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News. November, 2015. Issue #44. 74,000 ESB [video views](#). *100% Renewable by 2035.*

I believe in the words of Dr. Martin Luther King, Jr., that there is such a thing as being too late. And, when it comes to climate change, that hour is almost upon us.

- President Obama to other world leaders at COP21 in Paris

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Moving to 100% Renewables

Smarter Inverters Allow Better Integration of Renewables Into the Grid

Inverters are electronic boxes that change the DC electricity produced by solar panels and “invert” it into AC used by the grid. Inverters also protect the grid. *These enhanced capabilities, which include reactive power compensation, voltage and frequency ride-through, and real-time data connectivity, “could potentially offer utilities a least-cost tool for mitigating many grid management challenges” and “help defer or avoid certain distribution, transmission, and electric supply upgrades.”* - in other words save all of us money.

Many, and possibly all of these features were already implemented in many residential and commercial inverters and in many cases were turned on simply by doing a remote software upgrade to the inverters. (PG)

<http://www.greentechmedia.com/articles/read/a-state-by-state-snapshot-of-utility-smart-solar-inverter-plans>

Transportation

Study: EVs Cleaner Than Almost All Gas Vehicles (article & report, both G)

<http://www.autoblog.com/2015/11/17/ucs-evs-cleaner-than-gas-cars/>

<http://www.ucsusa.org/clean-vehicles/electric-vehicles/life-cycle-ev-emissions>

Energy Storage and Miscellaneous

Fluidic Energy: Rechargeable Zinc-Air Batteries

Fluidic is already in production with more than 50,000 batteries shipped. Zinc-air batteries that are fully rechargeable have the potential for low cost and high energy storage. Unlike lithium batteries, these batteries appear to be relatively slow to charge and discharge. This makes them perfect for long-duration storage - say storing solar power for use overnight. (G)

<http://www.greentechmedia.com/articles/read/Fluidic-Energy-is-the-Biggest-Zinc-Air-Battery-Startup-You-Havent-Heard-Of>

Tesla's Gigafactory to be Carbon Neutral

Along with being the largest building on the planet, producing more lithium batteries than the entire world produced in 2013, and probably reducing battery costs by some 30%, the Gigafactory will be carbon neutral.

According to Tesla's Chief Technology Officer JB Straubel: *The other interesting thing is we wanted to manage the emissions from the Gigafactory. Solar power can do some of that, but we took kind of a radical move in the beginning and said we are not going to burn any fossil fuels in the factory. You know, zero emissions. We are going to build a zero-emissions factory — just like the car. So, instead of kind of fighting this battle in hindsight, we just said we are not even going to have a natural gas pipeline coming to the factory, so we didn't even build it. And it kind of forced the issue. When you don't have natural gas, you know, none of the engineers can say, "Oh, but it will be more efficient, let me use just a little bit." Sorry, we don't even have it.* (article G)

<http://www.treehugger.com/renewable-energy/teslas-gigafactory-will-produce-much-renewable-energy-it-uses-net-zero-energy.html>

16 Cities Have Adopted "Fuel Economy Stickers" for Buildings

This provides energy use disclosure for tenants and purchasers helping people make intelligent decisions on energy cost. (article and podcast. Both G)

<http://www.greentechmedia.com/articles/read/why-we-need-a-fuel-economy-sticker-for-buildings>