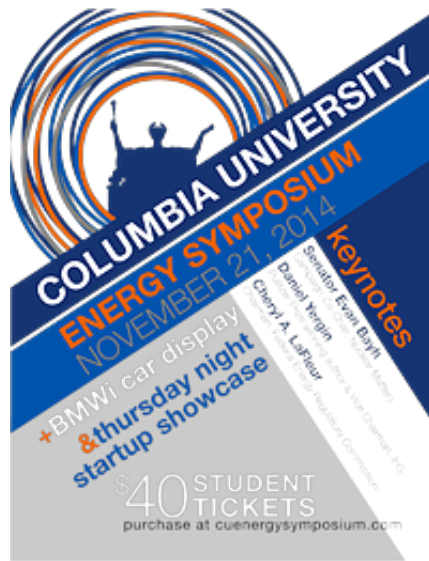


Columbia University's Energy Symposium



There's a lot of good energy, as it were, at Columbia University all the time: they're working on [climate and sustainability](#), and have a wealth of [world-class educational programs](#). I went to this year's tenth annual energy symposium staged by the students from the business school, law school, and SIPA. I've been to a few of these over time, including [last year's](#).

The night before the symposium, I went over to a "[cleantech startups showcase](#)" to check out some really innovative projects. I heard the mini-pitches from folks working on fuel cells and on cellulose for bioplastics. One startup has developed a cheaper and easier way to conduct energy audits and another has a better way to measure heat in power cables. Still another can capture the energy from the air flow in an HVAC system and use it to power sensors and actuators so that you don't need to replace batteries. This is like the power from water flows that [Rentricity](#), one of the many recent successful tech companies incubated in New York, can provide. Great stuff!

The next day, [Cheryl LaFleur](#), Chairman of FERC, gave the first keynote speech. She talked about the drivers of change in the power sector: technology, environmental policy, markets, and security concerns. Technology developments that are pushing us forward in the US include the stunning advent of a lot of relatively cheap domestic gas supply, the fast-rising renewables component of power, and energy conservation and efficiency along with microgrids and demand response. New environmental regs, primarily from EPA, are pushing generation away from coal. (There's [a terrific article](#) in today's NY Times on the Clean Air Act and how the Obama Administration has been putting it to such good use.) The markets have been firing up to provide new generation, transmission and distribution, and pipelines. On the security of the grid, I was a bit shocked to learn of [the scale of the attacks](#) happening now. Beyond this, Chairman LaFleur had some charming understatement for us: the political ecosystem does not have consensus. You need go no further to see how the nominee for her job before she got it, Ron Binz, was [shot down in flames](#) by the Kochs and their allies. It's going to get worse, Madame Chair, before it gets better.

(I left too early to hear the other keynoters, Daniel Yergin and Evan Bayh. I've heard Yergin speak and his book, *The Prize*, is a great read on the history of the oil industry. Bayh was representing [Nuclear Matters](#). I've heard [all that nonsense](#) many times before - and over 40 years - so I wasn't going to miss anything except agita.)

In [a panel](#) on the "Distributed Utility of the Future," some worthies spoke about developments in the grid universe. A lot of the emphasis seems to be moving toward the customer side of power these days. The panelists spoke of the "customer as resource," particularly in the context of demand response - lowered demand by customers in response to price signals in order to alleviate dangerously heavy loads. Storage and distributed generation by customers also was discussed. The representative from [Opower](#) talked about how their 50 million customers were educated and engaged by knowing how their energy use stacked up against others'. The marketing guru from [First Solar](#) talked about some of the great opportunities, particularly in the developing world, for community systems, aka microgrids. All of the panelists were jazzed by New York State's developing REV initiative: [Reforming the Energy Vision](#). What's pretty exciting, revolutionary in many ways, is the "vision" to turn the utilities in New York into "Distributed System Platform Providers." The DSPPs, according to Greentech Media [here](#), "...will essentially become the purchaser and aggregator for distributed resources." O brave new world. These panelists, with national perspectives, all are watching New York closely. As the very smart folks at the [Rocky Mountain Institute](#) know, and these savvy panelists too, the emphasis on "prosumers" in the power sector is part of a slowly burgeoning worldwide movement.

The second [panel discussion](#) I attended was on "Renewable Energy Investments." These folks were unanimous in their enthusiasm for the implications of the technology breakthroughs and cost reductions that have been driving the uptake of renewables. As Steve Corneli of NRG said, in reference to decarbonizing our energy, "getting 'there' is going to get easier." NRG, not incidentally, has made [a commitment recently](#) that is unprecedented for a utility: vowing to cut carbon dioxide emissions 50% by 2030, 90% by 2050. For them, it's a business **opportunity**. NRG's CEO said, only last week at the groundbreaking ceremony of the company's new ultra-green headquarters: "As the U.S. transitions to a renewables-driven, increasingly distributed, grid resilient energy system, we expect to be a leader..." In the process, they intend to "substantially grow business and shareholder value."

Izzet Bensusan, the very articulate founder and chief of [Karbone](#), "New Energy Specialists for the New Energy Economy," identified what we're experiencing as a "revolution in energy." He noted that the cost of capital for projects in renewables has come down by half in the US in just six years. The panelists acknowledged the political barriers but Corneli, for one, said these are temporary but that, in any event, we are going to continue to see breakthroughs in policy and finance. (Not uninteresting note: Citigroup has calculated that the recent [US-China climate and energy agreement](#) will put at least a [\\$3 trillion dollar hole](#) in the oil and coal industries' revenues to 2030.)

The level of enthusiasm these knowing panelists reflected what my panelists in April identified: [Confidence](#). Investors, developers, policy makers, and consumers are all gaining confidence every day in the idea of a fully decarbonized and, in some places, denuclearized, energy

economies, what the great Hermann Scheer called [technology-driven energy](#). As I like point out to my students, when the [Special Report on Renewable Energy Sources and Climate Change Mitigation](#) (SRREN) came out a few years ago, it noted that:

Existing energy infrastructure, markets and other institutional arrangements may need adapting, but there are few, if any, technical limits to the planned system integration of RE technologies across the very broad range of present energy supply systems worldwide, though other barriers (e.g., economic barriers) may exist. ([SRREN, Ch. 8](#), page 612.)

Even those economic barriers are coming down. As the cofounder and CEO of [Mosaic](#), "the first peer-to-peer lending platform for solar power," pointed out, though, we could do a whole lot better in the renewables business if we jettisoned fossil fuel subsidies. And how! "Fossil-fuel subsidies totalled \$550 billion in 2013 – more than four-times those to renewable energy – and are holding back investment in efficiency and renewables." (IEA's [World Energy Outlook 2014, Executive Summary](#), p. 4.)

There was a lot going on this year at the CU Energy Symposium, as there is every year. Unfortunately, I had to bail out before lunch. In any event, the panelists, student team who staged this great annual event, and the lucky audience members, all engaged in an eminently useful dialogue.