



View from Wall Street:
Electric Energy and Related Issues
7th Annual Financial Survey

November 2014

Lewis Hart,
Chappaqua Capital Consultants, LLC

Bruce Lacy,
Lacy Consulting Group, LLC



Acknowledgements

The 7th Annual Financial Survey was made possible by all our clients, sponsors and interviewees.

This includes support from

The US Nuclear Infrastructure Council, and

The US Department of Energy, Office of Nuclear Energy

Thank you!

All opinions and data resulting from the Survey and provided in this Report are the sole responsibility of the Authors.



Table of Contents

Executive Summary	iv
Q 1 – Investment Expectations: Who’s Winning, and Who’s Losing?	1
Q 2 – Load Growth: Slow Growth and a Few Contrarians	2
Q 3 – Wind and the Grid: Manageable Problem or Crisis in the Wings?.....	6
Q 4 – Wind and the Grid: The Solutions are Not Blowing in the Wind	8
Q 5 – Wind: A Free Rider on the Grid, and Likely to Continue	12
Q 6 – Wind vs. the Grid: Virtue Counts, But Reliability is the Trump Card.....	14
Q 7 – Solar Investment Tax Credit: Extension Past 2016?	16
Q 8 – Solar Energy: The Future is Bright	18
Q 9 – Solar Energy: Whose Side of the Meter Are You On?	20
Q 10 – Green Light for LNG Exports, But What is the Right Role for Government?	21
Q 11 – Ukraine and US LNG Exports are a Geopolitical Opportunity, Maybe.....	23
Q 12 – Coal: Down but Definitely Not Out.....	28
Q 13 – The Future of Nuclear in Germany, Japan and the UK.....	31
Q 14 – US Long Term Nuclear Future: Less Negative	34
Q 15 – Wall Street is Making Up its Mind on Small Modular Reactors (“SMRs”)	36
Q 16 – The Role of the US Government in Supporting SMR Development.....	39
Q 17 – The Future of Baseload: Natural Gas and Solar?.....	41
Q 18 – Replacing Coal: “Proven” Natural Gas vs. “Best Case” Nuclear	44
The Authors	52

EXECUTIVE SUMMARY

Eighteen questions and fifty one interviewees¹ provide a contemporary view of Wall Street attitudes toward electric generation and related energy issues in the US. Given our in-depth and in-person approach to interviews, honed since our first annual survey in 2007, we continue to benefit from participant comments that frequently go well beyond the direct answers to the questions, provide deeper insight, and introduce connected issues of importance.

In this year's survey, along with the now familiar recurrent themes of plentiful cheap natural gas and expansion of renewables, we gained perspective on Wall Street expectations for technological developments, changes in the grid and utility/customer relationship, and the future of generation in the US.

In our summary we have added references to question numbers in the Survey Report so you can move directly to the questions of greatest interest to you for review.

Investment and Load Growth: Where the dollars and kWhs are going

No surprise! Natural gas continues to lead short term investment and long term expectations for the replacement of retiring baseload coal and nuclear. The insight comes when we see how the number two and three choices, Solar and Nuclear are changing. Wall Street's thinking is also changing with regard to the traditional views of categorizing generation into baseload, load following, and peaking units. See Questions 1 and 17

Almost everyone (49-2) saw continuation of slower kWh growth, but the fun begins with understanding why the growth is slow. Big diversity of opinion! Eleven different reasons as the cause of slower growth were mentioned. See Question 2.

Intermittent Wind Power and The Grid

90% plus of our participants thought that the intermittency of wind and its impact on the grid definitely needed attention. Even more interesting was that 60% viewed intermittency issues only being solved with a disruption of load type crisis. A view was expressed by interviewees that the cause of intermittency/grid problems reflected different issues for each region, and the solution lay in local and regional solutions. See Question 3.

Interviewees selected what they believed are the most likely policy maker actions regarding resolution of intermittency issues to include time of day pricing, energy storage development,

¹ Interviews were conducted in the period May-June 2014.

and elimination of wind subsidies. First and second choice priorities among these options were blended with comments about the importance of time frame for solutions. Some felt that elimination of wind subsidies would be effective in the short run but that energy storage development would be most important for intermittency in the long run. See Question 4.

A majority felt that the intermittent energy providers should pay the capacity/backup costs caused by intermittent power. However, a sizable minority felt that wind, and renewable power generally, were meeting very important national environmental and social goals. Hence, they felt that costs should be socialized across ratepayers and taxpayers. Both sides claimed the moral high ground. See Question 5.

A modest majority (53% to 41%) suggested that the CO2 reduction from renewable wind power was worth the grid disruption caused. However, the hedged answers of many interviewees showed that they saw the need for balance between grid reliability and CO2 control. And whatever the social goals of CO2 reduction, there was a definite preference for a market solution for both CO2 control and backup power costs. See Question 6.

Solar Energy

When an irresistible force encounters an immovable object the result is....., in this case, a compromise. There is a strong lobby, aggressively supporting a long term extension of the 30% Solar investment tax credit (“ITC”). There is an equally strong lobby opposing extension of the credit. Result: 78% of our interviewees see short term extensions of the Solar ITC as the anticipated compromise.

While a majority of interviewees see the ITC as a stimulant to growth, they don’t see its phase out as a growth killer. Momentum will carry the industry forward with state RPS support, continuing technology improvements, and declining cost solar panels as contributing factors. See Questions 7 and 8.

When allocating future Solar generation between photovoltaic “PV” (lower capital cost) and thermal (several hours storage capacity), interviewees tilt strongly toward PV. Utility scale PV has the broadest support but rooftop PV has more interviewees seeing it as a future dominant technology. See Question 9.

Natural Gas and Coal

Consistent with our 2013 results, by an overwhelming vote of 45 to 3, there was support for developing LNG exports. However, when we dug more deeply into the “questions within the question”, there was disagreement between those who wanted unrestricted market

development and those who wanted governmental guidance and control through a licensing / approval process. See Question 10.

While a majority (55%) thought the situation in The Ukraine has influenced US natural gas policy, comments indicated a guarded view of this opportunity. A plurality opined that it would be four to six years before any real impact. An only slightly smaller number thought never. Not one interviewee thought in terms of US market dominance, and there was sharp division as to whether the US could ever use natural gas as a foreign policy tool. See Question 11.

Our interviewees saw coal generation surviving but with no growth. Looking past the next ten years, there is expectation that technological change could resurrect the use of this plentiful US natural resource. See Question 12.

Nuclear

Our participants opined on the future of nuclear in three foreign countries: Germany, Japan and the UK. The results show how each country represents a different combination of national ability to forgo nuclear vs. national need for electricity. See Question 13.

When looking at shutdowns vs. new build, participants continue to have a slightly negative view for the US nuclear short term future. However, attitudes for the longer term have become much less negative, benefiting from the construction progress at Vogtle and Summer. See Question 14.

Small Modular Reactors (“SMR”)

With regard to whether the costs of SMRs can be contained to not overwhelm their modularity/flexibility advantage of bite size units and bite size financing, this was a year of important change. After three years of predominantly “undecided” responses, Wall Street moved toward a decidedly pro and con perspective. The results show the importance of reaching out to Wall Street and also the limits of Wall Street patience. See Question 15.

We found an almost even philosophical split between pure free market proponents and those who saw a role for government in supporting SMRs, with a group in the middle advocating some of both. Concern about SMR long term economic competitiveness was a common theme in all three groups. See Question 16.

The Financing Case Study

In our last question, we asked about the relative cost of capital impact of choosing between “best case” nuclear and “proven” natural gas generation to replace retiring coal fired capacity.

View From Wall Street: Electric Energy and Related Issues
7th Annual Financial Survey

No surprise! There was a financing cost premium for nuclear. But perhaps the real news is that the “nuclear premium” at an average of 36 bp for intermediate term debt, 51 bp for long term debt, and 83 bp for equity, was probably not sufficient to assure choosing natural gas if there were other good reasons to choose nuclear. There was a material shrinkage in the cluster of high cost responses and a higher percentage of interviewees offering quantified responses on comparative capital costs. See Question 18.

