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News. February, 2017. Issue #57. 99,000 ESB [video views](#). **Low-Cost 100% Renewable by 2035.**

Success is the sum of small efforts, repeated day in and day out.
- Robert Collier, author.

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ESB News

Several talks I gave last month are on YouTube thanks to Martin Voelker of the Colorado Renewable Energy Society. Both are G rated, about an hour long, and had more than 60 people in attendance.

Clean Energy Through Open Electricity Markets

<https://www.youtube.com/watch?v=seGwTKTm38A>

Why Storage is Key for a Renewable Energy Future

https://www.youtube.com/watch?v=Yc_hULwykvQ

Also, next month will mark 100,000 views of our various YouTubes. I would like to celebrate the occasion with a special ESB news. Please email, FaceBook, or Linked-In me with ideas of what you would like to see. Thanks, Ken

Moving to 100% Renewables

The Irreversible Momentum of Clean Energy

Barack Obama makes the economic, corporate, market, and global case for clean energy in a well-researched article in Science Magazine. One example: *economy-wide, solar and wind firms now employ more than 360,000 Americans, compared with around 160,000 Americans who work in coal electric generation and support.* (G)

<http://science.sciencemag.org/content/early/2017/01/06/science.aam6284.full>

Large Corporations are Driving America's Renewable Energy Boom

And they are just getting started. (G)

<https://www.greentechmedia.com/articles/read/Large-Corporations-Are-Driving-Americas-Renewable-Energy-Boom>

Open Electricity Markets

"Open" = fair, competitive, deregulated, or choice markets. Avoid "Enrons" by insuring lots of competition. A city or county chooses default suppliers. Individual and businesses can opt-out directly to the market.

Study Ranking Top States for Corporate (Business) Renewable Energy Procurement

Iowa, Illinois, New Jersey, California, and Texas are their top-five. (Article (G) and Study (PG))

<https://www.greentechmedia.com/articles/read/Report-Ranks-Top-States-for-Corporate-Renewable-Energy-Procurement>

<https://www.rila.org/sustainability/RetailEnergyManagementProgram/Documents/RILAITICEIndex.pdf>

A Western Regional Electricity Market Would Be a Boon

An integrated market would drop the cost of wind and solar integration, and make buying wholesale renewables a lot easier for corporate renewables buyers. (G)

<https://www.greentechmedia.com/articles/read/why-a-western-rso-matters-for-renewables>

Was 2016 the Year for Wholesale Power Market Reform?

According to this article, four factors are driving this reform: 1) *The opportunity: Markets can expose the value of optimizing both power supply and demand.* 2) *The threat: New technology is hitting the grid -- if markets don't capture the opportunity now, they'll have to cope later.* 3) *The need for collaboration: Utilities are grappling with new business models -- understanding the value of new services can help,* and 4) *The why now: Pilots, policies and today's plans will shape the next decade or more.* (article, G)

<https://www.greentechmedia.com/articles/read/was-2016-the-year-for-wholesale-power-market-reform>

The author is the director of America's Power Plan. *America's Power Plan is a platform for innovative thinking about how to manage the transformation happening in the electric power sector today. We bring together America's clean energy thought leaders to assemble information on a package of policies, markets, and regulations to maximize the grid's affordability, reliability/resilience, and environmental performance.* (PG)

<http://americaspowerplan.com/>

LA Times: Californians Paying Billions for Power They Don't Need

LA Times article exploring the dangers of allowing monopolies to own power generation in a semi-open market. (G)

<http://www.latimes.com/projects/la-fi-electricity-capacity/>

Energy Storage and Miscellaneous

Super Duper EV Charging - 350 kiloWatt (kW)

The faster the charge, the quicker the fill-up. For perspective, today's Tesla SuperChargers are 150 kW. A normal 110 volt wall plug provides 1 kW. A normal wall plug provides about 3 or 4 miles of driving for a one-hour charge. (G)

<https://electrek.co/2016/12/15/electric-vehicle-dc-fast-charging-station-in-us-breaks-ground-in-california/>

Generally speaking, the more energy you push through a cable the hotter it will get. For super fast charging this means you either need big, heavy, unmanageable cables, or liquid cooled cables to keep cable size and weight manageable. Tesla and others have been working on liquid cooled cables for some time. (G)

<https://chargedevs.com/newswire/itt-cannon-introduces-a-liquid-cooled-dc-connector-and-cable-design/>

Blame Inflation, Not Fuel Efficiency and Not EVs for Potholes and Rickety Bridges

An interesting analysis for Nevada and Colorado. Road taxes are a fixed amount per gallon. For example, in Colorado, road taxes have not gone up for 25 years. This white paper assigns the following losses from road taxes for fixing Colorado roads: Inflation: \$313 M lost; fuel economy standards: \$59 M lost; and EVs, just \$296,000 lost. (G)

<http://www.swenergy.org/blame-inflation-not-fuel-efficiency-for-potholes-and-rickety-bridges>

Kauai Solar Plus Battery Project Costs Crashing Down - Will Push Renewables to 50%

The great thing about competitive contracting is that the price is replicable - when one company strikes a deal, others can probably get that same pricing. This article describes two contracts for solar plus 4 or 5 hours of battery storage for Kauai's electrical coop. In one year, the price fell from September, 2015's 13.9 to 11 cents per kWh in 2016 - a stunning 20% drop. Most of that price drop is due to the falling costs for battery storage. (G)

<https://www.greentechmedia.com/articles/read/aes-puts-energy-heavy-battery-behind-new-kauai-solar-peaker>

Study: Solar-Plus-Storage Microgrids: 'more than just a fad' (G)

<http://www.utilitydive.com/news/navigant-solar-plus-storage-microgrid-adoption-more-than-just-a-fad>