
CAPITOL ANALYSTS NETWORK, INC.

Stuart J. Sweet, President

February 18, 2016

GLOBAL WARMING: 2016 INVESTMENT RISKS HEAT UP

America chooses our next President in 41 weeks. It makes sense for investors to consider what it means if a Democrat or a Republican wins the White House in nine months. We start now by analyzing the global warming controversy. Here is why: the differences between the political parties on global warming are greater than perhaps any other issue.

President Obama marked his 2008 election night as when "the rise of the oceans began to slow and our planet began to heal." He followed through in 2009 by asking Congress to pass a greenhouse gas "cap and trade" program, but Congress refused. Blocked by Congress, Obama used his pen instead. His Administration issued regulations that curtail greenhouse gas emissions from new cars and new power plants. Last August, EPA demanded that states reduce their CO₂ emissions to attain a nationwide reduction of 16 percent from 2005 levels under its Clean Power Plan (CPP). Ten weeks ago, Obama went to the Paris Conference and committed the U.S. to lowering annual emissions by [26 to 28](#) percent below 2005 levels by 2025. Already 10 percent below 2005 levels, this amounts to a further 16 to 18 percent reduction in the next ten years.

Surveying the statements of major presidential candidates, it is equally clear that the next President will follow in Obama's footsteps if he or she is a Democrat. If the next President is a Republican, he will declare Obama's program a dead letter and do little to rein in CO₂.

Major Presidential Candidates on Global Warming Policies

Democrats	
Hillary Clinton	"Building on the Clean Power Plan, I will launch a clean energy challenge to partner with states, cities, and rural America to accelerate clean energy deployment, building efficiency, and clean transportation."
Bernie Sanders	"We've got to stand up to the fossil fuel industry and fight for national and international legislation that transforms our energy system away from fossil fuel as quickly as possible."
Republicans	
Donald Trump	"So Obama is talking about all of this with the global warming and ... a lot of it is a hoax. It's a hoax. I mean, it's a money making industry, okay? It's a hoax."
Marco Rubio	"Whether the climate is changing is a measurable thing, in fact, it's always been changing. The fundamental issue for a policymaker is what do we do about it, and everything the president is advocating for, even the scientists admit, we don't believe it would make a dramatic impact any time in the near future on any trends in the climate. But I can tell you would have a dramatic impact on our economy."
Jeb Bush	"President Obama's Carbon Rule is irresponsible and overreaching. The rule runs over state governments, will throw countless people out of work, and increases everyone's energy prices."
Ted Cruz	"The President's lawless and radical attempt to destabilize the Nation's energy system is flatly unconstitutional and—unless it is invalidated by Congress, struck down by the courts, or rescinded by the next Administration—will cause Americans' electricity costs to skyrocket at a time when we can least afford it."
John Kasich	"[The Obama Administration's Clean Power Plan] It must be scrapped and not replaced. Regulations on energy production which are counterproductive, extreme should be repealed."

Companies Exposed to Global Warming Politics in Election 2016

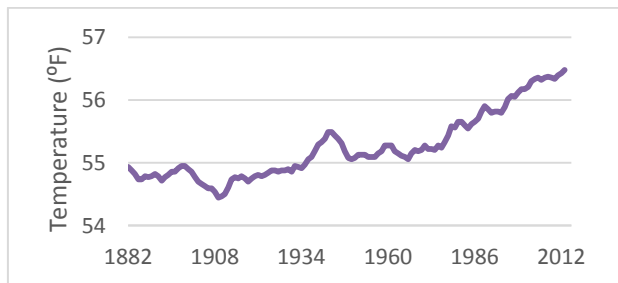
Bullish if a Republican Wins	Bullish if a Democrat Wins
<p>Coal</p> <p>Coal ETF (KOL), Peabody Energy (BTU), Cloud Peak Energy (CLD), Westmoreland Coal (WLB)</p> <p>Utilities</p> <p>ALLETE (ALE), Ameren (AEE), DTE Corporation (DTE), American Electric Power (AEP), WEC Energy Group (WEC), Southern Company (SO), Duke Energy (DUK), and AES Corporation (AES)</p> <p>Cement</p> <p>CEMEX (CX), Vulcan Materials (VMC), Martin Marietta (MLM), and Eagle Materials (EXP)</p> <p>Railroads</p> <p>CSX (CSX), Norfolk Southern (NSC), and Union Pacific (UNP)</p>	<p>Renewable Energy</p> <p>Guggenheim Solar ETF (TAN), PowerShares WilderHill Clean Energy (PBW), Vestas Wind Systems (VWDRY), First Solar (FSLR), SunPower (SPWR), SolarCity (SCTY), Brookfield Renewable Energy Partners (BEP), 8point3 Energy Partners (CAFD)</p> <p>Energy Efficiency</p> <p>Hannon Armstrong Sustainable Infrastructure Capital (HASI), General Electric (GE), Honeywell (HON), Johnson Controls (JCI), Owens Corning (OC), Cree (CREE), Itron (ITRI), Power Integrations (POWI), Ameresco (AMRC), OPOWER (OPWR), and EnerNOC (ENOC).</p>

We explain the companies' election exposure later. First, we present our findings on the global warming controversy.

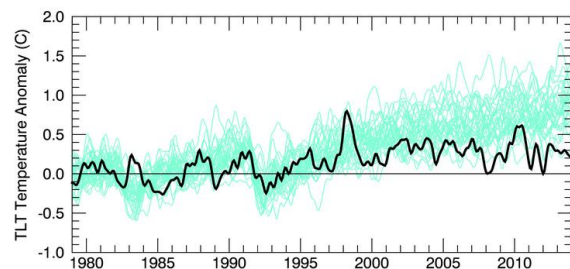
Planet Earth is Warming - We Should Not Worry About It For Several Decades

Earth is indeed warming. It has by 1.6° Fahrenheit since 1880, but the trend has not been uniform. In two sub periods since 1880, the earth actually cooled by 0.5°F, from 1900 to 1908 and again, from 1942 to 1970. The second cooling period even provoked climatologists' warnings that policymakers should do something quickly to [prevent an ice age!](#) These cooling periods took place at the same time that atmospheric [carbon dioxide levels](#) rose.

NOAA Global Annual Land and Ocean Temperature °F



RSS "Temperature Lower Troposphere" (TLT)



Skeptics also point to the global temperature time series developed by the scientific research company, Remote Sensing Systems. This team, who is supported by NASA and NOAA, uses satellites to measure the temperature of the lower atmosphere. Their data contradict the set

from the National Ocean and Atmosphere Administration ([NOAA](#)) which relies on ground sensors. RSS's satellite data finds an ongoing "[warming pause](#)," for the last 18 years despite a significant increase in atmospheric CO₂.

Who is right, NOAA or RSS? Probably RSS. If the correlation between CO₂ emissions and global temperature is robust, then the global ice volume should be falling due to increased melting as the temperature rises. With over [77 percent](#) of the world's ice, Antarctica is the place to look. [NASA's](#) 2015 finding, however, concludes Antarctica ice volume is actually increasing 82 million tons a year, evidence for a "warming pause."

These are inconvenient truths for global warming alarmists who urge aggressive actions to reduce CO₂ levels quickly on an assumed robust correlation between higher CO₂ levels and higher temperatures. There is a positive link between them over a long period of time, but there is less [climate sensitivity](#), a measurement of how much the temperature rises if atmospheric CO₂ concentration doubles, than activists assert.

Since 1990, temperature estimates prepared by the United Nations Intergovernmental Panel on Climate Change ([IPCC](#)), have come down steadily. In 1990, the IPCC said their best guess was a 5.4°F rise in mean global temperatures by 2100 under a "business as usual" case. In 2013, their estimates fell to 3.1°F, 43 percent lower. Public commentary ignores this large "oops" factor, even though it added 50 years to the time originally predicted by climate warming activists when the world would get "too hot." It reduces the persuasiveness of their claims that we take costly, aggressive action now.

This is a layman's way to look at the issue: According to [UN studies](#), mankind released 1,890 Gigatons (Gt) of CO₂ between 1870 and 2011 by burning fossil fuels. We know that global temperatures increased by 1.6° F during this period. Currently, the world emits 33.8 GtCO₂ annually. If global CO₂ emissions continue growing at 1.2 percent per year as projected by the [Department of Energy](#) then another 1,890 GtCO₂ will be released by 2057, and the global temperature would again rise by 1.6°F. Continuing the 1.2 percent annual emissions growth rate, it would take 29 years for the next 1,890 GtCO₂ to be released through 2086, presumably adding another 1.6° F, bringing the total to 3.2°F. After dropping their climate sensitivity variable by 43 percent, the UN's central 3.1° F temperature increase forecast is finally plausible.

Even if the US made enormous efforts to curb its CO₂ emissions, by itself it would mean little: of the 3,780 GtCO₂ that would be released between now and 2086 under a business as usual policy, only 11 percent would be by the U.S. Most warming would be caused collectively by China, India, Brazil, and Indonesia. Why sacrifice if the US cannot alter the ultimate result?

The Paris Global Warming Accord

In late 2015, 196 nations met to negotiate terms on a century-long goal to limit man's impact on global temperature change. The goal of the Accord is to limit cumulative temperature increases since the Industrial Revolution to 3.6°F by 2100. Taking previously warming into account, this leaves room for an increase of 2° F. This implies that all future CO₂ emissions must be capped at 4,200 GtCO₂, or about half of what would happen otherwise by then.

What Happens if the Earth Does Warm Another 1.6° F by 2065?

If nothing is done, it seems reasonable to assume temperatures would increase by 1.6°F over the next fifty years. How significant would this be? One way to assess significance is to look at what happened between 1880 and 2015 when the earth's temperatures also rose by 1.6° and project that something similar will happen again if the temperature also rises by 1.6° F. over the next 50 years.

- Over the last 130 years, the sea level rose by 210 millimeters or [8.25](#) inches. Recently the sea began rising at a faster clip of [1.3](#) inches per decade. Therefore, it is generous to warming alarmists to assume it will rise by one foot by 2065.
- The number of hurricanes actually has [fallen](#) since 1965 when satellite technology made accurate counting possible, but their intensity has [risen](#). The National Ocean and Atmosphere Administration (NOAA) predicts another [5 percent](#) intensity increase by 2100. Few forecasters predict an increase in hurricanes, however.
- U.S. [flooding damage](#), a proxy for global flooding, changed little in the last century. It is unlikely to go up much in the next fifty years.
- The number of [droughts](#) increased globally. Therefore, the number of droughts can be expected to continue rising globally.

Overall, the U.S. would be little impacted from a gradual 1.6° F temperature rise by 2065. With long lead times and a wealth of technological and other resources, we would adapt comfortably. Perhaps the greatest impacts would be felt by Americans living near the Great Lakes or the oceans, if they live 2 feet or less above sea level. Miami, for example, would have to revamp its storm water control system in the decades ahead. Also, it would be unwise to build on Cape Hatteras, NC or on parts of New Jersey's shore after 2065. In general, the Atlantic and Pacific Oceans eventually will rise by one foot, shrinking the size of America's beaches. The impact in the U.S. of a one foot sea level rise on your community can be seen at [this link](#).

Certain third world nations are most at risk because they are near sea level now or may experience more frequent droughts. [Notre Dame University](#) concludes that Sub-Saharan Africa, India, Pakistan, Bangladesh, and Afghanistan are most vulnerable; the U.S., not so much.

Fusion: Truly Clean Power

If mankind has a hundred years before global warming makes it "too hot," we probably do not have to do anything to avoid excessive temperatures other than what we have been doing since the Industrial Revolution began: make rapid technological progress. If you want to end the carbon era, the answer is not to ration carbon. It is to develop something better: nuclear fusion.

Since 1952, when American scientists exploded the first hydrogen bomb, engineers have sought to harness energy from nuclear fusion to provide a clean and abundant energy source. Fusion, the process that powers the sun, occurs when two hydrogen atoms are heated at such high temperatures that they collide, fuse, and become helium, releasing vast amounts of energy.

For fusion to work, scientists have to contain and sustain 100 million degree temperatures. The first goal is to achieve "positive energy balance:" getting more energy out of

the reactor than is put into it. The next goal is to make the process achieve a high enough positive energy balance that it covers the cost of capital. This seems highly likely to occur in the 21st century. Fusion energy releases negligible amounts of CO₂.

Scientists may be closer than the public thinks. In 2014, [Lockheed Martin](#) announced they had developed a mini-fusion system that could fit inside a truck and yet harness enough fusion energy to power 80,000 homes. It may be deployable in ten years. Separately, [MIT](#) is working on a small reactor that could create 50 times the power it draws. A team in South Wales is studying an “avalanche” fusion reaction, which is triggered by laser pulses. According to their [calculations](#), “You put in 30 kilojoules [of energy] and get 1 billion joules out.” That represents a 33,000 to 1 energy return. Then there is the largest scale fusion project, ITER, which is backed by over 35 countries. It is expected to produce net-positive energy by [2027](#).

It seems reasonable to assume that one or more of these approaches will prove commercially viable sometime in the next 40 to 50 years. Accelerating the development of fusion power seems the most promising way to reduce dramatically greenhouse gas emissions should that prove necessary in 60 years. If fusion power does not materialize, then it will be easier to finance de-carbonization in 2075 when real global GDP is 4 or more times higher.

Impact on Companies if the Democrats or Republicans Win the White House

The untimely death last week of Justice Anton Scalia improves the immediate prospect that EPA's Clean Power Plan will go into effect. It is being challenged by [29 states](#); the case will be heard this year by the DC Circuit Court of Appeals, which is expected to rule in Obama's favor. The Supreme Court was expected to reverse this court, 5-4. Now, if the Supreme Court splits 4-4, it will leave the lower court's ruling in effect.

If a Republican wins this November, then he will appoint a ninth Justice who is likely to throw out the CPP. Failing that, a Republican would appoint an EPA Administrator who will revise it, and maybe neuter it.

"Global Warming" Winners under a Republican President

Few companies likely will rejoice more if a Republican wins than the surviving coal corporations, specifically Cloud Peak Energy (**CLD**) and Consolidated Energy (**CNX**). (Peabody Energy (**BTU**) and Westmoreland Coal (**WLB**) are highly leveraged, and inappropriate investments for widows and orphans.) Instead of facing a 16 percent cut in demand by 2022, and a 20 percent drop by 2040, the coal industry could see an uptick in orders.

Executives at several electric utilities also would go to bed happy. Especially pleased may be those working for: ALLETE (**ALE**), Ameren (**AEE**), DTE Corporation (**DTE**), American Electric Power (**AEP**), WEC Energy Group (**WEC**), Southern Company (**SO**), Duke Energy (**DUK**), and AES Corporation (**AES**). Under the CPP, they would have to retire coal power plants prematurely to comply with EPA mandates and build expensive natural gas or wind farms to take their place. There would be no guarantee that regulators would reimburse them in full, and on time, for their capital investments in cleaner energy.

Energy Generation from Coal by Company			
Allele (ALE)	85.00%	Wisconsin Electric Group (WEC)	53.40%
Ameren (AEE)	73.50%	Southern Company (SO)	39.00%
DTE Corporation (DTE)	73.00%	Duke Energy (DUK)	36.50%
American Electric Power (AEP)	61.00%	AES Corporation (AES)	30.00%

Source: Company Annual Reports

Cement: a Special Case

Cement makers must release one ton of CO₂ to make one ton of cement. No other industry is so CO₂ intensive. By themselves, cement makers are responsible for [5 percent](#) of U.S. CO₂ emissions. They appear to be a potential Democratic EPA target under the CPP. CEMEX (**CX**), Vulcan (**VMC**), Eagle Materials (**EXP**), and Martin Marietta (**MLM**) have a vested interest in a GOP presidential win.

"Global Warming" Winners under a Democratic President

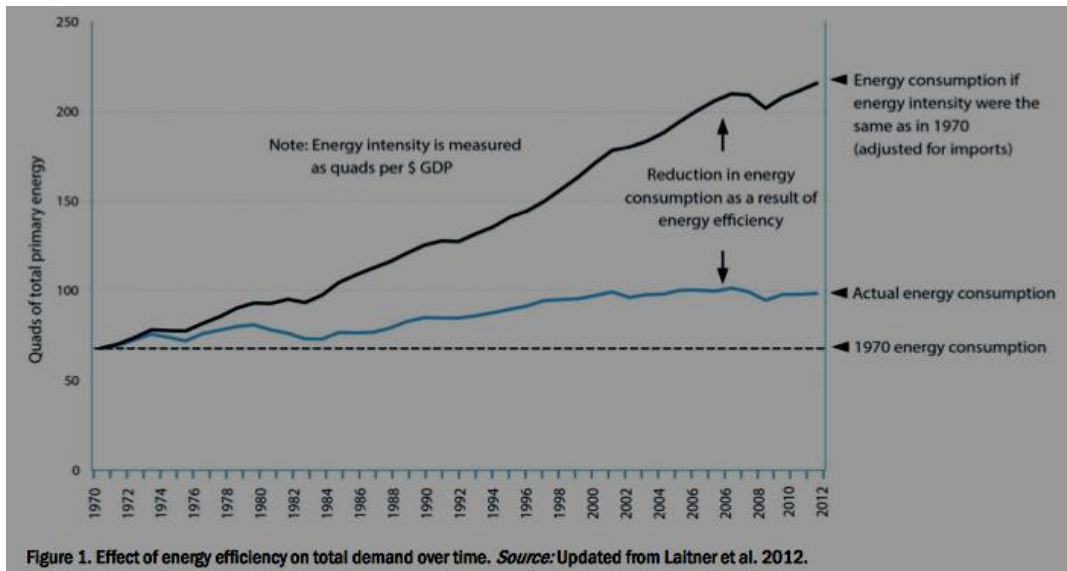
If coal is Cinderella, then solar and wind power are Democrats' favorite children. Renewable energy capacity would almost double by 2022, and then double again by 2030 under the CPP, see the table below. This would delight wind and solar power companies such as Vestas Wind Systems (**VWDRY**), First Solar (**FSLR**), SunPower (**SPWR**), SolarCity (**SCTY**), Brookfield Renewable Energy Partners (**BEP**), and 8point3 Energy Partners (**CAFD**).

Electric Generation Capacity (GW) under Base and Clean Power Plan Cases

	2013		2022		2030		2040	
	Base	Base	CPP	Base	CPP	Base	CPP	
Coal	304	263	217	260	209	260	209	
Natural Gas/Oil	470	482	490	519	518	595	579	
Wind	61	83	100	87	192	110	205	
Solar	13	28	32	39	76	61	136	
Other	218	224	225	228	231	235	235	
Total	1065	1079	1065	1133	1226	1261	1365	

Source: [EIA](#)

Democrats also favor improvements in energy efficiency, but of all the options for states to attain compliance with CPP standards, it is the least discussed. According to EPA Administrator [Gina McCarthy](#), "The biggest bang for the buck is efficiency." In fact, states have been implementing energy efficiency policies for decades. Today, 26 states have energy efficiency resource standards in place, 40 states have adopted versions of national building codes, and others have utility-managed energy efficiency programs. According to the American Council for an Energy Efficient Economy [ACEEE](#), "improvements in energy efficiency have supplied more energy than domestic coal, natural gas, and oil combined."



ACEEE believes significant opportunities to boost energy efficiency remain. Power plant CO₂ emissions could be reduced by 26 percent, and power demand reduced by 25 percent by 2030. This reduces CO₂ emissions by 600 million tons annually. Honeywell echoes this view on its [website](#), “Nearly 50 percent of its products linked to energy efficiency, Honeywell (**HON**) can help the world face its energy challenges. In fact, if Honeywell’s existing technologies were widely adopted today, energy demand in the U.S. could be reduced by 20-25 percent.”

In addition to Honeywell, other companies active in selling energy efficiency systems include General Electric (**GE**), Johnson Controls (**JCI**), and Owens Corning (**OC**). Investors could also consider CREE (**CREE**), Itron (**ITRI**), Power Integrations (**POWI**), Ameresco (**AMRC**), OPOWER (**OPWR**), and EnerNOC (**ENOC**).

Political Weather to Determine the Energy Investment Climate

Planet earth is warming, but whether or not we need to take aggressive action to ration carbon is unclear. Regardless of the evidence, American Presidents are given considerable discretion and power to manage this uncertainty. Investors inevitably are exposed to presidential election risk if they own securities in companies that leading Democratic presidential candidates believe are part of a global warming problem. Conversely, opportunity also is present in the coal bargain bin if a GOP president says, "never mind." This election year, it is especially wise for investors to keep an eye on the political temperature.

For further analysis or information, contact Capitol Analysts Network, Inc. at:

2230 Decatur Place, N.W.
 Washington, D.C. 20008
 Email: capnet@xecu.net

Phone: 202-223-4014

website: www.capitolanalysts.com

© 2016 Capitol Analysts Network, Inc. All rights reserved

Disclaimer: This report is based on material we believe to be accurate and reliable; however, the accuracy and completeness of the material and conclusions derived from said material in this report are not guaranteed. Capitol Analysts Network, Inc. makes no recommendation as to the suitability of such investment for any person.