Subject: FW: Input to Feb. 4 Meeting on Clean Power Plan

From: David Mitchell [mailto:atrial1047@att.net]
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To: Cecil, Walter
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In response to the PSC workshop on the EPA Clean Power Plan, I would like to submit the following comments for the record:

1. It is quite clear from the information provided by the participants that a variety of factors are leading to the ongoing decline of coal as a source for electricity. One of the trends is the rapid fall in the cost of both solar and wind systems, allowing for essential parity with fossil fuel sources.

The market and social trends all point to a very strong movement away from investment in fossil fuels, and towards renewable sources. Included in these are the U.N. Paris Climate Agreement, the Clean Power Plan itself, and a variety of Renewable Energy Standards in the U.S., including Prop. C passed in Mo. in 2008.

2. The workshop was focused on the cost of compliance and reliability issues related to the Clean Power Plan, and I realize it was not designed to address the issues as to why the Clean Power Plan was developed by the EPA. Given that 11 states in the 14 state region have chosen to engage in litigation against the EPA Clean Power Plan, I feel a need to reaffirm some realities.

A. NASA, on its website climate.nasa.gov/evidence, prominently displays the following quote:

> "Ninety-seven percent of climate scientists agree that climate warming trends over the past century are very likely due to human activities, and most of the leading scientific organizations worldwide have issued public statements endorsing this position."

B. The U.S. National Academy of Sciences, at the request of Congress, issued a report in 2010 addressing the issue of global warming. One of the reports, Advancing the Science of Climate Change, had the following summary quote:

> " A strong, credible body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for broad range of human and natural systems..."

The U.S. National Academy of Sciences operates on a nonprofit basis, the authors of all their reports work pro-bono, and there is a rigorous review process. If there is a more prestigious scientific organization in the U.S., I am not aware of it.

C. The U.N. International Panel on Climate Change, the IPCC, has been studying global warming since 1988. They have produced five exhaustive reports on the state of the climate, with the Fifth Assessment Report completed in 2014. With each report, the U.N. IPCC concludes with more certainty the human influence on our climate system.

The U.N. IPCC does not conduct it's own research, but reviews all the relevant research available. There have been thousands of scientists who have contributed to these reports, all working on a pro-bono basis. There is an exhaustive review process with each report, and included in this is opportunity for each U.N. member to have their own experts provide review.

The U.N. IPCC is an international body, with its reputation on the line in the publishing of these reports.

The U.N. Fifth Assessment Synthesis Report in its Summary for Policymakers has the following quote:

" Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gasses are the highest in history. Recent climate changes have had widespread impacts on human and natural systems."

3. Ocean acidification is, in my view, the most devastating consequence of the human burning of fossil fuels since the Industrial Revolution, and the least discussed.

Yale Environment 360 (e360.yale.edu) has an article: An Ominous Warning of the Effects of Ocean Acidification by Carl Zimmer. Feb. 15, 2010.

This article states that CO2 emitted since the Industrial Revolution has lowered the pH of the world's oceans by .1, and this means the oceans are about 30% more acidic than 200 years ago. Also, the current ocean acidification rates are 10x faster than the mass extinction event 55 million years ago, and:

"...may spell doom for many marine species, particularly ones living in the deep ocean."

" The planets weathering feedbacks won't be able to compensate for the sudden drop in pH for hundreds of thousands of years."

The National Oceanic and Atmospheric Administration notes that one third of all CO2 emissions since the Industrial Revolution have been absorbed by the world's oceans, and annually 2.5 billion tonnes of CO2 enters the oceans. This is equivalent to 11 million hopper train cars filled with coal per year, a train long enough to circle the globe 14x. Current emission trajectories will lower the pH of the oceans by an additional .7 units by 2300. That may not sound so bad, but these measurements are on a logarithmic scale. A .1 unit change has resulted in an ocean whose surface waters are 30% more acidic. Obviously, continuing on our path to an ocean in 2300 whose pH is .7 lower than now is completely unthinkable.

4. The state of Iowa, as noted in the workshop, gets at least 25% of its electricity from wind power. (Wikipedia)

The state of Texas gets about 9% of its power from wind. (Wikipedia)

There are massive wind resources in the Plains states in the U.S.

Germany made a national decision in 1997 to move to an energy grid powered primarily with alternative energies, with the goal of 80% renewables by 2050. By 2014, they have achieved a 30% alternative energy profile. (Wikipedia)

The point to be made is that moving to a much stronger alternative energy profile does not have to be profoundly threatening. Iowa, Texas, and Germany have not fallen into chaos yet.

Conclusion

In my view, it is tragic that so many states are involving themselves in litigation against the EPA Clean Power Plan. Including Missouri. The CPP intent and purpose is to begin to reduce the massive discharge of CO2 into our global atmosphere which causes so much climate disruption, as well as ocean acidification.

The EPA CPP is a small part of a plethora of changes happening all over the world, all aiming at reducing humanity's fossil fuel imprint. The tides of history are moving powerfully to a world with significantly more alternative energies, and significantly less fossil fuel use.

The U.N. Paris Agreement in Dec. 2015 was the collective voice of the world affirming the absolute necessity of humanity's need to significantly reduce its fossil fuel imprint to avoid runaway global warming.

Those utilities who position themselves to have the greatest variety of fuel sources, with a preponderance of reliance on alternative energies and related systems, will have the greatest flexibility and strength in the decades to come. They will also be aligning themselves with the powerful historical forces which are becoming ever more manifest.

I very much appreciate the workshop held by the PSC on Feb. 4, and was very much encouraged by much of the information presented. Including efforts by utilities, and other entities, to change their energy profiles.

Respectfully Submitted

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