LONGBOARD
CAPITAL ADVISORS LLC

February 2009 Newsletter
by Brett Conrad, Managing Partner

Look for the Continuing Trend

Economic cycles are normal. This contraction is just more intense than any others in recent memory. Cut through the daily chatter of gloom, bottoms and booms and look at what is really happening. The global economy is still far larger and more dynamic than it was 10 years ago. What trends are continuing regardless of the economic situation? Where can you still make money as an investor?

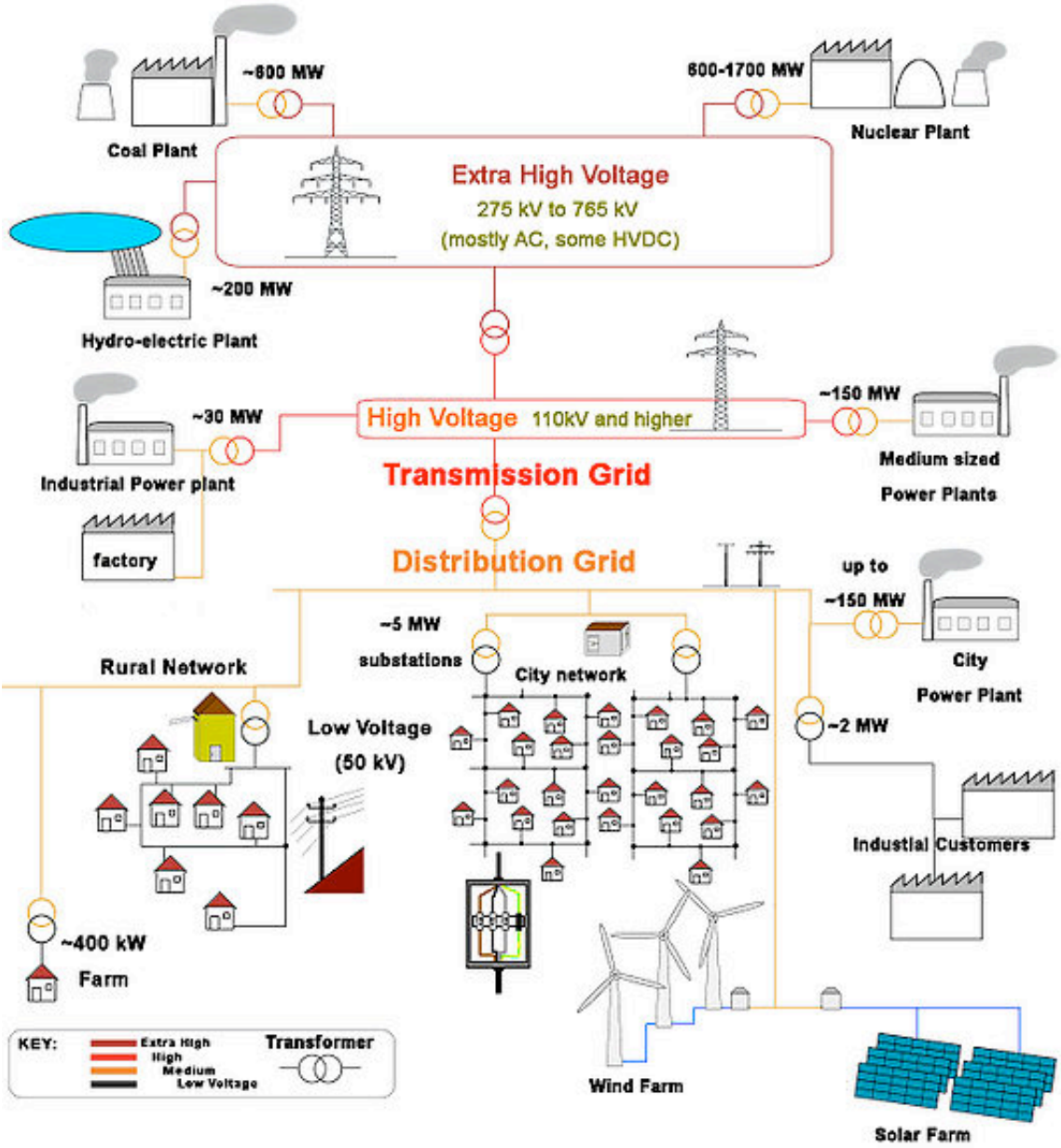
Continuing Trend: Move Electrons Instead of Physical Objects

The most obvious continuing trend is the switch from moving physical objects to moving electrons wherever possible. This movement is essentially the elimination of steps performed by people or machines in the process of living and doing business. The virtual environment is becoming a better substitute for reality, and as money gets tight, efficiency rules. Here are some examples of this disintermediation:

Newspaper News ---- Internet News
Newspaper Classifieds ---- Craigslist
Newspaper and Magazine Display Ads ---- Targeted Ads on Google, Yahoo
Books ---- e-readers: Amazon Kindle, Sony e-reader
Physical Universities ---- Virtual Universities
Vinyl and CDs ---- Digital Music
Physically Travel to Work ---- Tele/Virtual Commute

The Global energy Infrastructure is just Now Moving from the Physical Age to the Digital Age.

Just think about how much energy and effort is expended getting gasoline to your automobile. Oil companies go through the processes of exploration, drilling, moving the crude oil to a refinery, cracking it to gasoline and trucking it to the gas station. After losing 75% of the energy value burning it in a combustion motor, the toxic exhaust and carbon dioxide get spewed out of the tailpipe. This process is simply too complex and too dirty, and it begs for more efficiency and simplification. Our free nuclear generator in the sky holds the answer.



Electricity generated from coal, natural gas and nuclear fuel also goes through too many steps in generation and delivery. Think about coal-fired electric generation; mining and transporting the coal to a power plant, burning it, cleaning the exhaust, and then transporting the electrons through sometimes faulty wiring to homes and businesses creates many inefficiencies. Now we have the opportunity to go to all electron systems, without moving a brick of coal or a barrel of oil. This will indeed cause the slow dismantling of the oil business and the transformation of the electric generation business.

Is this impossible?

Let's take, for instance, my friend Paul Scott who owns a Toyota RAV4 electric car, an electric motorcycle and a powerful solar array on his home. He has been able to almost completely cut those huge oil and coal supply chains out of powering his home and his transportation. I think of him like the first person on the

block to own an iPod - it is a little expensive now, but it is the future. Just begin to think four or five years out. In 2013, an electric car will cost less than or equal to a comparable combustion car, and a home solar system will probably run only $5,000, or 25% of its cost today. If people finance their solar systems, gasoline and electricity that once cost $200 per month will now be replaced with solar energy that costs only $70 per month, including the cost of financing. As batteries and solar systems get cheaper with even more advanced technologies and mass production, oil and coal will diminish in importance, much like newspapers and compact disks are not as important today as they were ten years ago. Plug-in hybrids will still be popular in the future in some colder and cloudier climates, but they will be able to run on advanced bio-fuels. For sunny locations like California, or windy locations on the great plains, fossil fuels will only be used for specialty applications within three decades from now.

Few people predicted major newspapers like *The New York Times* and *The Wall Street Journal* would be on the brink of collapse from electronic disintermediation. Now, is Longboard Capital predicting that the oil business will disappear in 50 years? No, but it will be less significant than it is now, and only the most efficient oil producers like Saudi Arabia will be in business. Longboard predicts oil sands mining in Alberta, one of the most over-hyped sources of new North American energy will be completely shut down by 2050. Oil production from the tar sands is one of the most energy-consuming and pollution-generating energy production methods in the world. Look no further than the bankruptcies of corn ethanol producers in the last couple of months if you want a window on what will happen to tar sands oil production. Corn ethanol simply has very poor energy output compared to the energy it takes to produce it.

Imagine what inexpensive, clean energy will do to improve the development process in emerging economies. Countries in Africa, for instance, won't have to go through the malevolent side-effects of industrialization that China has had to endure. In China, pollution is the number one cause of death, and worldwide, it causes a reduced life expectancy for 40% of the population. Much like when the personal computer revolution combined with the internet to create all kinds of new possibilities, the clean energy revolution will have very profound effects. What will happen when we cheaply generate on-site electricity to the majority of schools in developing countries that currently have no power? Imagine the brain power that will be unleashed as these schools add computers and get connected to the best teachers, and the most advanced education available.

Why we are on the tipping point of the revolution (in spite of low oil prices)?

Currently 95% of the electricity in the US is powered by centralized generation stations. Imagine 95% of centralized power moving to 50% as local generation gets more cost-effective. This will mirror the move from centralized computing to personal computing. Centralization won't disappear from the power grid; it will just decrease in significance. To deal with the overcapacity local generation and efficiency efforts will create, the worst polluting coal plants will shut down first, followed by the nuclear plants that will just go offline and retire at the end of their lifetimes.


One of the problems with using wind and solar as inputs to the energy infrastructure is that they are delivered in a diffuse form and must be concentrated. Wind companies are addressing this problem by installing larger wind turbines where the blades sweep the size of a football field (100 meters). As these companies create these giant machines, they have experienced problems from the carbon fiber blades shattering to overstressed gears failing. However, as field experience rises, companies like Vestas, Suzlon and Clipper are beginning to manufacture machines that are very reliable and operate with minimum maintenance. Wind can currently produce electricity less expensively than new coal plants in the US. Wind turbine prices are dropping as output rises to demand and the price of steel and labor drops across the world. With a smart grid, and wind energy being created from multiple diverse sources, energy can be delivered to consumers day and night.

Sunlight can now easily be converted to electricity using photovoltaic panels, but the cost is still relatively high for houses and factories to go "off grid". For instance, it currently costs about $3,000 in solar capital expenditure to power a $1,000 home refrigerator. Within five years, with new technology that is coming online this year, the cost of solar equipment will drop 75%, making solar power cheaper than buying directly from the grid without subsidies. This year alone, Longboard Capital predicts retail solar panel prices to drop at least 25% because of a panel glut. This price drop will create further demand, especially in the US, where new tax incentives combined with the lower cost will push the cost of solar very close to the cost of grid electricity. This will especially be true in many cities in California, where the sun shines often and the grid electricity is relatively expensive. A couple of the solar installers that will benefit from the demand surge will be Solar Power (SOPW) and Akeena Solar (AKNS). Longboard also expects integrated players like First Solar (FSLR) and SunPower (SPWRA) to thrive in this tough environment. 2009 will also begin the first wave of mergers and bankruptcies in the solar space as global competition gets fierce.

In order to power more automobiles and homes with cleanly-produced electrons, a battery revolution is needed. Batteries must drop in cost, charging time must be reduced and lifespan needs to be expanded before the clean energy revolution can truely take root. We are now on the cusp of that revolution, and within three years, low cost electric and plug-in electric cars will hit the road with batteries that charge in seven minutes and travel 400 miles on $10.00 in electricity. These batteries will also last for 200,000 miles and will be completely recyclable at the end of their lifetimes. Companies large and small are working out the final kinks. Only Toshiba has announced plans to start construction on a large scale factory for these new batteries, but Longboard is expecting A-123, Boston-Power, Advanced Battery (ABAT), LG Chem,

Tesla, Altairnano (ALTI) and BYD (HK 285) to be possible competitors in this soon to be trillion dollar industry.

Expect at least two high profile battery IPOs in the next two years. Longboard Capital will publish a more complete battery discussion next month.

The future is exciting. If we use technology in a conscientious fashion, and incorporate sustainable practices in everything we do (reduce, recycle and reuse), future generations will be able to enjoy the abundant resources our planet has to offer.

Please feel free to contact me with any questions about investing and the clean energy industry.

Best Wishes,

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