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News. April, 2013. Issue #13. 3,800 ESB [video views](#).

Imagination is the beginning of creation. You imagine what you desire, you will what you imagine and at last you create what you will.
- George Bernard Shaw

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News About Us

We've Been Busy.

We skipped the March News and we are going to hold off on the video version of the news for a few months. We are working on a series of 10 short videos with the overall working title of 100% Renewable Energy by 2033 (or darn close). Individual video titles include, for example, 4 Steps to 100% Renewable Electricity, The Electrification of Transportation, Yes We Can Do This, and It Will Cost Less Than We Pay Now.

ESB Awarded Google Grant

The Google Grant pays for AdWords (the advertising you see at the top or along the side of the results from a Google search). These have increased our video views by almost 10 times. We are now being seen at the rate of about 1,300 views per month. *Thank you Google!!!*

Electricity

100% Renewable Energy (G)

<http://www.renewableenergyworld.com/rea/news/article/2013/04/100-percent-renewable-vision-building>

New York City: Studies: 90% Greenhouse Gas Reduction by 2050 (G)

<http://www.urbangreencouncil.org/90by50>

New York State: Study: 100% Renewables Energy by 2030

(Study: VG)

www.stanford.edu/group/efmh/jacobson/Articles/I/NewYorkWWSEnPolicy.pdf

Hawaii: 50% Daytime Solar by 2014 (G)

<http://kauai.coopwebbuilder.com/content/kaua%CA%BBi-utility-build-40-million-solar-project-among-largest-state>

Expansion & Reconfiguration of Hawaiian Baseload Geothermal to Dispatchable

We have addressed the issue of baseload power plants being incapable of working with high percentage renewable wind & solar many times. As far as we know, up until now, all geothermal electricity plants have been baseload plants. In Hawaii, which already has a high percentage of solar & wind, they have reengineered a Geothermal plant to be a peaking (or dispatchable) generator. (G)

www.renewableenergyworld.com/rea/news/article/2013/02/geothermal-deal-could-bridge-the-gap-for-future-development

Two States at Almost 25% of Electricity From Wind

Iowa & South Dakota. Cost of integrating wind into the Texas grid (ERCOT) was at less than \$0.50 per MWh or less than 5/100ths of a penny per kWh. *Newer research suggests systems can go to 40 percent renewables with no problem, Studies show nuclear and large fossil plants actually have "far higher integration costs than renewables,"* (G)

<http://www.greentechmedia.com/articles/read/Grid-Integration-of-Wind-and-Solar-is-Cheap>

New Solar Now < 6 Cents per KWh in New Mexico

Cheaper than new coal (about 13 cents). Integration costs are lower for sun & wind also. (G)

<http://www.sustainablebusiness.com/index.cfm/go/news.display/id/24550>

No Room For Baseload in Germany

... what will happen when Germany doubles the amount of wind and solar, as it plans to do within the next decade. ... there will simply be no room for fossil fuel production – the so-called "base load". Any coal or gas fired generation that remains will need to be capable of being switched on and off on demand. The base load/peakload model will be turned on its head. (G)

<http://cleantechnica.com/2013/03/27/germanys-electricity-split-march-24-actual-vs-planned-charts/>

Gallium Arsenide High Efficiency Flexible & Light-Weight Solar Panels

(Article & Video, both G rated)

<http://www.altadevices.com/index.php>
www.youtube.com/watch?v=P3Sr5bbMivc

Gallium Arsenide Nanowires Improve Efficiency of PV Cells

1 gram of nanowires added to the cells of existing PV panel technology improves the cell efficiency by 20%. (G)

<http://venturebeat.com/2013/04/08/sol-voltaics-uses-nanotechnology-to-make-solar-energy-25-percent-more-efficient/>

Libya. Solar Using 0.1% of Land Area Would Be 5 Times as Much Energy As From Oil

If Libya used just 0.1% of its landmass for solar power, it could generate the equivalent of seven million barrels of oil per day, which would be about five times the 1.4 million barrels it currently produces (G)

<http://reneweconomy.com.au/2013/solar-power-could-produce-5x-more-energy-than-oil-in-libia-40004>

Solar Over Canals, Hydro in the Canals

India has prototyped solar PV panels over canals. In Washington state: a prototype generator using the water in the canals. (Both articles G).

<http://www.earthtechling.com/2012/09/solar-covered-canals-a-growing-power-maker-in-india/>
<http://www.earthtechling.com/2012/03/big-canal-turbine-takes-the-plunge-in-washington/>

Solar Gangman Style

(3 minutes, G)

<http://www.youtube.com/watch?v=WybhbXfUyrY>

Transportation

Drive Sunshine

ESB and many others believe that EVs will be rapidly adopted:

Fun to Drive + Big \$ Savings on Fuel + Charging with Solar/Wind
= ***Rapid Adoption of Electric Vehicles***

But first you need to get people to test drive one. The Drive Sunshine Institute makes it easy for people to feel the difference for themselves and get questions answered by arranging EV test drives at businesses and other locations. (G)

<http://drivesunshine.org/>

Practical Individual Electric Transport

So its kind of silly to move 160 pound me inside 3,000 pounds of car. Can we do better? One solution are ebikes. I've been having a great time test driving ebikes. Great fun. They make you feel like superman or wonderwoman. But at least some of the year the weather in Boulder is not good for bicycling (at least for me). So what about a tiny, one-person electric car with all the amenities including freeway speed and fast acceleration? (G)

<http://green.autoblog.com/2013/03/06/tiny-colibri-ev-seats-one-due-in-2015-for-under-10000-euros/>

Sweden Exploring Powering Heavy Duty Electric Trucks From Overhead Electric Wires

Similar to busses in San Francisco and other cities using a pantograph (a spring-loaded tower that connects the truck to the wires). The trucks would have a built-in battery for short distance travel away from the overhead wires. (G)

<http://green.autoblog.com/2013/03/17/scania-siemens-partner-for-roof-connected-electric-trucks>

Out of Electrons in Seattle? No Problem. AAA Fast Charging Roadside Assistance Truck

<http://green.autoblog.com/2013/03/29/aaa-first-fast-charging-roadside-assistance-truck-seattle/>

Misc.

Rechargeable Zinc Air Battery - Long Life, High Energy Density

EOS Energy Storage claims they will be shipping small numbers of utility scale 1 MW/6 MWh batteries at an initial cost of \$1000/kW and \$160/kWh. With an expected life of 10,000 charge cycles (30 years) this battery may prove to be a game changer. (website & long video, both G rated)

<http://www.eosenergystorage.com/products>
www.youtube.com/watch?v=Y07RysIt3M0

MIT Generates a Very Detailed Solar Map Showing Good Solar Sites

Using a combination of Google Maps, LIDAR, and solar insolation data. (G)

<http://mit.edu/SustainableDesignLab/projects/CambridgeSolarMap/index.html>

Low Pressure High Density Hydrogen Storage Using Magnesium

Magnesium is relatively cheap. (G)

<http://www.fuelcelltoday.com/news-events/news-archive/2013/march/mcphy-hydrogen-technology-for-renewable-energy-storage-in-colombia>

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Charging at the Mall - Integrated PV, Battery, & EV Chargers

42 kWh, 75 kW fast charge capability. Tie in to electric grid? What's in it for the mall? *One thing we are finding out is that shoppers charging their vehicles spend more time at our malls than the typical shopper.*

<http://www.forbes.com/sites/peterdetwiler/2013/02/07/simon-says-charge-your-ev-at-the-mall/>

Truck Train Self Driving Trucks Follow Lead Truck in Japan

<http://green.autoblog.com/2013/03/04/fuel-saving-self-driving-trucks-on-the-road-in-japan>

Toyota i-Road Concept Personal Mobility EV Leans Into Turns

<http://www.autoblog.com/2013/03/04/toyota-i-road-leans-its-way-into-the-city-w-video>

Free E-Book Answers Top 10 Questions on Electric Mobility

<http://green.autoblog.com/2012/11/27/new-free-ebook-answers-the-top-10-questions-about-electric-mob/>

Plasma Concept Makes Wind Turbines More Efficient

<http://www.hawaiibusiness.com/Hawaii-Business/January-2013/Navateks-CEPAS-technology-makes-more-efficient-wind-turbines/>

Energy "Deathprint" - Deaths per trillion kilowatthours of electricity

Electricity only. *Although it is difficult to assign a cost to these numbers, estimates have suggested a 10% increase in health care costs in countries where coal makes up a significant fraction of the energy mix, like the U.S. and Europe ... These additional health costs begin to rival the total energy costs on an annual basis for the U.S. given that health care costs top \$2.6 trillion, and electricity costs only exceed about \$400 billion. Another way to describe this human health energy fee is that it costs about 2,000 lives per year to keep the lights on in Beijing but only about 200 lives to keep them on in New York.*

<http://www.forbes.com/sites/jamesconca/2012/06/10/energys-deathprint-a-price-always-paid/>

Modlet: Monitor and Schedule Electricity Use in Home or Office

<http://thomodlet.com/index.html>

Lithium Battery Anode Improvements Using Silicon - 10 Minute Charge. Lower Cost.

<http://news.usc.edu/#!/article/46778/cheap-strong-lithium-ion-battery-developed-at-usc/>

Isle of Wight Residential H2 Creation & Storage from Excess Renewables into Fuel Cell
<http://www.actagroup.it/news.asp?tit=acta-and-ecoisland-sign-letter-of-intent-for-isle-of-wight-domestic-hydrogen-partnership&id=113&page=>

Do it yourself Solar

People are finding a way to make a difference.

(also see ASES email 2/28)

eartheasy.com/blog/2012/07/our-simple-diy-home-solar-power-system

Do-It-Yourself Biodiesel Machine

<http://green.autoblog.com/2013/02/22/biobot-will-make-your-biodiesel-easy-as-pie/>

Rethinking Wiring for LEDs

<http://lumencache.com/>

Snails Teeth to Improve PV & Batteries

<http://cleantechnica.com/2013/01/17/improved-solar-cells-and-batteries-thanks-to-research-on-snail-teeth/>

<http://wardsauto.com/vehicles-amp-technology/marine-snail-s-teeth-hold-secret-nanomaterials-li-ion-batteries-solar-cells>

Renewables Drives Fossil (particularly baseload?) Costs Down

<http://cleantechnica.com/2013/01/17/rising-solar-energy-output-drives-german-french-power-prices-to-record-lows/>

25 Million Ebikes Per Year in China

<http://www.fastcoexist.com/1681004/electric-bikes-have-invaded-china-is-the-us-next>

Low-Cost Electric Scooter Taxi Service in Amsterdam Debuts

<http://green.autoblog.com/2012/11/23/hopper-launches-electric-scooter-taxi-service-in-amsterdam/>

PV vs. Biofuels (PV 30 to 200 times better)

<http://cleantechnica.com/2013/01/18/are-photovoltaics-or-biofuels-better-at-energy-conversion/>

Cost of Replacing Hybrid Car Battery Packs Not All That Expensive

I can remember some folks claiming \$8,000 and \$10,000 costs for replacing the batteries. The net cost for a first or second generation Prius battery? About \$3,000. (G)

<http://green.autoblog.com/2012/11/26/replacing-batteries-in-standard-hybrids-not-all-that-expensive/>

Cheaper Bills for Homes Near Wind Farm

x

<http://www.heraldscotland.com/news/home-news/cheaper-bills-for-homes-near-new-wind-farm.19707284>

Wireless Bus Charging at 50 kW 90% Efficiency With a 6" Misalignment & a 10" Air Gap

In the ??? issue I listed 5 ways to deal with range but neglected wireless charging while the vehicle is moving (does this article say this?) Make this a 6th way

<http://green.autoblog.com/2012/11/20/utah-state-university-moves-forward-with-wireless-electric-aggi/>

Compressed Air Energy Storage to Compete with Battery Systems?

<http://lightsailenergy.com/tech.html>

Torrefied(?) Wood to Replace Some Coal?

<http://www.renewableenergyworld.com/rea/news/article/2012/05/five-shining-examples-of-renewable-energy-innovation-and-investment?page=all>