peers

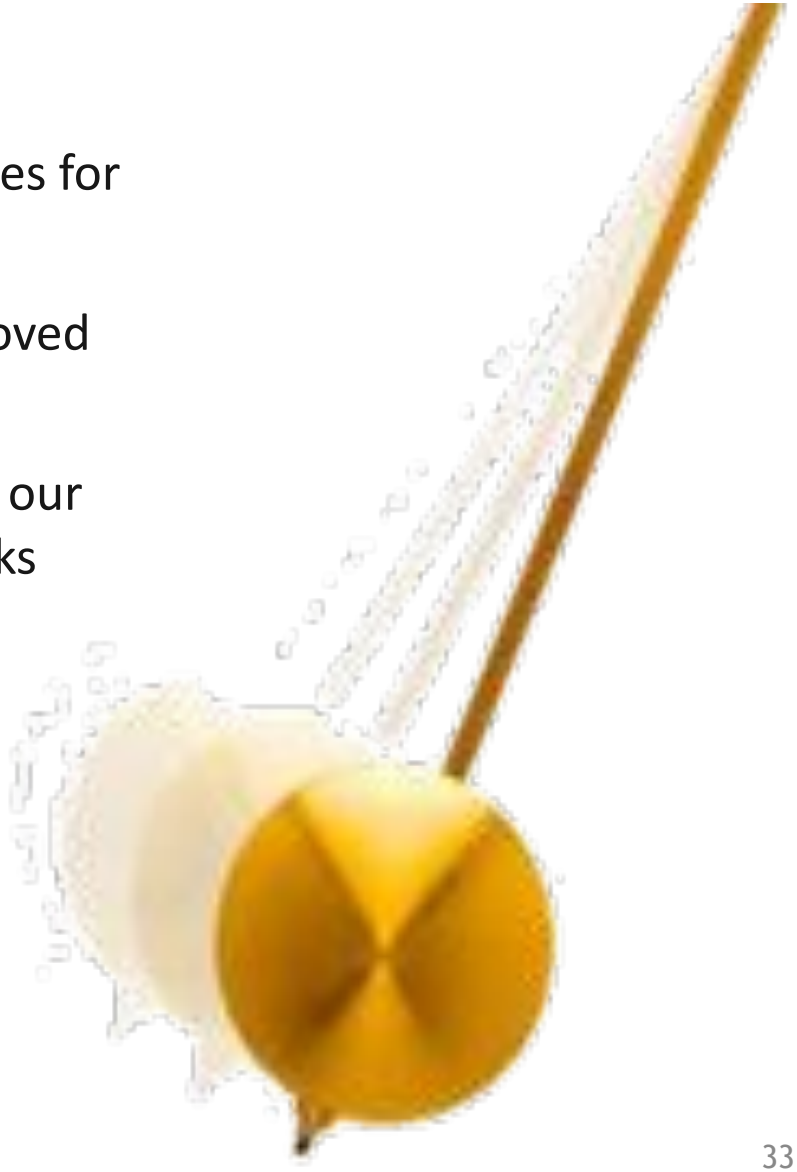
- Green buildings reduce operating expenditures and minimize future capital expenditures
  - 4-8% net operating income increase over standard construction*
- Green REITs are a growing trend
  - Post-IPO performance of Hannon Armstrong REIT: +14% (incl. yield)**
- Green improves real estate value
  - Researchers estimate that each 1kW of residential solar system equates to a $5,911 higher premium in real estate value†

Sources: **5 Stone Green Capital Investor Presentation, **Google Finance, †LBNL Study*

Image Credit: *Asheville NC Realty*

In Sum, There is Something for Everyone, and Cleantech Investments Can Produce Attractive Returns

- The energy innovation cycle has produced tremendous investment opportunities
- The cycle is evolving, providing opportunities for exposure from a variety of asset classes
- Across the risk spectrum, cleantech has proved to be a compelling investment area
- A new transparency paradigm is improving our understanding and disclosure of carbon risks
- Reallocating from fossils not only reduces portfolio risk, but can provide a substantial return benefit



Energy Innovation Creates Opportunities for Outsized Returns While Climate Change Brings Outsize Risk to Fossils

- We've seen many examples of innovation cycles, but energy may be the most important yet
- We're facing an inevitable Carbon Cliff, which makes the urgency to be on the right side of disruption even greater
- Fiduciaries should seek to measure and reduce carbon-associated portfolio risk

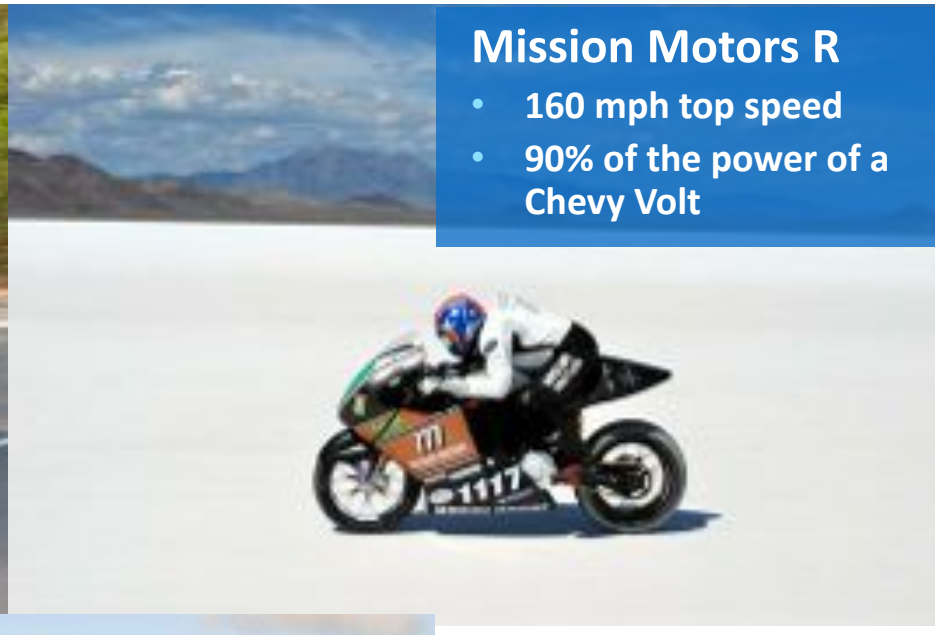
Besides, Fossil Free Isn't a Bad Place to Be

Nissan Leaf

- 120 mi range
- <$30,000

Mission Motors R

- 160 mph top speed
- 90% of the power of a Chevy Volt



Tesla Roadster

- 0-60 mph in 3.7s
- 245 mi range

How Far We've Come: Cleantech Then, and Now

Then

Energy Crisis, 1977

"Put on a sweater"

– **President Jimmy Carter**
Televised Fireside Chat

Now

Energy Opportunity, 2014

"Best car we've ever tested"

– **Consumer Reports**
Model S Review

DBL INVESTORS
DOUBLE BOTTOM LINE VENTURE CAPITAL

NACUBO

Thank You

Nancy E. Pfund
Founder & Managing Partner

nancy@dblinvestors.com