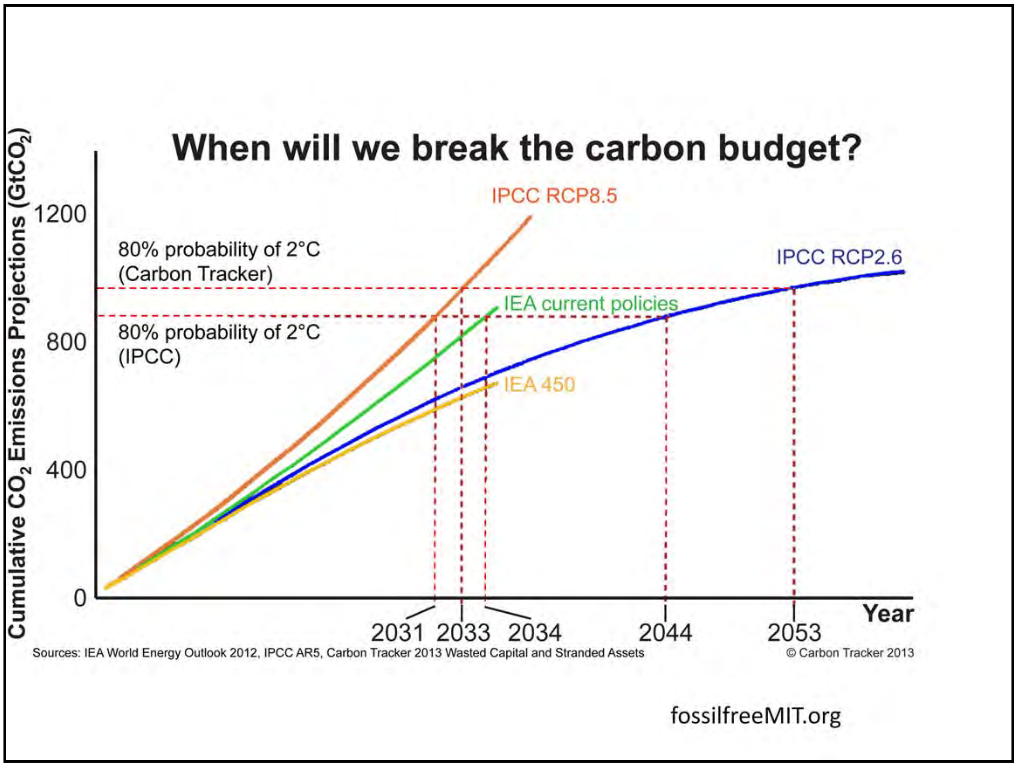
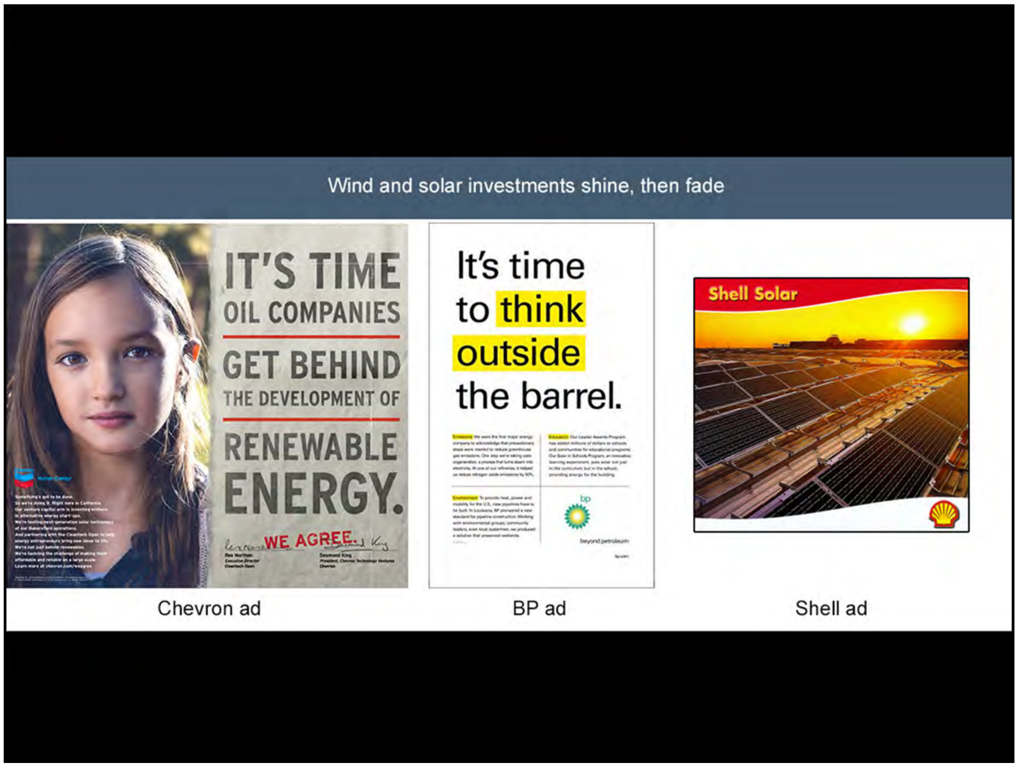
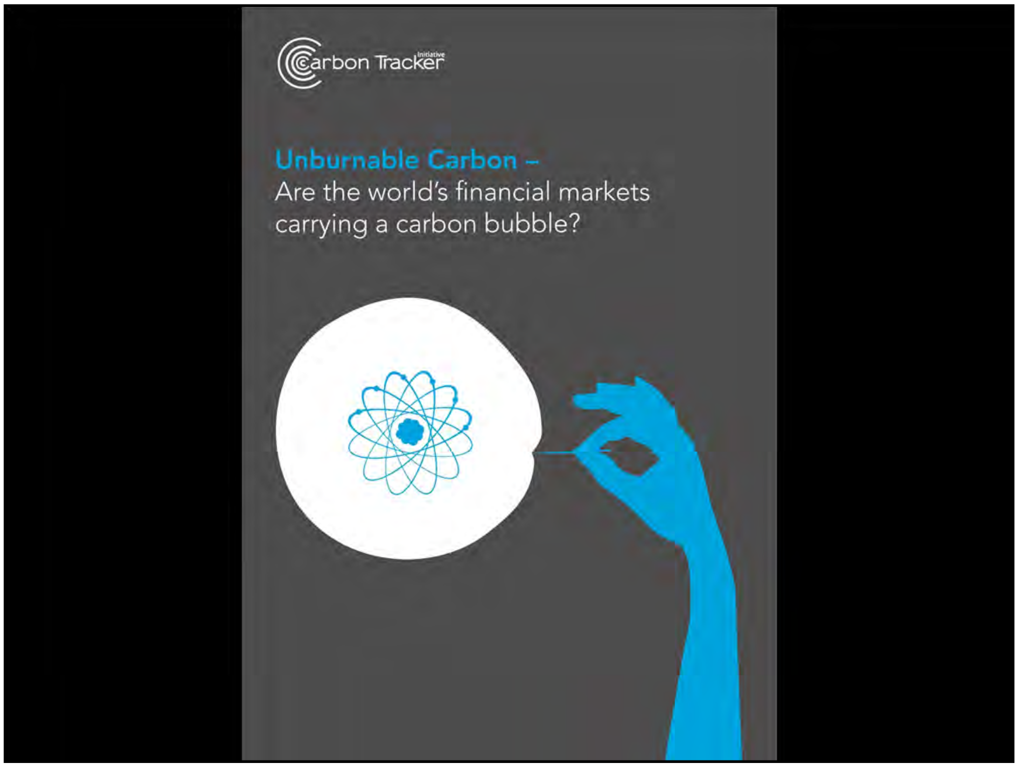
Financial Context: Global



Business-as-usual burning of fossil fuels will raise temperature beyond the treaty-accepted safe limit of 2°C between 2031 to 2053.

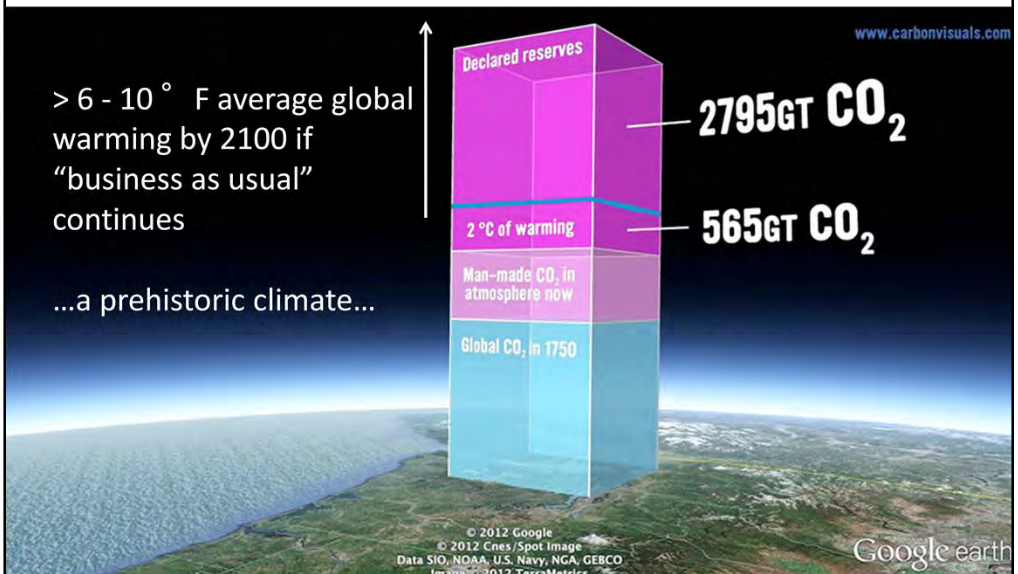


We used to think we were all working together to slow this down: conserving energy, doing research, the oil companies were developing renewables



We were awakened when economists found that the stock-market prices of the big coal, oil and gas companies depended in large part, not on current production, but on their underground fossil-fuel reserves, which were counted as financial assets.

Unburnable Carbon



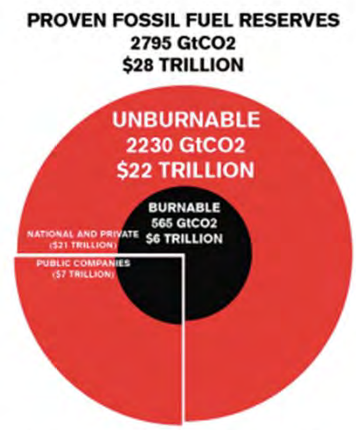
These reserves are 3-5 times the world CO2 budget. If it's all burned, we will have a prehistoric climate.

Forbes

Logan Yonavjak July 29, 2013

The "Carbon Bubble" – Why Fossil Fuels Investments Are Increasingly Risky

There is also increasing uncertainty surrounding the valuation of fossil fuel securities due to a likely carbon bubble. Thus, broader fossil fuel divestment, not only from equities but also from corporate bonds, can actually provide downside risk protection.



The $20 Trillion Carbon Bubble. Credit: ThinkProgress.org.

So the companies holding these reserves are in a financial bind—if government respond to the scientific warnings, their underground assets will be devalued, their market valuation will crash, and investors that haven't left in time will lose.

Fossil fuel companies are expanding the reserves and selling off renewable investment

- Companies spent **$647 billion** in 2012 to ***expand*** these reserves

  (**< $4.8 billion on renewable energy research and development**)

Sep, 2014


INTERNATIONAL BUSINESS TIMES

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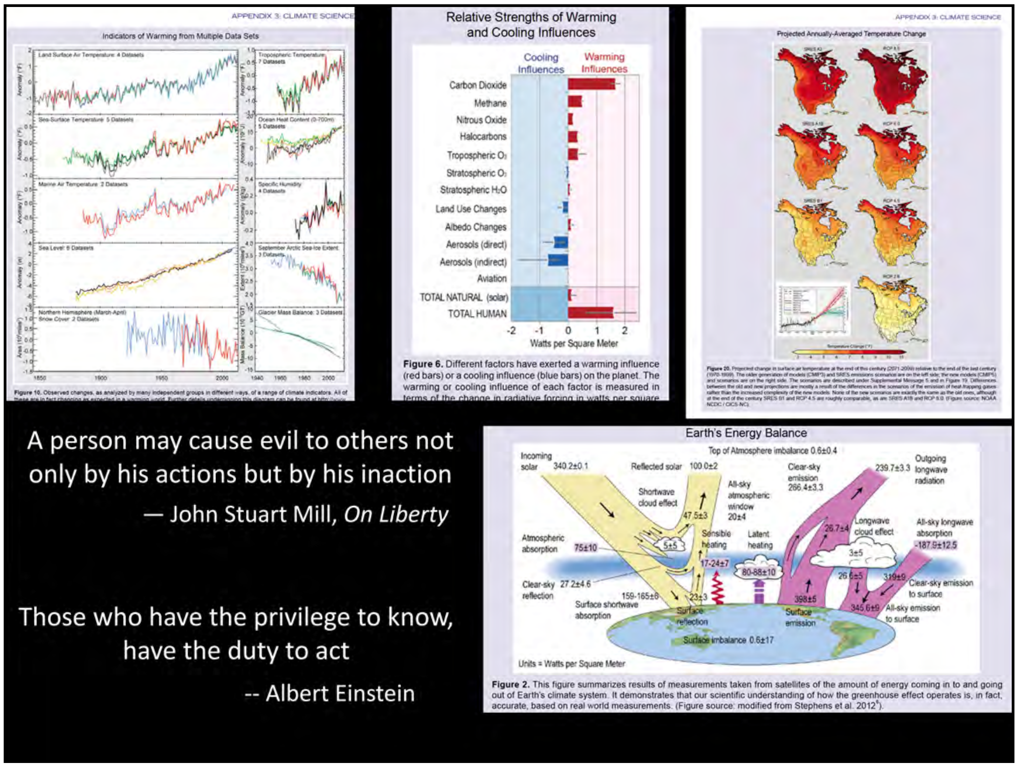
Chevron Finalizes Sale Of Its Clean Energy Subsidiary, Marking Latest Oil Industry Move Away From Renewables

By Maria Gallucci @mariagallucci m.gallucci@ibtimes.com on September 03 2014 10:54 AM EDT

They could respond by moving capital into the new renewable technologies, but they're going the other way– expanding reserves to maintain short-term book value and selling off their renewable investments.

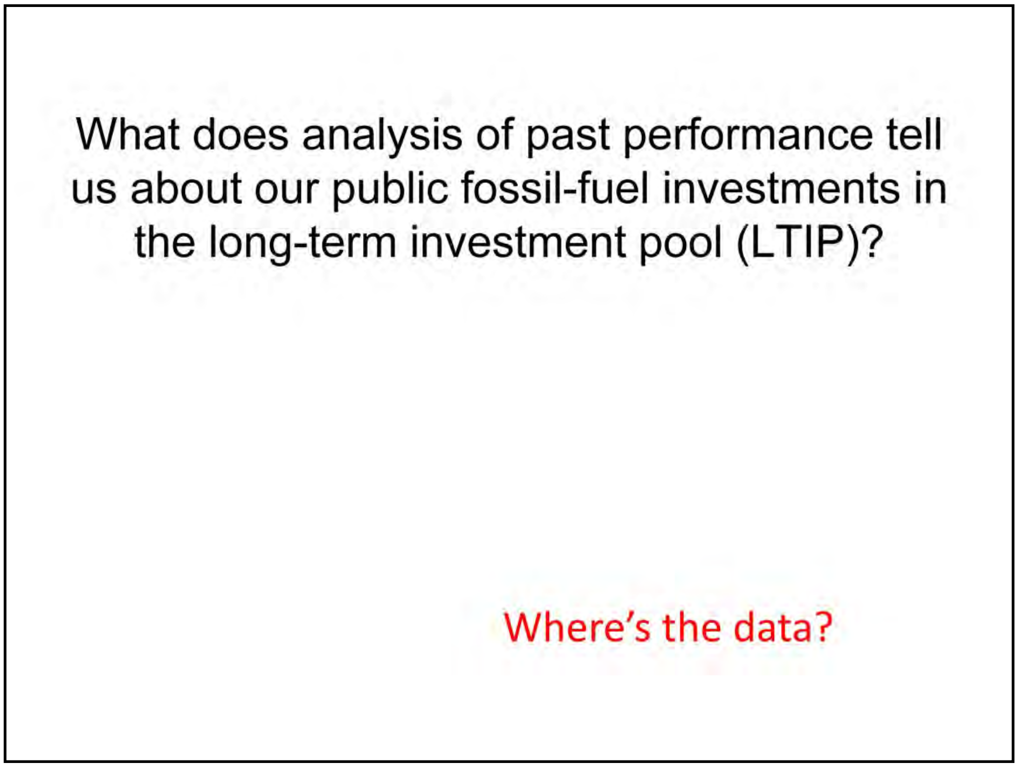
They won’t respond until societal pressure gets the government to incorporate human cost into the financial equation.



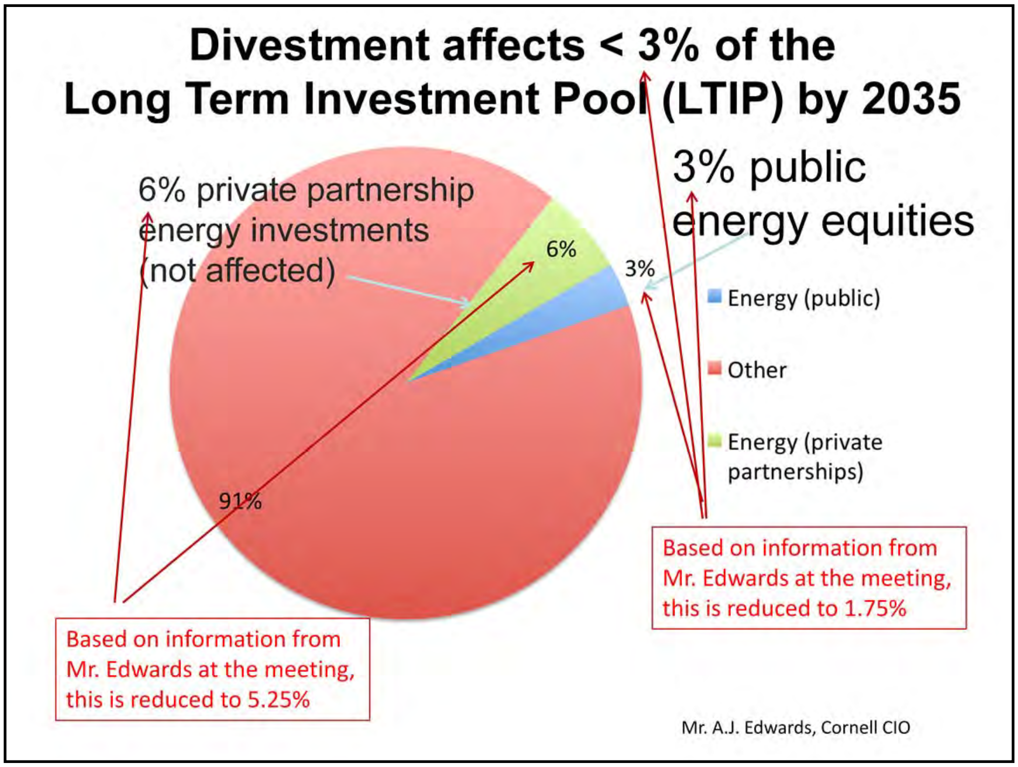
So what are we to do? We've done our best with research and journal articles. Our scientific organizations have published advisory data summaries. But it hasn't dented fossil-fuel company opposition. What has gotten attention is the divestment movement.

Financial Context: Cornell

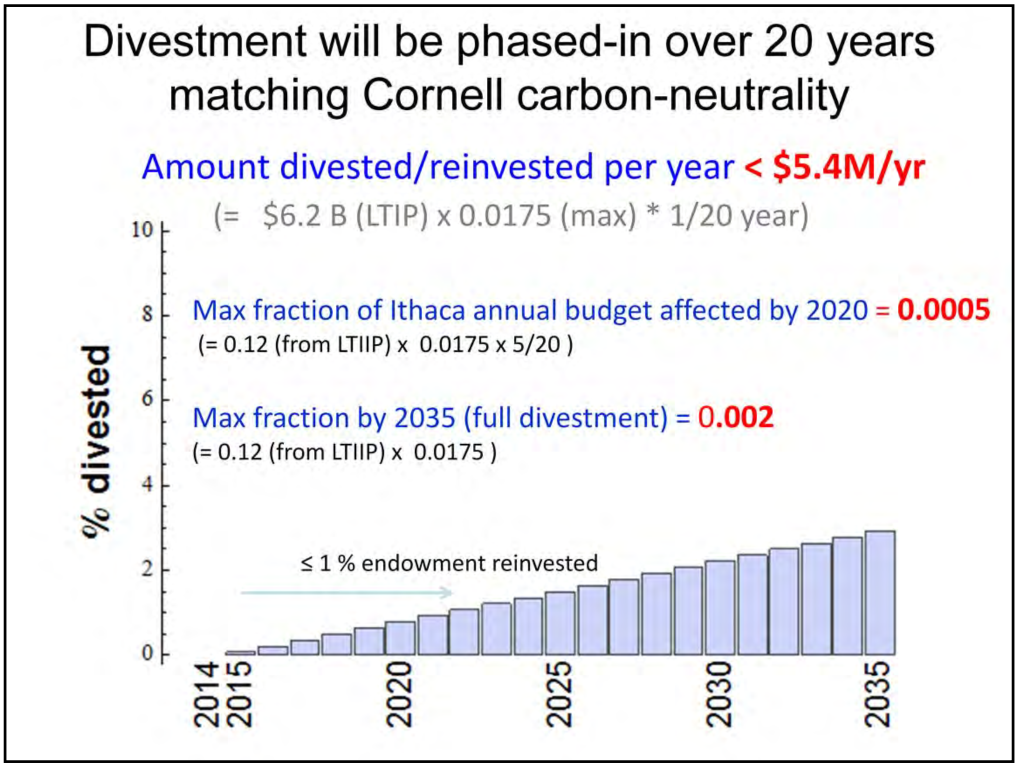
The administration claims that divestment will cost too much.



We’ve have been asking for almost two years for the data, and it hasn’t been given. This is a university, and we require *informed* debate, not unsubstantiated pronouncements. This behavior is inappropriate and is reason enough, on its own to pass the resolution. As Marty said, we’ve already provided you our data; I’ll briefly summarize.



The targets of divestment,100 publically traded oil and gas comprise less than 3% of our investment. [Based on information in Mr. Edwards' talk, which followed this one, this upper limit is reduced to 1.5%]



And the resolution calls for phased divestment over 20 years– following our on-the-ground move to carbon neutrality. Put the numbers together, We're talking about shifting $5,4M per year. [The number given in the meeting was 9.3%, based on older information. Based on the numbers given by Mr. Edwards in his talk, this has been reduced to $5.4M and the fractions of the budget affected have been correspondingly reduced.]

The endowment contributes about 12% of the Ithaca campus operating budget, so we are talking about reinvesting amounts that account for tiny fractions of our income stream.

Energy investments have not had outstanding performance over past 10 years

MSCI USA IMI Sector Index Total Returns as of 3/6/2015

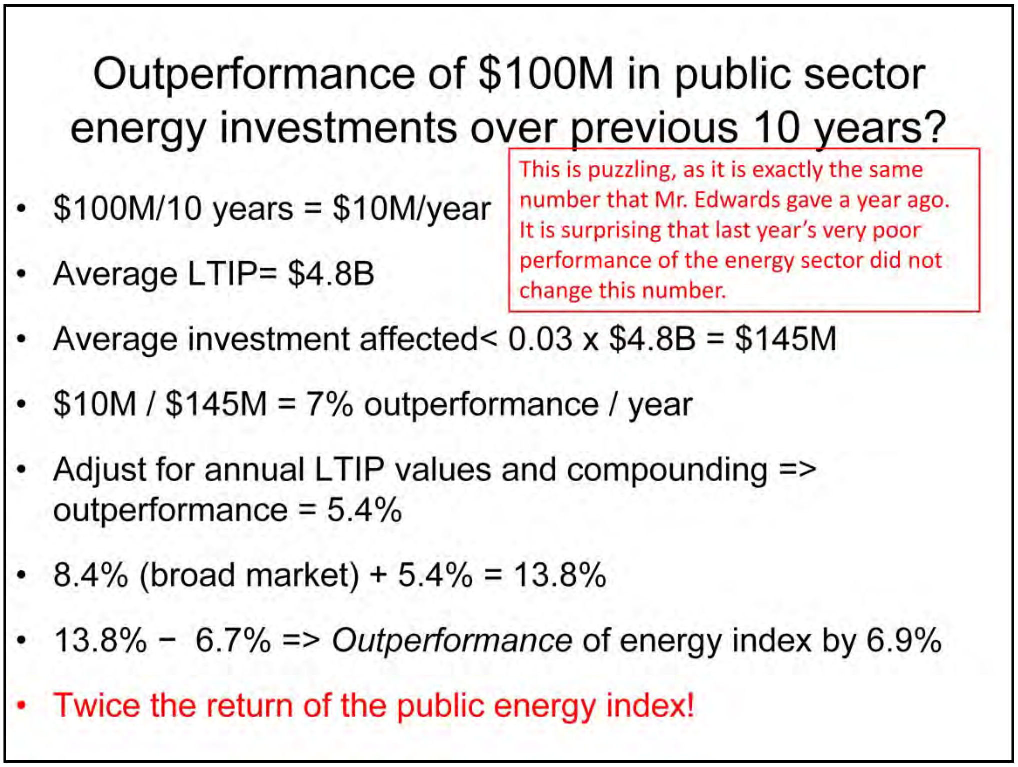
	Index Levels	Returns				Compound Annual Returns			
MSCI Index	Last	Day	MTD	QTD	YTD	1 Yr	3 Yr	5 Yr	10 Yr
MSCI USA IMI Energy Index	1,239.999	-1.65%	-2.81%	-3.07%	-3.07%	-11.79%	2.65%	7.02%	6.70%
MSCI USA IMI Materials Index	1,557.658	-1.38%	-2.08%	2.78%	2.78%	4.49%	13.86%	12.17%	8.02%
MSCI USA IMI Industrials Index	1,654.976	-1.28%	-1.74%	0.55%	0.55%	6.09%	18.37%	15.93%	8.37%
MSCI USA IMI Consumer Discretionary Index	2,101.594	-1.21%	-0.86%	4.05%	4.05%	12.25%	22.66%	20.85%	9.85%
MSCI USA IMI Consumer Staples Index	2,202.877	-1.88%	-2.44%	0.46%	0.46%	17.69%	17.28%	15.58%	10.64%
MSCI USA IMI Health Care Index	2,448.645	-1.78%	-0.72%	5.66%	5.66%	22.64%	29.36%	20.71%	11.92%
MSCI USA IMI Financials Index	862.268	-0.91%	-0.70%	-1.39%	-1.39%	9.97%	19.81%	11.91%	1.39%
MSCI USA IMI Information Technology Index	2,029.207	-1.15%	-1.30%	3.13%	3.13%	17.83%	17.23%	15.85%	10.12%
MSCI USA IMI Telecommunication Services 25/50 Index	1,696.043	-1.68%	-2.31%	2.19%	2.19%	10.33%	16.23%	14.62%	8.77%
MSCI USA IMI Utilities Index	1,448.411	-2.88%	-4.04%	-7.75%	-7.75%	11.98%	12.40%	12.58%	8.18%
MSCI USA IMI Real Estate Index	1,333.049	-3.01%	-3.34%	-0.48%	-0.48%	15.77%	13.81%	15.39%	N/A

Energy index 10 yr avg annual return: **6.7%**

Overall US market 10 yr avg annual return: **8.4%**

We're not throwing this fraction away; we're reinvesting it elsewhere in the market– wherever we think it will make the most money. Will this hurt?

Well, energy hasn't done well over the last 10 years. And that's not just due to last years loss of 12%.



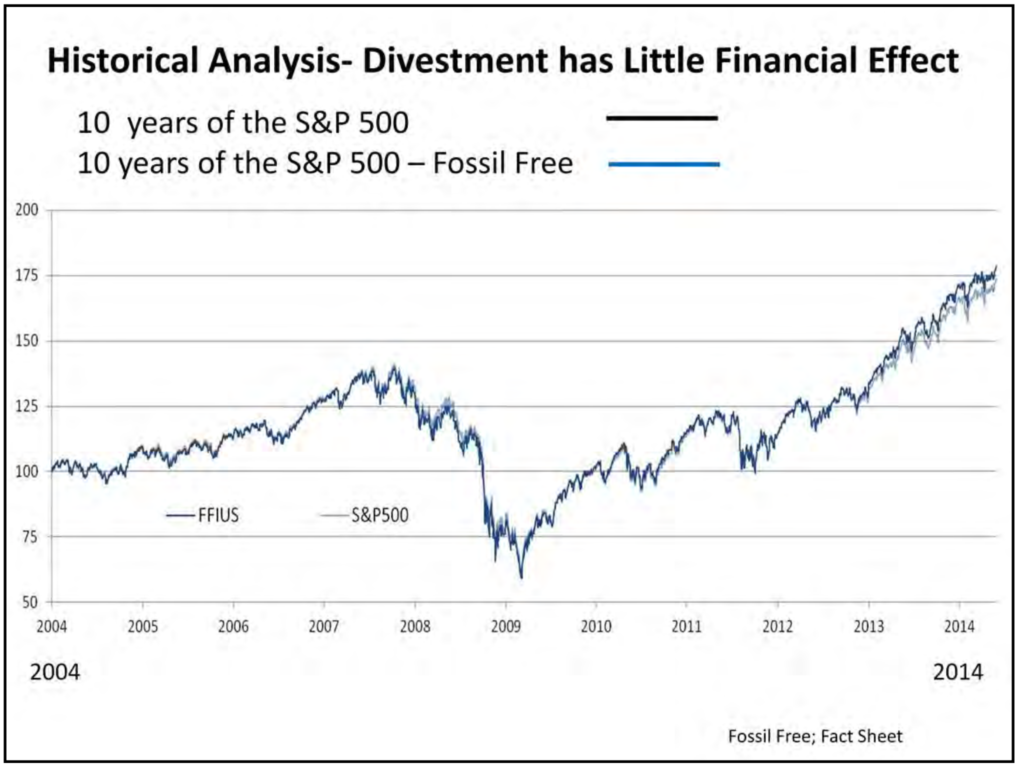
I don't know what the investment office will say today, but what they said last year was that public energy stock outperformance in our portfolio added $100M over the previous 10 years. That is, $100M above the unmanaged market index average.

How good would our stock-picking have had to be for that to be true? Let's do a simple calculation without compounding.

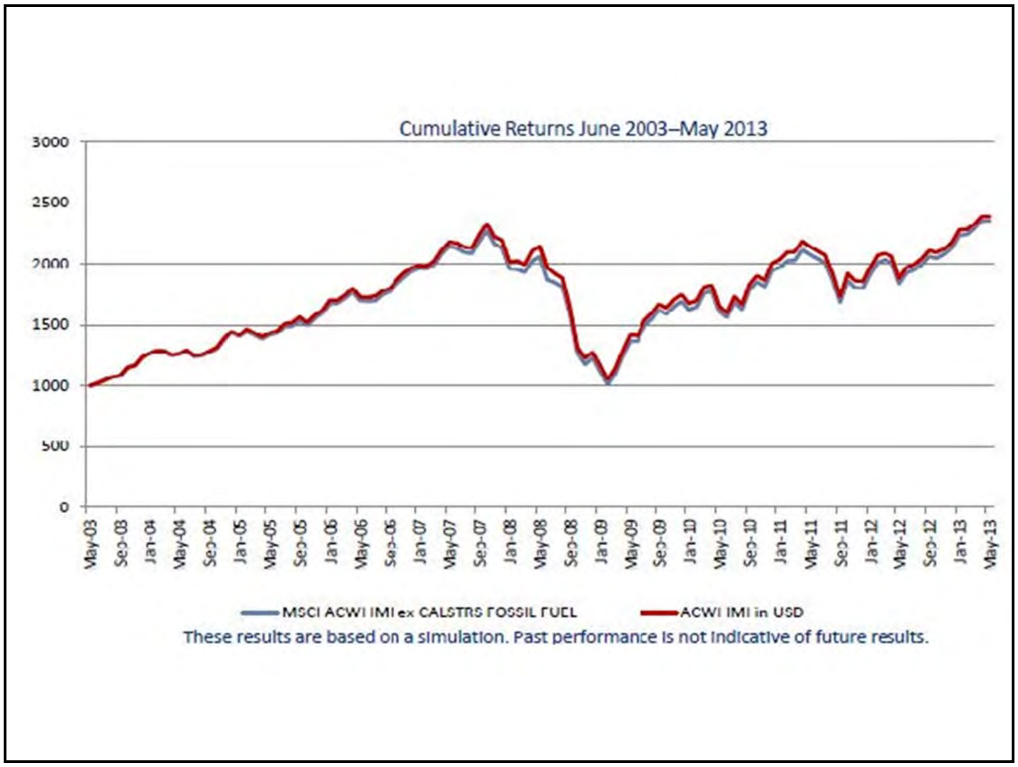
Then adjusting for compounding lowers this a bit to 5.4%

Combining it with the market average indicates that, if the claim is true, we picked energy stocks that gave twice the energy sector performance.

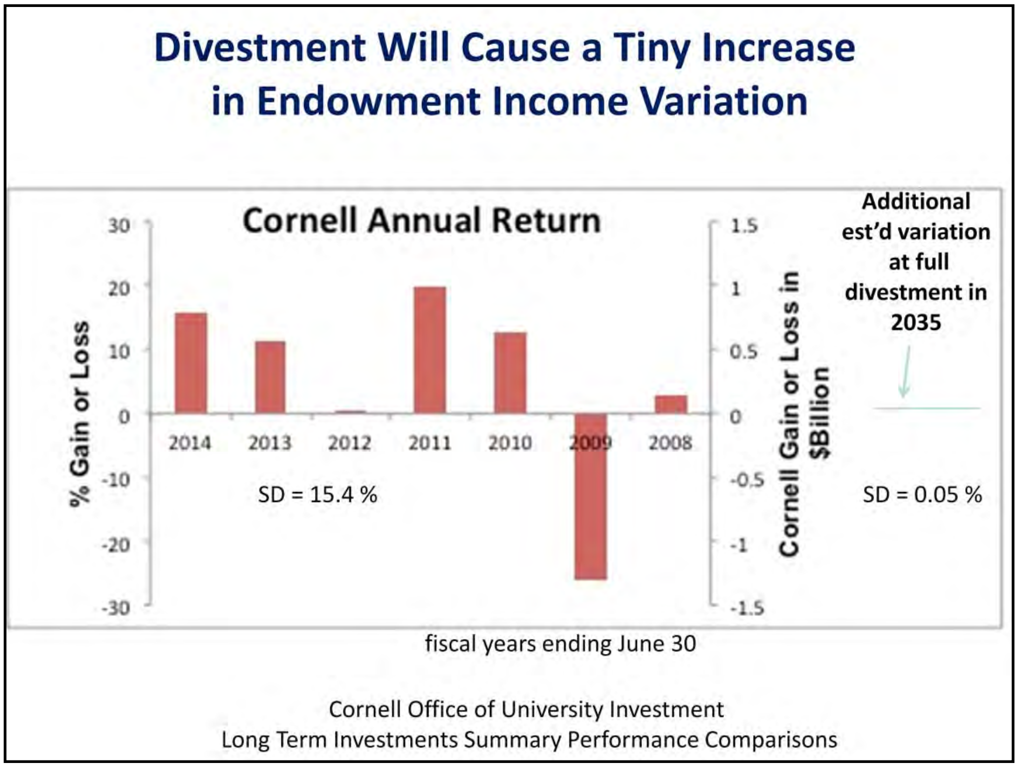
That is some good stock-picking. I'd like to see the data. But if we did that with the energy headwind, imagine what we could have done elsewhere in the market.



In point of fact, because the amount affected is small, there's hardly been any difference between a divested index and non-divested index. Here's the cumulative return of $100M invested in the S&P500 with and without fossil fuel companies.



Here's a different one that compares the Morgan Stanley Capital International All Country World Index. Divested and non-divested over 10 years.   In the past, the administration has picked on one particular study; not shown here. But there are many studies and I can show you lots's of graphs like this. The only one that argues otherwise is a flawed oil industry funded study.

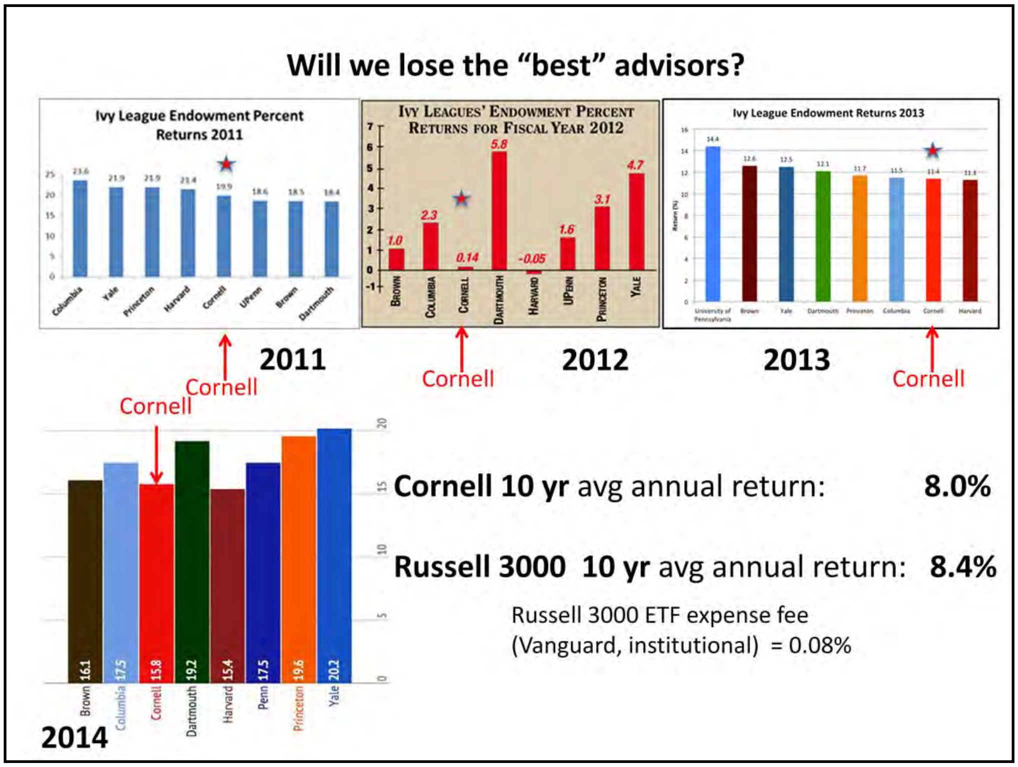


We do lose a bit of diversification by divesting. But this is tiny compared to the variations we have anyway. This is the Cornell annual return for the past 7 years. The standard deviation is about 15%. We calculate that divestment will add about 0.05%.

Is it impractical to divest?

- Divesting ~$9.3 M/year
  (out of $6.2 B)
- All funds being sold are publically traded
- We’ve done it before
- Other funds are doing it
- Already exists a competitive market for tailored investment portfolio advisors

But the investment office has claimed that it’s impractical to divest because we will lost the best advisors if we ask for any constraints. In spite of the fact that the amounts we will be moving are small, that you can buy and sell these stocks easily, and that we’ve done this in the past.



Are these managers the best? Here's charts from the Cornell Sun showing how our investment returns compare with our Ivy League peers. 2011 wasn't too bad, we were only slightly below median. Since then we have been consistently in next to last place. *** We could have gotten better returns with a simple index fund. Maybe changing advisors isn't a bad idea.

And these advisors probably don't come cheap. We could have gotten the Russell 3000,a very broad market fund for a minimal expense fee of 0.08%. Typical managed fund fees are around 1.5% (That would be $57 M/year on the 61% of the endowment we have invested in equities; but we haven't been told).

Future looking: The Financial Carbon Bubble

But that's past performance. What about the future? No-one can predict that with any certainty. But we can anticipate structural changes and the stock market reacts rapidly. It will react on the perception that climate change action, is coming, long before we see actual reductions in fossil fuel exploration subsidies or a carbon tax.

United Kingdom House of Commons Environmental Audit Committee Report (Feb 26, 2014)

Volume 1: Report, together with formal minutes, oral and written evidence

"**… stock markets are currently over-valuing companies that produce and use carbon** (a `carbon bubble' consisting of fossil fuel assets which will have to be left unburned in order to cut emissions to the levels required to limit climate change)…"

"The UK Government and Bank of England **must not be complacent about the risks of carbon exposure in the world economy.**"--- Committee chair, J. Walley MP

The warnings are coming. Here's one from the House of Commons audit committee to the Bank of England came a year ago

Mar 3, 2015

Bank of England warns of huge financial risk from fossil fuel investments

Global action on climate change could cause insurers' investments in fossil fuels to take a huge hit, says bank's prudential regulation authority

The deputy head of the Bank of England's prudential regulation authority said: 'investments in fossil fuels and related technologies … may take a huge hit'. Photograph: Anthony Devlin/PA

Now the Bank of England is sending out its own warnings to investors

SundayReview | OPINION

The Coming Climate Crash

Lessons for Climate Change in the 2008 Recession

By HENRY M. PAULSON Jr. JUNE 21, 2014

"We've seen and felt the costs of underestimating the financial bubble. Let's not ignore the climate bubble."

Here's a warning from Henry Paulson, George W. Bush's Secretary of the Treasury during the 2008 credit crash.

Solar power

Big power out, solar in: UBS urges investors to join renewables revolution

World's largest private bank predicts large-scale power stations will soon make way for electric cars and new solar technologies

John Vidal

Wednesday 27 August 2014 06.40 EDT

Shares 11k | Comments 208

August, 2014

Here's a recent warning from the world's largest private bank.

Forbes New Posts Most Popular Lists Video 2 Free Issues of Forbes

Why Big Tech Companies Are Investing In Renewable Energy

Feb, 2015

INTERNATIONAL BUSINESS TIMES (/)

COMPANIES (HTTP://WWW.IBTIMES.COM/COMPANIES) ENERGY (HTTP://WWW.IBTIMES.COM/COMPANIES/ENERGY)

Apple Inc. And Google Inc. Sign Major Renewable Energy Deals As Wind And Solar Energy Costs Plunge

By Maria Gallucci (/reporters/maria-gallucci) @mariagallucci (http://www.twitter.com/mariagallucci) m.gallucci@ibtimes.com (mailto:m.gallucci@ibtimes.com) on February 12 2015 3:40 PM EST

73 66 70

Meanwhile the big tech companies that have more capital to invest than the oil companies are moving in

And the poorest countries have recognized that dropping prices have made renewables their best economic option for development. The tide is turning, the investing future is changing.