

The Future of Energy

Special Report

When Batteries Breathe

As is typical this time of year, I've seen my share of predictions.

But I'm not interested in forecasts for 2011. Anyone who claims to know what the price of oil or the level of the Dow will be in 12 months is either making it up or lying.

Instead, I'm interested in the bold long-term predictions that are emerging, and the easy profits they can bring stock investors who weigh and judge them correctly.

The following four ideas came from two lists of long-term projections: one from [IBM](#) for the year 2015, the other from the UK's [Observer](#) for 2035.

1. Breathing batteries

In the next five years, IBM believes "scientific advances in transistors and battery technology will allow your devices last about 10 times longer than they do today" by using "the air we breathe to react with energy-dense metal."

What's more, the tech firm thinks by re-engineering the transistor, "we might be able to lose the battery altogether in some devices like mobile phones or e-readers."

The main point here — one I've touched on before — is that we're in for a massive battery transition. And not just for powering devices...

We'll be using batteries to power cars and cities as well.

Extending the ranges of hybrid and electric vehicles and storing energy will create a \$600 billion market over the next decade, according to Piper Jaffray.

Batteries make EVs more viable and they bring the cost of renewables way down, leading *Motley Fool* to declare last month, "Energy storage is the new global gold rush."

Today, I'm actually putting the final touches on a report that'll reveal the best way to play the boom.

2. Gonna need more cash for apps

You can already use smartphone apps to tell you the name of a song on the radio, adjust your home thermostat remotely, process a credit card transaction on the fly, and [get](#) clinical-quality EKG readings.

But those nifty apps will play second fiddle to what's on the horizon...

Tech companies are working on apps that turn everyone with a smartphone into a walking sensor, giving a range of scientists nearly limitless amounts of data — thereby producing new solutions for nagging problems.

Need to know the noise pollution levels in seven major cities? We have an app for that...

When the first frost comes in sequential years in multiple regions? Our phones will be tracking it...

Temperature data, atmospheric data, seismic data — all being monitored and recorded for analysis by phones in millions of pockets and purses.

An app called Creek Watch already allows citizens to take a snapshot of a creek or stream, answer three simple questions about it, and the data is automatically accessible by the local water authority.

Tech firms like Cisco, Siemens, Research in Motion, and Apple are ones to watch.

3. Good use for hot air

More than a year ago, at a technology conference in Silicon Valley called GreenBeat, I [sat](#) in the front row as start-up named Locust won the innovation competition. Doerr and Khosla were there to witness it, too.

Locust found a way to reduce power consumption at data centers by more than 90% — consumption that costs about \$10 billion per year.

The breakthrough could shave billions off that tab, hence the attendance of legendary venture capitalists.

IBM is predicting even more.

It believes the heat given off from the thousands of servers in data centers around the world will be recycled to heat water for homes and offices.

A pilot project in Switzerland attaches a network of tiny capillaries filled with water directly to the surface of each chip in the computer. The chips heat the water to 140 degrees, after which it's passed through a heat exchanger and piped to provide heat where necessary.

As I recently declared, the focus on energy is shifting from production to efficiency.

4. Firmly post-peak

I'll leave you with a 2035 energy prediction from Chris Llewellyn Smith, former head of physics at Oxford.

His view is basically the same as *Energy & Capital's*, but I thought it would be good to hear it from someone else for a change.

The situation is this: There are currently 6.7 billion people on the planet, half of which live in cities. In just a few decades, there will be 9 billion of us with 80% in cities.

Energy demand is slated to rise 35% by 2035. Oil production in the best case will only increase 15%, as we'll be living in a post-peak world.

That's a heckuva shortfall. And fortunes will be made trying to fill it.

That's the entire philosophy of this newsletter.

Smith concludes:

It won't be cheap. And in the post-fossil-fuel era it won't be sufficient without major contributions from solar energy (necessitating cost reductions and improved energy storage and transmission) and/or nuclear fission (meaning fast breeder and/or thorium reactors when uranium eventually becomes scarce) and/or fusion (which is enormously attractive in principle but won't become a reliable source of energy until at least the middle of the century).

Get ready for years of easy energy profits.

Call it like you see it,



Nick
Editor, [Energy and Capital](#)

Editor's Note: Make sure to check out my most recent Whiteboard Weekly video about the future of energy materials... and how you can [start profiting from them today](#).

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