

The Real Cost of Renewable Energy

MAY 7, 2012

By Ken Blanchard

I took a few minutes last week to determine what wind and solar energy actually cost. Proceeding on the assumption that the real cost of a turtle is how much cash ends up in the hands of the turtle seller, per shell, I wondered how much consumers pay for a given unit of energy and how much other money producers get for various forms of energy generation.



Wind turbines near Elkton. Photo by Bernie Hunhoff.

The average price of residential electricity in the U.S. is about 12 cents per kilowatt hour but varies widely by state, according to the Energy Information Administration. In South Dakota it is nine cents. In Alaska it is almost twice that and in Hawaii, three times that. Doing a quick conversion, Americans pay on average about \$120 per megawatt hour for electricity.

That is not quite the price of electricity, for energy producers also receive state and federal subsidies. Add the subsidy to the retail price and you get a reasonable estimate of the real cost. The Institute for Energy Research calculated the cost of federal subsidies from the EIA's production reports. I cannot find anywhere that the EIA actually tells us what we need to know here: subsidies per unit of energy produced.

The IER finds that in 2007 natural gas and petroleum liquids received about \$0.25 in Federal subsidies for every megawatt hour produced. Coal gets \$0.44; hydroelectric, \$0.67; and nuclear power gets \$1.69. About 87% of our electricity is produced from those sources. Given that, the subsidies add up to considerable amounts of money. The total increase is still only a small fraction of the cost of the energy.

In 2007, subsidies for wind and solar power per megawatt hour were \$23 and \$24 respectively. That obviously dwarfs the subsidies for conventional sources and it means that electricity from these sources costs considerably more. A megawatt hour from coal would cost \$120.44. A megawatt hour of wind or solar generated electricity costs \$144.

That was back in 2007. As a result of the stimulus bill, subsidies to all sources of energy increased, but the subsidies for renewables ballooned. Here are the numbers for 2010:

For solar power, they were \$775.64 per megawatt hour, for wind \$56.29, for nuclear \$3.14, for hydroelectric power \$0.82, for coal \$0.64 and for natural gas and petroleum liquids \$0.64.

That means that wind energy is now costing over \$170 per unit. Solar power is off the charts at almost \$900. I admit some astonishment that the solar industry in the U.S. is not booming rather than wobbling. At that level of reimbursement, you'd think they'd be giving away whole house solar installations for joining Netflix.

Proponents of renewable energy will argue that there are large costs involved in fossil fuel production and consumption (environmental degradation, health, etc.). That may be true, but it gets the cart before the horse. One turtle may be cooler than another and one form of energy generation may be more desirable than another. That doesn't change how much the turtle or the megawatt hour costs.

It misses something else, equally important. Subsidies shift wealth from one place to another. Wealth shifted to renewables is wealth generated by non-renewables. As long as the subsidies last, they don't reduce the secondary costs of traditional energy.

What they do accomplish, with mathematical certainty, is to make energy more expensive in the short run. This is not ruinous only because the renewables produce less than 3% of our electricity. Of course, it may be that the subsidies will eventually kick in and wind and solar power will dramatically increase production while prices fall precipitously. Is there any sign that that is happening? How efficient would these machines have to become (10 times as efficient?) and how much turf would we have to cover with pinwheels and panels before these sources constituted 20% of electricity generation?

Wind power and solar power are pretty ideas. They have been the sources of the future for as long as the monorail has been the transportation of the future. Maybe one day they will really pan out. Right now, these industries are neither producing jobs nor economic growth. They are absorbing both.

Dr. Ken Blanchard is a professor of Political Science at Northern State University and writes for the Aberdeen American News and the blog South Dakota Politics.

COMMENTS

05:18 am - Tue, May 8 2012

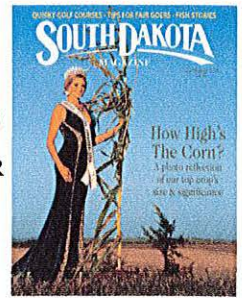
Ed Goss said:

WOW, Thanks Dr.Blanchard there is nothing like the bottom line. Like they say we have to face reality. Thanks for this article. I hope all SD folks read this and especially or congressional deligation.

08:14 am - Tue, May 8 2012

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CHARLES CURK
SPRINGFIELD, SD

dave tunge said:

Reminds me of the old story of two brothers in Tennessee. They decided to start selling watermelons for a business. They bought the melons for \$1 and sold them to the customers for \$1. When they were out of watermelons and figured up the bottom line one of the brothers said to the other "I think we're gonna need a bigger truck."

09:43 am - Tue, May 8 2012

Bernie said:

Our old friend Bob Karolevitz used to joke that the Polish way of doing business was "to lose a little bit here and a little bit there and pretty soon you make a living," but these losses are too big to operate the Polish way.

I'm all for green energy, but have to agree that it has to make some sense. I was disappointed over the big hub-hub to start a South Dakota-owned wind farm, and went to the meeting. But the whole point wasn't to create a locally owned project or to create cleaner energy, but only to milk a federal incentive for 6 or 7 years and then to re-sell it once the incentive was dry.

We've got to separate the profiteers from the serious researchers and developers.

10:40 pm - Fri, May 11 2012

Ken Blanchard said:

Thanks to all. I am not opposed to research in green energy. I just think that a rational energy policy has to be rational.

08:14 am - Thu, May 31 2012

tom wilde said:

our military spends trillions each year on defending and securing mid east oil and transporting it this simplistic study left that out.

06:55 am - Sat, June 9 2012

Mick said:

What are these wind farms going to look like in 20-30 years.....think rusting hulks!!

05:59 pm - Fri, November 9 2012

Mathews said:

I like what you guys tend to be up too.
This sort of clever work and coverage! Keep up the terrific works guys I've incorporated you guys to my blogroll.

04:50 am - Tue, November 13 2012

Scott Wieskamp said:

Coal, Nuclear, and Natural Gas are not coming from the Middle East. Amazes me how ignorant people are when it comes to electricity. Oil runs cars, trains, automobiles. Coal, nuclear, and natural gas run the electric grid.

04:53 am - Tue, November 13 2012

Scott said:

And water (hydroelectric plants)...and when wind is not blowing one of these sources picks that load up. So, you need to cover every megawatt that is produced by wind with another source of generation.

11:47 am - Wed, November 21 2012

harry schmidt said:

Those Washington spinmeisters will change the dynamics by renaming green energy the same way they deviously hyped obamacare ... hereafter green energy will be called "the affordable new energy source."

08:00 pm - Mon, May 25 2015

Justin Harris said:

The professor does not provide his data sets so it is not possible to tell his parameters or sample populations. Based on the appearance that this is a biased article I would assume that his results are biased.

08:08 am - Wed, July 29 2015

Jon Kennedy said:

The author did provide the stats via links in the article. Mr. Harris must have missed that.

07:38 am - Wed, July 20 2016

Joe McGuire said:

Mr. Harris, Never assume, it makes an ASS of U & ME. I'm that Dr. Blanchard has plenty of data sets. You might ask him. He is a smart cookie.

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WIND WON'T BE STOPPED

② The Hill - Feb 24, 2015 Randy Simmons & Gordon Lofthouse

For the past 23 years, the federal government has subsidized wind power with tens of billions of taxpayer dollars through the Production Tax Credit (PTC). What do we have to show for it? Wind energy only supplied 1.6 percent of total U.S. energy in 2014. Now the Department of Energy wants to reach a ridiculous goal of 20 percent wind energy by 2030. The fledgling wind industry has no hope of reaching that goal on its own, and the government wants to stick the American taxpayer with the bill to sustain an industry that can't sustain itself.

The PTC was originally intended to give the wind industry the kickstart it needed to be self-sufficient. But, despite wind energy's 23-year reliance on fiscal training wheels, the Obama administration now wants to make the PTC permanent. Let that sink in a little bit. The government is considering the creation of an endless welfare system for big wind companies. If that isn't crony capitalism, I don't know what is.

The only reason wind energy has hobbled along is because of the government crutch that props it up. What does a permanent government subsidy say about the true viability of the wind industry? It proves that the wind industry is fully dependent on government handouts and can't ever be independent. So, why do we continue to allow our tax dollars to be thrown at an enterprise that cannot support itself in the foreseeable future? That's the question no politician wants to answer.

Not only does the PTC make the wind industry dependent on government funds, it takes money from the average American and gives it to the super-wealthy. The PTC is really a reverse Robin Hood, taking money from the poor to give to the rich. Money-savvy **Warren Buffett** fully realizes that the wind industry is not economically productive without the government there to push it along. Buffett said, "[O]n wind energy, we get a tax credit if we build a lot of wind farms. That's the only reason to build them. They don't make sense without the tax credit." While the PTC exists, private investors like multibillionaire Warren Buffett are able to profit at the taxpayers' expense.

Every time the PTC is set to expire, investments in wind energy plummet. In 2000, 2002 and 2004, new wind installations dropped significantly when the PTC expired. But the government renewed the PTC after each crash, allowing the wind industry to limp along on the taxpayer's dime. In 2013, the PTC was expected to expire once again, and new wind installations fell by 92 percent. Big wind breathed a sigh of relief, however, when later in the year Congress added a provision to the American Taxpayer Relief Act that allowed projects constructed before 2014 to receive the tax credit. The construction of wind farms resumed. In keeping with that trend, Obama's 2016 budget proposal would make the PTC permanent, eternally prying money out of the American taxpayer's wallet for this failed initiative.

Must the American people tolerate paying at least \$12 billion annually in tax-funded PTC money to prop up the wind industry indefinitely? If wind energy is the panacea that politicians claim, it should be capable of standing on its own. The wind industry has had 23 years of government assistance to become independently profitable, and even though it still isn't, the Obama administration thinks the solution is a never-ending cycle of crony capitalism.

Simmons, Ph.D., is director of the Institute for Political Economy and professor of political economy at Utah State University. He also serves as president of Strata Policy, a public policy think tank headquartered in Logan, Utah. Lofthouse is a policy analyst at Strata Policy.

TAGS: Warren Buffett, Wind power, Wind farm, production tax credit, PTC, Tax credit, Subsidy

SUBMITTED BY CHARLES CRINK

3 **TAX INCENTIVES**
**Federal Incentives
for Wind Power**

The U.S. Department of Energy's (DOE's) Wind Program works to accelerate the deployment of wind power. This document lists some of the major federal incentives for wind power. This list is current as of October 2013.

**Research and
Development (R&D)
Grants**

The DOE **Wind Program** periodically posts competitive solicitations for R&D grants to improve the performance and lower the cost of wind energy, or to reduce barriers to deployment. wind.energy.gov/financial_opportunities.html

DOE's **Advanced Research Projects Agency-Energy (ARPA-E)** sponsors R&D grants for earlier-stage, high-potential, high-impact energy technologies. arpa-e.energy.gov/?q=programs/apply-for-funding

DOE's **Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR)** Program offers periodic solicitations for small businesses. science.energy.gov/sbir/funding-opportunities/

While DOE's R&D Programs generally do not fund the purchase or installation of wind energy systems by individuals or companies, there are a number of government-sponsored deployment incentives as outlined in this publication.

Additional resources for information on financial incentives:

DOE's Office of Energy Efficiency and Renewable Energy eere.energy.gov/financing/consumers.html

Database of State Incentives for Renewable Energy dsireusa.org



By the end of 2012, the United States had 60,007 MW of installed wind capacity.
Photo from Moe Vetter, NREL 16204

Tax Incentives

The federal government uses several tax-based policy incentives to stimulate the deployment of renewable energy. The Department of the Treasury's Internal Revenue Service (IRS) administers these incentives.

The federal **Renewable Electricity Production Tax Credit (PTC)**, established by the Energy Policy Act of 1992, allows owners of qualified renewable energy facilities to receive tax credits for each kilowatt-hour (kWh) of electricity generated by the facility over a 10-year period. Qualified wind power projects are eligible to receive 2.3 cents per kWh for the production of electricity from utility-scale wind turbines (indexed for inflation). dsireusa.org/incentives/incentive_cfm?Incentive_Code=US13F

The federal **Business Energy Investment Tax Credit (ITC)** is a corporate tax incentive that allows for owners of

new wind energy systems of any size to receive tax credits worth 30% of the value of the facility. dsireusa.org/incentives/incentive_cfm?Incentive_Code=US02F

Project owners must choose between the one-time Investment Tax Credit, tied to the total value of the facility, and the Production Tax Credit, tied to the energy produced over a ten year period. To qualify for either the PTC or the ITC, these projects must begin construction by December 31, 2013—which is defined as either starting physical work of a significant nature or the taxpayer incurring 5% of the total project cost. In addition, projects have different reporting requirements to qualify depending on when they are placed into service:

- Projects placed into service by December 31, 2015 are not required to demonstrate continuous work;

- Projects that are projected to go into service after 2015 must demonstrate continuous work up to the point of the project going online.

irs.gov/pub/irs-drop/n-13-29.pdf
irs.gov/pub/irs-drop/n-13-60.pdf

Commercial owners of small wind turbines (100 kW or less) placed in service prior to December 31, 2016 are also eligible for the ITC.

Homeowners who purchase and install a qualifying residential small wind electric system (100 kW or less) by December 31, 2016 may claim the **Residential Renewable Energy Tax Credit**. This credit is worth 30% of the value of the system with no upper limit. dsireusa.org/incentives/incentive.cfm?Incentive_Code=US37F

The **Advanced Energy Manufacturing Tax Credit** (commonly referred to as 48C), established by the Recovery Act, supports investment in domestic clean energy and energy efficiency manufacturing facilities through a competitively-awarded 30% investment tax credit. Concept papers are due April 9, 2013, and projects will be assessed by DOE based on the following criteria: commercial viability, domestic job creation, technological innovation, speed to project completion, and potential for reducing air pollution and greenhouse gas emissions. energy.gov/downloads/fact-sheet-48c-manufacturing-tax-credits

The **Modified Accelerated Cost-Recovery System (MACRS)** allows businesses to recover investments in certain renewable energy property, including small wind (100 kW or less), through depreciation deductions over a 5-year period following purchase. The American Taxpayer Relief Act of 2012 extended the deadline for

the 50% first-year bonus depreciation to December 31, 2013. dsireusa.org/incentives/incentive.cfm?Incentive_Code=US06F

Incentives for Tax-Exempt Entities

Several incentives are available to stimulate the deployment of wind power by certain tax-exempt entities that cannot take advantage of tax credits.

Qualified Energy Conservation Bonds (QECCBs) allow qualified state, tribal and local government issuers to borrow money at attractive rates to fund energy efficiency and renewable energy projects. A QECCB is among the lowest-cost public financing tools because the U.S. Department of Treasury subsidizes the issuer's borrowing costs. Issuers may choose between structuring QECCBs as tax credit bonds or as direct subsidy bonds. Both tax credit and direct payment bonds subsidize borrowing costs—most QECCBs are expected to be issued as direct subsidy bonds due to the current lack of investor appetite for tax credit bonds. QECCB proceeds can be used to fund capital expenditures on wind power projects that spur rural development. irs.gov/pub/irs-drop/n-09-29.pdf

In addition, DOE's **Tribal Energy Program** provides financial and technical assistance, education and training to tribes for the evaluation and development of renewable energy resources on tribal lands. eere.energy.gov/tribalenergy

Other Deployment Incentives

DOE offers **loan guarantees** to help companies secure financing to deploy innovative, clean energy technologies

that reduce, avoid or sequester carbon dioxide and other emissions. The Recovery Act provides a new, temporary addition to the existing program which is aimed at standard renewable projects, including wind power projects. lgprogram.energy.gov

The U.S. Department of Agriculture provides farmers and ranchers with grants for renewable energy development assistance through its **Rural Energy for America Program (REAP)**. Certain entities, such as state, local, and tribal governments, educational institutions, and rural electric cooperatives, are also eligible for these grants. rurdev.usda.gov/energy.html



The Department of Agriculture provides grants to farmers and ranchers for renewable energy development.

Photo from Native Energy, Inc., NREL 17589

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SUBMITTED BY CHARLES CURR

Why Are States Reevaluating Wind Energy?

 instituteeforenergyresearch.org/analysis/states-reevaluate-wind-energy/

October 8, 2014

As the best wind energy sites have already been used and as wind subsidies decimate state funding, states are reconsidering their stance on what has become industrial wind energy. Opposition is mounting among residents regarding the loss of scenic views, the noise from the wind blades, the lights that shine at night and a lack of public notice about where wind turbines will be erected. States are now considering regulating wind energy as wind farms move closer to more heavily populated areas and are turning the landscape into a “giant industrial complex.” States are also concerned about wind subsidies that could be used for other essential expenses such as schools, highways and prisons.

State Experiences in Wind Energy

Over the last decade, U.S. wind capacity has increased from [6,222 megawatts in 2003](#) to [61,110 in 2013](#)—that is more than 46,000 turbines, according to the American Wind Energy Association. Texas has the largest wind capacity at 12,354 megawatts, followed by California with 5,829 megawatts and Iowa with 5,177 megawatts.

In Texas, Comptroller Susan Combs urged an end to state subsidies for wind power because while tax credits and property tax limits helped grow the industry, it gives the industry an unfair advantage. [According to Combs](#), “It’s time for wind to stand on its own two feet.”^[i]

Oklahoma, another large wind state with 3,134 megawatts of wind capacity, started with three wind farms and 113 turbines a decade ago and now has more than 30 projects and 1,700 active turbines. According to wind developers, more than \$6 billion was spent on the construction of wind farms in Oklahoma over the last decade with the turbines valued at as much as \$3 million each. The turbines are subject to local property taxes after a five-year exemption, which was designed to offset a lifetime property tax exemption in neighboring Kansas—a state with a wind capacity of 2,967 megawatts.

Oklahoma also offers wind developers tax credits based on per-kilowatt production that can be applied to corporate income tax liability and then sold back to the state for 85 cents on the dollar, for an estimated total of \$80 million over the next four years. The wind industry has a dozen registered lobbyists in Oklahoma working to stop new regulations and maintain subsidies that are expected to total \$40 million this year.^[ii]

The Federal Production Tax Credit

Besides state subsidies and mandates for purchasing renewable energy, the federal government provides wind producers with a production tax credit (PTC)—a subsidy of 2.3 cents per kilowatt hour of wind energy output for the first ten years of the turbine’s operation. (Because the 2.3 cents per kilowatt hour is pre-tax, if the wind producer faces the top 39.6 percent marginal income tax rate, the PTC is worth 3.8 cents per kilowatt hour.)

The PTC has expired and been extended several times. Previously, wind farms had to be placed in service and generating electricity in order to claim the credit. But during the last “one year” extension in 2013, Congress only required the project to be in the beginning stages of construction in order to be eligible for the tax payments. Later, the Internal Revenue Service (IRS) defined that to be a mere 5 percent investment of the total project cost. That 2013 PTC extension was estimated to cost taxpayers \$12 billion.

Recently, however, the IRS lowered the threshold for projects that qualify for the wind PTC. The IRS determined that renewable energy projects could qualify for the PTC if they incurred at least [3 percent](#) of the total project cost before the beginning of 2014, down from 5 percent. [\[iii\]](#)

The IRS did not stop there. The agency also indicated that wind farm projects that generate power before the end of 2015 could claim the PTC. This meant that any wind farm project that began generating electricity before January 1, 2016 would be eligible. The IRS also indicated that projects that come online after that time might still qualify for the PTC because the decision would be made on a project-by-project basis.[\[iv\]](#) A “one year extension” turned into a 3 year extension for eligibility, and under the PTC, once companies are qualified, they receive payouts for a decade.

Congress is under pressure to extend the PTC again this year. The Senate passed a 2-year PTC extension that would cost taxpayers [\\$13.35 billion](#).

Besides costing taxpayers money, in some regional electricity markets the production tax credit allows wind power generators to bid their power at zero cost or even below because they still make money from the PTC. That makes other energy sources uncompetitive even though traditional sources can supply reliable energy 24 hours a day, while wind produces energy whenever the wind blows. This has led to the forced closure of nuclear and coal power plants.

Unfortunately, consumers are being misled about the true cost of wind power. Because there is no fuel cost, they believe that wind is inexpensive power. While there are no fuel costs, wind has high non-fuel operation and maintenance costs and capital costs. The capital cost of building new wind facilities is still higher than building a natural gas combined cycle plant, [according to the Energy Information Administration](#).[\[v\]](#)

To see how willing consumers are to pay for the higher capital costs of renewable power, electric utility companies have offered their consumers the option of participating in voluntary “renewable, or green” programs where they have to pay extra for the renewable energy. Participation rates in these programs are low. [When IER examined the participation](#) rate in these programs, we found that the average level of participation in surveyed “opt-in” Green Pricing Programs was less than 2.1 percent with two-thirds of all surveyed utilities recording participation rates of 1 percent or less.[\[vi\]](#) Thus, it is clear that consumers do not want to pay extra for renewable power and would prefer affordable energy from the most efficient source their electric utility can provide.[\[vii\]](#)

Wind Blade Failures

Another troubling issue for the states is that these industrial wind facilities are seeing higher failure rates than predicted. A [recent study](#) found that there are about 3,800 wind blade failures a year with costs as high as \$1 million. Wind manufacturers are under increasing pressure to deliver cost competitive technology resulting in larger turbines with minimum unscheduled downtime and longer, lighter rotor blades. The frequency and severity of blade failures varies from country to country, and they result from lightning damage, manufacturing defects, and human error.[\[viii\]](#)

North Dakota Looks into Wind Decommissioning

The North Dakota Public Service Commission (PSC) recently began the process of reviewing decommission plans for wind farms that have reached their 10-year mark. [Four such projects](#) have hit that mark.[\[ix\]](#) The PSC requires companies whose turbines are on property owner’s land to issue a guaranty that they would finance the decommissioning and land restoration process, following specific guidelines.

One company, FPL Energy, estimated a 35-year project life for its turbines, after which the total cost of

decommissioning and restoration of the wind sites is expected to be around \$3.39 million.

Another wind facility, Cedar Hills, located in Bowman County, North Dakota—a wind farm of 13 turbines—has submitted its decommission plan despite its fairly recent construction. The turbines are owned and operated by Montana-Dakota Utilities Co., a division of MDU Resources Group. The turbines, which went operational in June 2010, have a useful life of 20 years, and will be decommissioned around 2030. The site is located on privately owned agricultural land. The decommission is to include the removal of all turbine components and associated transformers, removal of the collector circuit components to a depth of four feet below grade and removal of all wind project related substation components. Any components or structures extending beyond four feet below the ground would remain after decommissioning. Grading and seeding is to occur where subsurface infrastructure is removed. The decommission project is estimated to cost \$960,700. Those 2010 prices, however, could change once the site enters the decommissioning process in less than two decades. Components and material removed from the site is to be transported to appropriate facilities for reconditioning, salvage, recycling or disposal.

Conclusion

Wind advocates justify the taxpayer wealth transfers to the wind industry using the “infant industry” argument. But, wind energy has been around since the 19th century and the federal wind production tax credit has been around since the early 1990s. Historically, wind power was rejected because it was not competitive with traditional electric generating technologies, and could not be relied upon to produce electricity when needed. It has prospered recently only because the Obama Administration is fixated on renewable energy providing subsidies, loans and grants to renewable industries and because many states have mandated its production and provided additional large subsidies and tax credits. But, the fact of the matter is that wind tax credits and subsidies kill jobs elsewhere in the economy, raise the cost of energy (especially on the middle class), and make millions for lobbyists whose job is to continue to fight for the large subsidies, mandates, and tax credits. [Now they are exerting their influence in activist groups and getting even more involved in politics.\[x\]](#)

[i] Associated Press, A Decade After Welcoming Wind, States Reconsider, October 1, 2014, http://hosted.ap.org/dynamic/stories/U/US_RECONSIDERING_WIND_POWER?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT

[ii] Ibid.

[iii] Daily Caller, Obama Uses His Infamous Pen for Green Energy Cronyism, September 2, 2014, <http://dailycaller.com/2014/09/02/obama-uses-his-infamous-pen-for-green-energy-cronyism/#ixzz3CFpPDkmE>

[iv] Forbes, The IRS Is Giving Away \$13 Billion A Year in Wind Energy Subsidies, Without Congressional Authorization, September 2, 2014, <http://www.forbes.com/sites/realspin/2014/09/02/the-irs-is-giving-away-13-billion-a-year-in-wind-energy-subsidies-without-congressional-authorization/>

[v] Energy Information Administration, Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2014, May 7, 2014, http://www.eia.gov/forecasts/aeo/electricity_generation.cfm

[vi] Institute for Energy Research, IER Examines Green pricing Programs, June 17, 2013, <http://instituteforenergyresearch.org/press/ier-examines-green-pricing-programs/>

[vii] Daily Caller, The Wind Production Tax Credit: Bad Policy, Bad Politics, September 10, 2014, <http://dailycaller.com/2014/09/10/the-wind-production-tax-credit-bad-policy-bad-politics/#ixzz3D0apC6sD>

[viii] North American Clean Energy, GCube Scrutinizes Blade Breakages, <http://www.nacleanenergy.com/articles/18566/gcube-scrutinizes-blade-breakages-specialist-renewable-energy->

insurer-analyses-causes-frequency-of-wind-turbine-blade-failure-in-new-report

[ix] Bowman County Pioneer, State delves into new issue of wind farm site decommissioning; sets big precedent; September 12, 2014, <http://www.bowmanextra.com/2014/09/12/state-delves-new-issue-wind-farm-site-decommissioning-sets-big-precedent/>

[x] Washington Times, The league of crony voters, October 6, 2014, <http://www.washingtontimes.com/news/2014/oct/6/editorial-the-league-of-crony-voters/>

SUBMITTED BY CHARLES CVRK

Home → Climate → Green Energy → Wind

Electricity from Wind Turbines

What does it cost to save a ton of CO₂ with wind?

In 1888, the first large wind generator began producing power. It had 144 blades and powered the home of Charles Brush, an inventor who drew a crowd of thousands by illuminating a park in Cleveland with electric light shortly before Edison "invented" the light bulb. Today's wind turbines produce 100 times more power with only three blades.

How important is wind generation?

Can wind power make much of a difference? The short answers are "No" for energy independence and "some but not much" for global warming. Wind generation mainly replaces coal-fired generation and the US has its own coal. That's bad news for independence but good news for CO₂ reduction, as coal is the worst source of CO₂. Thirty years from now, wind power might be cutting global GHG emissions by 10%. But that cut in emissions is not from today's level, it's a cut from the future level, which would be much higher.

In 2006, wind power supplied 0.6% of US electricity but reduced CO₂ emission from electricity production by a full 1%. This amounted to a 0.4% reduction in CO₂ emissions from all fossil energy use, and a 0.36% reduction in total US GHG emissions. The wind industry is hoping to produce 20% of US electricity by 2030, which would result in a 13% reduction in CO₂ relative to 2030 levels without wind. This would not be enough to hold CO₂ emissions constant.

Wind generation grew 27% in 2006, but that is from a very low level. Its future growth rate will depend largely on the level of subsidies, since these are the primary drivers of wind investment.

Is wind power too expensive?

What really matters is the cost to society. With current subsidy methods, it costs around 3¢/kWh of subsidy to get wind turbines built [2011 update, I'm now hearing from insiders that more like a 5¢/kWh subsidy may be required]. This is because the up-front costs of wind turbines are huge and the payback takes twenty years. Investors require fast paybacks and this "costs" extra. But this is not a social cost. Much of that money is just a transfer to stock-holders. By evaluating a different subsidy method, a more accurate social cost can be found and it is only 1.2¢/kWh.

Although the amount of wind that could be installed this cheaply is limited, it is interesting to ask how much it would cost to solve the global warming problem if all GHG reductions could be accomplished so cheaply. The answer is they could be eliminated for a cost of \$81 billion per year. That is 0.63% of GDP, and considerably cheaper than the Iraq war.

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Subsidies for wind power

The most obvious subsidy is the production tax credit (PTC) which began at 1.5¢/kWh in 1992 and which increases at the rate of inflation. It is now about 2¢/kWh. Almost all wind generators have qualified for this and will receive it for 10 years.

The second subsidy is double declining 5-year depreciation. This allows investors to take a 40% tax deduction the first year and a 24% deduction the second year. At the end of five years the deduction is complete. Assuming the investor can use this against a 43% combined federal-state tax rate, it is worth about an additional half a cent/kWh.

The third subsidy is the most obscure and most unpredictable. About 20 states have adopted renewable portfolio standards (RPS), and it is no surprise that searching this term in Google brings up the Wind Energy Association first. An RPS requires retail electric providers to purchase a certain percentage of their power from "renewable" resources, and wind is often the cheapest alternative. To the extent wind power costs more than is covered by the first two subsidies, an RPS requirement will force the retailer to provide the necessary remaining subsidy.

How Expensive is Wind-Generated Electricity?

Once a wind-turbine is built and paid for, it generates electricity almost for free. Once your house is built and paid for, it provides housing almost for free. In each case the cost of the service is mainly a financing cost, but it is real nonetheless. Comparing wind generation cost with other generation costs will put the matter in perspective.

	One-Time Cost per kW	Capacity (usage) Factor	Fixed Cost per kWh	Variable Cost per kWh	Total Cost per kWh
Gas Turbine	\$439	15%	5.2¢	8.7¢	13.9¢
Coal	\$1,338	90%	2.7¢	1.9¢	4.5¢
Nuclear	\$2,180	90%	4.3¢	0.3¢	4.6¢
Wind	\$1,254*	30%	7.5¢	0.0¢	7.5¢

The one-time, installed cost of wind seems to be up closer to \$1,900 in 2011, compare with these estimates from about 2006.

Notice that wind power has the the lowest (zero) variable cost. Variable cost refers to fuel cost and maintenance costs that depend on power output. Unfortunately wind has the highest fixed costs in spite of costing less per MW of capacity than nuclear. This is because the same capacity nuclear plant generates three times more power than a wind turbine. Spreading the capital cost over one third the output results makes it very expensive per kWh generated.

Is wind power cheaper than gas-turbine power?

The cheapest power plant to build, per unit of output capacity, is a gas-turbine, a GT. This is basically a low-quality jet engine hooked to a generator. But power from GTs is expensive because gas is expensive and it's expensive to let a plant sit idle 85% of the time. This results in wholesale power that typically costs more than retail power. How do they stay in business? They produce the most valuable power. They run during the 15% of the hours (or sometimes many

fewer) when they are most needed and when the electricity price is highest.

Unfortunately, the wind blows when it wants to, and wind power is at most worth the average price of power. This is about the price paid to coal and nuclear units, which run almost all the time. Coal is wind's real competition, and wind power costs about 3¢/kWh more than coal power. This cost difference is not terribly accurate, but it is based on the Department of Energy's cost data and on financing assumptions used in major regulatory cases by two major electricity markets. Depending on where a project is located and price fluctuations in the turbine market, the price difference might range from 2¢/kWh to 5¢/kWh.

Business Cost vs. Social Cost

The above calculation asks how much it would cost to induce investors to build wind turbines by subsidizing their electricity revenues. Because of taxes and investor risk premiums, this is an expensive method of inducing investment.

Costs vs. transfer payments. Economics distinguishes between payments that are used up and payments that simply transfer money from one person (usually the tax payer) to another. The first type of payment is a cost, and the second type is a transfer payment. If the government spends \$100 billion building fighter planes that don't work, the country is poorer by \$100 billion, but if it simply gives the money to Halliburton or to the unemployed, then some are poorer and some richer, but the country as a whole is no poorer.

Economists have a theory of the social discount rate which helps them find the true social cost in situations such as wind subsidies, but it is not especially accurate, and is completely opaque to the uninitiated. A market-based approach will somewhat over-estimate costs, but is more transparent, and still provides a far more accurate evaluation than the standard calculation shown above.

A lower-cost subsidy. Another approach to subsidizing wind will show that subsidies need not be so expensive. To get investors to build wind turbines instead of coal plants, a wind project could be subsidized and charged just enough to make its costs identical to those of coal. First, to replace 1 kW of coal generation, almost 3 kW of wind generation will be needed, because wind turbines run at 30% output on average as compared with about 88% for a new coal plant. This raises the initial cost to \$4,013/kW compared with \$1,338/kW for coal, which requires a subsidy of \$2,676 to make up the difference. Next, the wind investor is required to pay the government exactly as much per kWh generated as the coal plant would pay for coal. This makes their "fuel costs" equal.

With this financial matching approach, the investor has the same capital costs and the same fuel costs whether building a coal plant or a wind turbine, and because the wind turbine has been scaled up, the investor will sell the same amount of power. The only difference is when the power is sold, but this is a very small difference because both projects spread their power production over peak and off-peak hours quite uniformly. Since the projects have the same costs and revenues, wind can be pushed ahead of coal with only a tiny extra payment.

The final step is to find what this subsidy has cost the government. As before, a 20-year project life is assumed. Suppose the government has financed the initial subsidy with 20-year

Treasuries. The cost of paying off such a loan can be computed using a spreadsheet's mortgage-payment formula and that cost is \$203 per year for 20 years. This comes to 2.7¢/kWh of electricity generated, but the investor pays 1.9¢/kWh in "as if" coal payments. This leaves the government holding the bag for just 0.9¢/kWh, and that is the cost of this form of subsidy.

Why is this so much cheaper? Essentially, the government has borrowed the money for the subsidy from the public instead of from the investor. This transfers less money to investors, but it still covers all real costs. Also the money is borrowed at a market rate that reflects society's valuation of future cost and savings. This calculation values the future cost savings of wind power properly.

The bottom line on wind costs. Although turbine costs and financing costs are difficult to pin down, the initial calculation of 3¢/kWh is consistent with the fact that wind projects get 2¢/kWh in PTC subsidy, 0.5¢/kWh in accelerated depreciation, and often but not always, a bit more from RPS requirements. In fact, discussion with those close to the industry suggest, that wind turbines are actually being built with less than 3¢/kWh of subsidy. That indicates the DOE cost numbers presented above are realistic.

If a wind turbine costs \$1,254/kW and has a 30% capacity factor, it will generate power for about 2.4¢/kWh—not counting future generation as less valuable. The only reason wind power seems expensive is because investors severely discount the value of future generation. Society also discounts future values, but its willingness to lend money at 5% to the Treasury proves that they discount its value much less. Using this more far-sighted social rate of return, shows that the cost to society of wind power is only about 1¢/kWh more than conventional power costs.

Wind energy policy

Current wind energy policy is not far off the mark on average. But some states subsidize is much more than others. This means we will buy expensive wind power in one state while passing up cheap wind power in another. But the larger problem is that other energy policies are far out of line with wind. To see this requires a close look at wind subsidies and then at other energy subsidies.

Current wind energy policy is so murky that when asked for help on evaluating wind subsidies, they throw up their hands and say it's impossible. A simple and transparent policy would work better and save money. Since coal is the direct competitor of wind and many other CO2 reducing alternatives, an unTax on coal, a charge refunded on a per-person basis, would be ideal. Until that becomes politically feasible, the federal production tax credit should be the sole subsidy and it should be stabilized.

India and China are expanding their use of wind power.  The demand for wind turbines has particularly accelerated in India, where installations rose nearly 48 percent last year, and in China, where they rose 65 percent, although from a lower base.

Global wind energy council 

DOE's Wind Information 

Organizations with Semi-Sensible Energy Proposals

[The Apollo Alliance](#)

[NRDC's Re-Energize America](#) [NASA's Solar & Wind Data](#)

Just the Facts:

The wind industry has set a target of 100 GW of installed capacity by 2020. This is about 100 nuclear plants worth of capacity. But, unlike nuclear plants, wind turbines don't run full tilt all the time. The wind is not so steady. This much wind capacity will produce about as much electricity as 30 nuclear plants, and that will be a bit less than 5% of the country's electricity. Compared to all fossil-fuel energy it will be just over 1%.

So wind is no panacea. But neither are other options. Corn ethanol could supply a bit more, but only at much greater cost. While it costs us over \$7 extra to save the fossil energy in a gallon of gas by subsidizing ethanol, we can save the same amount of energy at a cost of only 25¢ by subsidizing wind generation. That's over 28 times cheaper.

Ethanol from corn is quite expensive and not very ecological, so we probably do not want it to increase to the 1% level. That would require more corn acreage for cars than for feed and food.

That's where **eco-ethanol** comes in. That's ethanol made from cellulose, which is all the unused parts of plants. This is far more energy efficient and ecological because that is now wasted—well not quite. The unused parts of crop plants are usually returned to the soil to enrich it, or more accurately, to avoid impoverishing it. There is still a cost to using plant cellulose, but much less than from growing corn just to make gas for our cars.

* A Quad is a quadrillion (15 zeros) Btu.

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GCube Scrutinizes Blade Breakages: Specialist renewable energy insurer analyses causes & frequency of wind turbine blade failure in new report

(<http://www.nacleanenergy.com/articles/18566/gcube-scrutinizes-blade-breakages-specialist-renewable-energy-insurer-analyses-causes-frequency-of-wind-turbine-blade-failure-in-new-report>)

08 Sep 2014

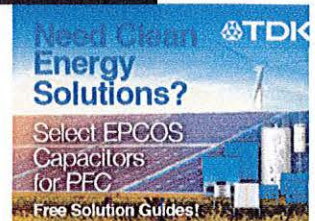
Specialist renewable energy underwriter GCube Underwriting Ltd has authored a detailed report to examine the problem of blade failure and breakage throughout the wind industry.

Entitled "Breaking Blades: Global Trends in Wind Turbine Downtime Events," the report draws on a combination of GCube's extensive proprietary claims database and publicly available market news to identify the root causes of common types of blade failure and suggests proactive mitigation measures to counter this inherent risk to wind energy assets and investment.

As wind power continues a high-profile migration from traditional growth markets to newer, often highly remote locations in Asia Pacific, Africa and Latin America and turbine manufacturers find themselves under increasing pressure to deliver cost competitive electricity generation through larger turbines with minimum unscheduled downtime and longer, lighter rotor blades, the overall integrity of wind turbines and, specifically, the performance and reliability of their blades, appears to have suffered.

With an estimated 700,000 blades in operation globally, there are, on average, 3,800 incidents of blade failure each year. While the frequency of such incidents and their severity varies significantly from country to country, blade incidents can cost in the order of \$1 million to resolve and there is a clear industry imperative to ensure that these failures are kept to a minimum.

In the Breaking Blades report, GCube categorises the common causes of blade failure, ranging from lightning damage to human error and manufacturing defect, before explaining the factors



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influencing the cost of blade claims. The report then goes on to look in detail at the individual components of a standard blade and outlines a range of inspection criteria that should help to mitigate the risk of blade failure and loss.

This advice is followed by in-depth interviews with representatives from key industry stakeholders RES, IM FutuRe and Renewable Energy Loss Adjusters (RELA), highlighting the most frequent origins of blade damage and its wider effects on industry investment.

The launch of the report marks the first time that an insurer has shared this level of data with its client base in the renewables sector. Breaking Blades forms part of a wider knowledge sharing initiative as the first of four reports on wind turbine failure to be released by GCube between September this year and June 2015.

“As the wind industry looks to attract secondary investment from the pension and fund management communities, blade failure and the associated business interruption costs - exacerbated by the shift into emerging markets and growing pressure on manufacturers - can be an unwelcome deterrent,” said Jatin Sharma, Business Development Leader, GCube.

“Ultimately it’s in the interests of all parties to minimise unscheduled downtime and the frequency and severity of turbine failure. The Breaking Blades report is by no means an answer to the problem, but should serve to raise further questions and create opportunities for greater industry-wide collaboration.”

To request a copy of Breaking Blades: Global Trends in Wind Turbine Downtime Events, please email info@gcube-insurance.com.

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THE GREEN CORRUPTION FILES

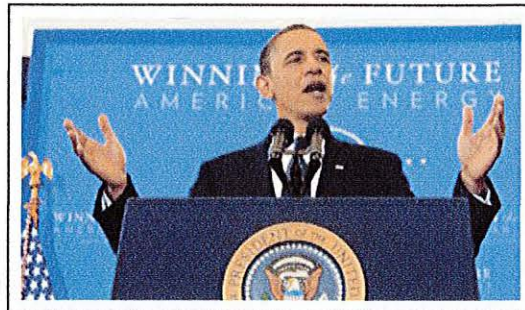
The Big Green Heist: The largest, most expensive and deceptive case of crony capitalism in American history...

Saturday, October 20, 2012

Green Alert: Tracking President Obama's green energy failures

DECEMBER 2012 UPDATES

At the end of September, [Marita Noon and I](#) began to expose the various failures of Obama's green-energy expenditures (mainly from the trillion dollar, 2009-stimulus package where over \$90 billion was earmarked for "green") — projects and firms that have gone bankrupt (confirming 15 with more on our radar). A hot topic that became part of the first presidential debate whereafter President Obama pressed Mitt Romney for supporting tax cuts for oil companies, [Romney reminded Obama](#) that



he put \$90 billion into failing green companies like Solyndra, Fisker, Tesla, and Ener1. "I had friend who said you don't just pick the winners and losers, you pick the losers," Romney cleverly added.

We then we moved on to those that are functioning, but facing difficulties (approximately 20)— struggling either financially, while some environmentally, and even those that are facing federal probes for various reasons. Still, many are laying off workers, and quite a few are on life support, with a number experiencing a combination of the aforementioned.

Lastly, we addressed the "5 million green jobs that Candidate Obama had promised in 2008," of which [Team Obama](#) is now claiming victory, however, as we noted, the math doesn't add up, nor does the [gimmick accounting](#) — recycled ones; those that already existed — used by the Obama administration's Labor Department.

While in Marita's Townhall.com columns we placed an * after the project/company's name to indicate a political connection (*cronyism and corruption*), in my subsequent blogs I expanded upon our efforts, and plugged in my research, listing those critical ties.

In our three-part series, two focused directly on the failures, and our sums were 15 bankruptcies and 20 troubled (a total of 35 with over 65% having *meaningful* Democrat political connections — bundlers, donors, supporters, etc). Yet, considering the rapid speed of these "green" bankruptcies and issues (about 10 that I read about just last week), I'm compiling new totals here, which will include a new and updated list by the Heritage Foundation dated October 18, 2012 — [President Obama's Taxpayer-Backed Green Energy Failures](#) — with their total of 36 (updated later with a number of 34). And most listed at The Heritage and ours are very similar, however, they have some we don't and vice versa.

UPDATE: New calculations as of December 1, 2012: despite eliminating AES Energy (which I am still not sure of) from my list and adding ReVolt Technology, the numbers remain the same: 23 bankrupt, 29 troubled, equals a new "Obama green-energy failure" list total of **52**. While billions of "green-energy taxpayer money is gone, and we know that the majority of the loans (90 percent) were funneled to Obama and high-ranking Democrat cronies, the "troubled list is a moving target." Thus there is no way to give an exact dollar amount what is still at risk, yet we do know that the percentage of cronyism in the failed and troubled list is hovering around 56% (29 of the 52), until I have time to dig further.

2012

52

BANKRUPT

1. **Solyndra***: Received \$535 million DOE loan and \$25.1 million in California tax credit. Bankrupt: [September 2011](#)
2. **Abound Solar***: Received part of a \$60 million grant under the Bush administration, and was awarded a \$400 million loan under Obama in December of 2010. Abound was awarded a \$9.2-million loan from the Export-Import Bank in July 2011. Bankrupt: [June 2012](#)
3. **Beacon Power***: Received more than \$25 million in DOE grants and a DOE loan for \$43 million. Bankrupt: [October 2011](#)
4. **A123 Systems***: Received \$390 million, of which \$249 million of it was a Recovery Act Grant. [Filed for Bankruptcy](#), October 16, 2012, and two companies are seeking to buy A123; Johnson Controls and the Chinese firm Wanxiang Group Corp.
5. **Amonix***: Received \$6 million in federal tax credits a \$15.6 million grant from the DOE for research and development. Bankrupt: [July 18, 2012](#).
6. **Azure Dynamics***: Received millions in stimulus funds and over \$1.7 million in Michigan state tax credits. Bankrupt: [March 27, 2012](#) — **HF ADDITION:** ~~states \$120 million~~
7. **Babcock & Brown**: Received \$178 million in the largest federal (1603) stimulus wind grant in December 2009. Placed into voluntary liquidation: [March 13, 2009](#)
8. **Energy Conversion Devices Inc/Uni-Solar**: Received a \$13.3 million Stimulus tax credit. Bankrupt: [February 2011](#).
9. **Ener1***: Received a \$118.5 million DOE Stimulus grant. Bankrupt: [January 26, 2011](#).
10. **Evergreen Solar, Inc.***: Received Stimulus funds, grants, tax-credits, low-interest loans and subsidies. Bankrupt: [August 15, 2011](#)
11. **Konarka Technologies Inc.**: Received \$20 million in grants from government agencies such as the DOE and the Pentagon. Bankrupt: [June 4, 2012](#).
12. **ADDITION Range Fuels***: Range Fuels: \$162.25 million in government commitments since 2007, of which \$64 million came from a USDA Biofuel loan in 2010 alone, [despite](#) financial and technical difficulties, and opposition inside the USDA.
13. **Raser Technologies**: Received \$33 million Treasury Department Stimulus grant. Bankrupt: [May 2, 2011](#).
14. **SpectraWatt***: Received \$500,000 grant from the Renewable Energy Lab via the Stimulus. Bankrupt: [August 23, 2011](#)
15. **Stirling Energy Systems**: Received \$7 million from a federal renewable-energy grant and was eligible for nearly \$10.5 million in manufacturing [September 28, 2011](#).
16. **Thompson River Power LLC**: Received \$6.5 million in Stimulus funds from Section 1603. Bankrupt: [July 2, 2012](#).
17. **HF ADDITION**: Mountain Plaza, Inc. (\$2 million); *in our unconfirmed list*
18. **HF ADDITION**: Olsen's Crop Service and Olsen's Mills Acquisition Company (\$10 million); *in our unconfirmed list*
19. **HF ADDITION**: Nordic Windpower* (\$16 million)
20. **HF ADDITION**: Satcon (\$3 million) As [reported by the](#) Heritage Foundation October 18, 2012, "A solar company that got a multi-million-dollar grant from the Department of Energy earlier this year announced Wednesday that it will file for Chapter 11 bankruptcy protection, making it the second taxpayer-backed green energy company to file for bankruptcy this week."
21. **HF ADDITION**: [Willard and Kelsey Solar Group](#) (\$700,981) (~~\$6 million~~); *in our unconfirmed bankrupt list*
22. **ADDITION, October 23, 2012**: Cardinal Fastener & Specialty Co.: Received \$480,000 through the Section 48C Advanced Manufacturing Tax Credit Program. During Obama's visit to [Cardinal Fastener](#), he took a "[green Recovery Act victory lap](#)," and touted it as means for "Made-In-America Jobs" for Ohio. Yet, just two weeks after the Obama visit, Cardinal laid off 12 percent of its staff, and in June 2011, Cardinal Fastener [filed for Chapter 11 bankruptcy protection](#). Lastly, in January 2012, Cardinal Fastener [was acquired by](#) Germany's Wurth Group for just \$3.9 Million.
23. **HF ADDITION, December 1, 2012**: [ReVolt Technology](#) is a Portland-based company, which specialized in developing zinc-air flow battery systems. "ReVolt earned its place in the [Graveyard](#) when it [declared bankruptcy](#) (October 17, 2012), despite the fact it had been offered a whopping \$10 million in funds from federal, state, and local governments. The [Advanced Research Projects Agency – Energy](#) offered a [\\$5 million](#) grant in 2010. Oregon matched the federal government's promise with \$5 million worth of loans."

Solyndra UPDATES:

- **October 12, 2012**: [Bankrupt Solyndra seeks \\$1.5 billion in damages from Chinese peers](#) — Reuters
- **October 22, 2012**: from my [Special Report Part One](#): Obama, the Green Loser; Cronyism Inc.,

noting, "[Solyndra was seeking tax benefit in their bankruptcy](#)," and it looks like they got it...[Court Confirms Solyndra Plan Over Government's Objection](#) — Dow Jones & Company, Inc



A123 Systems UPDATES:

- **October 22, 2012:** [A123 Systems Wants to Pay Bonuses to Top Executives](#) — Dow Jones & Company, Inc
- **November 16, 2012:** [A123 Got \\$1M From Gov on Same Day it Went Bankrupt](#) — The Washington Free Beacon
- **December 13, 2012** by The

Washington Free Beacon: [A-Not-OK: A123 sale to Chinese firm raises security concerns, Republicans and outside critics say](#)

"Republicans and outside business groups are calling on the Treasury Department to reject the sale of bankrupt battery-maker and stimulus recipient A123 Systems, Inc. to a Chinese firm, arguing the move could put American national security at risk."

"Chinese firm Wanxiang Group won a bid for A123 System on Sunday, beating out the Wisconsin-based Johnson Controls. A123 Systems, which produced lithium-ion batteries for electric cars, filed for bankruptcy in October after receiving \$133 million of a \$249 million stimulus grant from the federal government."

Abound Solar UPDATES

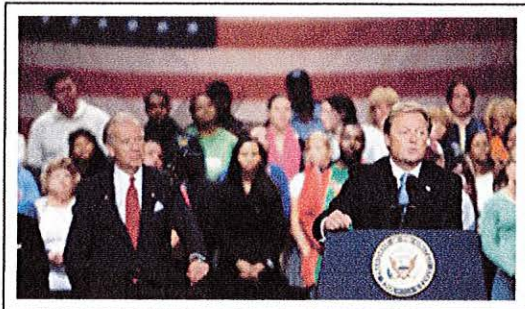
- **October 25, 2012:** [Colorado officials continue Abound Solar fraud investigation](#) — The Daily Caller
- **October 27, 2012:** [EMAILS SHOW WHITE HOUSE DROVE FAILED GREEN-LOAN IN COLORADO](#) — The Complete Colorado by Todd Shepherd
- **October 29, 2012:** [Emails Show White House Exerted Pressure for DOE Loan to Abound Solar](#) by the National Legal and Policy Center

TROUBLED

1. **Fisker Automotive*** — \$528.7
2. **Tesla Motors*** — \$465 million
3. **AREVA acquired Ausra Inc.*** — \$2 billion
4. **ADDITION November 20, 2012: Georgia Power Company** — [\\$8.33 billion](#) via the 1703 DOE LGP for Plant Vogtle, the construction and operation of two new nuclear reactors at a plant in Waynesboro, Georgia. In July 2012, [Bloomberg reported](#) the purchase of The Shaw Group Inc., which is [connected to](#) the Vogtle project, noting that Southern Co. is the largest investor in the Vogtle project, and they reported delays and cost overruns. Also, in August 2012, "[Plant Vogtle's contractors sue Georgia Power, project's co-owners.](#)" yet there is more to this story that I will expose in due time.
5. **BrightSource Energy*** — \$1.6 billion
6. **First Solar*** — \$3 billion, plus [suspicious Export-Import bank funding](#)
7. **Nevada Geothermal*** — \$78.8 million, plus \$69 million in federal stimulus-funded grants
8. **NextEra Energy Genesis Solar Project*** — \$681.6 million
9. **SunPower Corp.* (California Valley Solar Ranch project bought by NRG Energy*)** — \$1.2 billion DOE loan guarantee
10. **AltaRock*** — \$6 million, \$25 million, plus \$1.45 million
11. **Bloom Energy*** — [\\$5 million](#)
12. **CH2M Hill*** — \$2 billion
13. **Chevy Volt*** — \$151 million, \$105 million, plus other stimulus funds **HF ADDITION:** GreenVolts (\$500,000) - *I'm assuming this is the Chevy Volt*
14. **ECotality Inc.*** — \$126.2 million
15. **Johnson Controls** — \$299 million
16. **Montana Alberta Tie Line** — \$152 million of federal financing (some reports say \$161 million)
17. **National Renewable Energy Lab*** — \$200 million
18. **Schneider Electric** — \$86 million
19. **Serious Material (Serious Energy)*** — \$548,100
20. **Solar World Industries America** — \$4.6 million
21. **ADDITION: Solar City*** — Got a \$275 million conditional guarantee (DOE) [that was later](#) rejected. Besides some [financial issues](#), Solar City was subpoenaed in July as part of a federal probe of the Treasury grant program. As [reported by](#) The Washington Free Beacon (October 18, 2012), [SolarCity](#), is currently being audited by the Internal Revenue Service and investigated by the Treasury Department's inspector general amid allegations that the firm misrepresented the value of its investment when applying for stimulus grants. So it looks like Solar City* has applied for approximately \$325 million in these stimulus grants, according to the SEC filing." So, loan rejected, but the grant is larger (as are the political ties) — we'll keep an eye on this story.
22. **Solar World Industries America** — \$4.6 million **HF UPDATE, November 16, 2012:** Solar World (\$82 million credit from the Energy Department's stimulus-funded Advanced Energy Manufacturing (48C) Tax Credit). According to the [Heritage Foundation](#), "SolarWorld, which [announced](#) a 47% revenue decline in the third quarter, [blamed](#) a potential 37 layoffs at its Oregon plant on "illegal" Chinese trade practices."
23. **HF ADDITION: Vestas** (\$50 million)
24. **HF ADDITION: LG Chem's subsidiary Compact Power** (\$151 million, part of the Recovery Act, and millions worth of special state tax breaks based on job creation of all things) LG Chem is another green company that President Obama touted during his visit at the LG Chem battery cell production site in 2010. This is an amusing story that was recently brought to my attention — [according to Wood TV](#), Michigan (October 18, 2012), "Workers at LG Chem, a \$300 million lithium-ion battery plant heavily funded by taxpayers, tell Target 8 that they have so little work to do that they spend hours playing cards and board games, reading magazines or watching movies." Now, their [story \(more scandalous than what I posted here\)](#) is under investigation by the [Recovery Accountability and Transparency Board](#) — an oversight agency for the federal stimulus program, what I call the RAT Board — *another huge part of this green corruption scandal.*
25. **HF ADDITION: Navistar** (\$10 million)
26. **HF ADDITION: Mascoma Corp.*** (\$100 million)
27. **ADDITION, October 22, 2012: MiaSolé*:** [Received](#) two Advanced Energy Manufacturing [tax credits](#) totaling \$101.8 million from the Obama Administration in January 2010, see my [Summer 2010 report](#) on Kleiner Perkins, yet also a VantagePoint investment. This month (October), "[struggling](#)" and "[desperate](#)" MiaSolé [has agreed to be sold to](#) China's Hanergy Holding Group for \$30 Million, which is considered to be dirt cheap.
28. **ADDITION, October 23, 2012: Smith Electric Vehicles:** Received \$32 million in federal grants from the American Recovery Act. Smith Electric Vehicles was another [Obama touted](#) green investment, however, since 2009 they have [racked up](#) \$128 million in losses." In February 2011, Smith Electric

* Vehicles [announced](#) a potential partnership with Wanxiang Group (one of the largest non-government-owned companies in China that is on a "[green USA buying spree](#)" — Smith Electric, A123 Systems and Ener1), and in September 2012, struggling (and "short on cash") Smith Electric [scrapped its IPO](#) to "pursue private financing opportunities."

29. **HF ADDITION, November 16, 2012: SunTech** (\$2.1 million credit from the Energy Department's stimulus-funded Advanced Energy Manufacturing (48C) Tax Credit). According to the [Heritage Foundation](#), "SunTech [said](#) the U.S. International Trade Commission's 35.95% tariff on Chinese solar panels was partially responsible for the 50 impending layoffs at its Arizona production facilities."



Telsa and Fisker UPDATES

- **October 10, 2012:** [The DOE Restructured Its Loan to Tesla](#) — National Review Online
- **October 23, 2012:** [House Committee Looks into Terms of DOE's Fisker Automotive Loans](#) — "The House Oversight and Government Reform Committee is looking into U.S.

Department of Energy's (DOE) original terms of [its loan to Fisker Automotive](#), questioning whether DOE will step in to help the electric vehicle (EV) automaker if it goes bankrupt and investors are allowed to retrieve their money." by Daily Tech

- **November 1, 2012:** [Obama-backed Fisker hybrids 'burn down,' 'explode' after Sandy submersion](#) — The Daily Caller
- **December 20, 2012** by Market Watch: [Tesla will need more loans to stay afloat in 2013](#).

"Without the hundreds of millions of dollars Tesla TSLA -1.25% has received from the federal government this year, the electric-car maker's financials would be gasping for air as 2012 winds down."

"Given the ugly state of Tesla's finances — and the company's sky-high valuation: almost \$4 billion — it will rank among the top candidates in Silicon Valley for a 2013 stock collapse, unless it receives significantly more cash next year."

NEW INFO on Nissan that [received \\$1.4 billion loan](#) arrangement under the Department of Energy's ATVM Program (one of five where cronyism and corruption reigned): November 15, 2012, according to The Detroit News, [Nissan CEO abandons '12 electric vehicle sales target](#), which includes the all-electric leaf, and the DOE loan was used for. Do we add them to our "troubled list?"

=====

BEGINNING calculations October 20, 2012: 22 bankrupt, 25 troubled, equals a new "Obama green-energy failure" list total of 47. And so far, at least \$15 billion of "green" taxpayer money is either gone or still at risk, and the majority was funneled to Obama and Democrat cronies — I can confirm that over 62% are political connected.

October 23, 2012 calculation: 23 bankrupt, 27 troubled, equals a new "Obama green-energy failure" list total of 50. At least \$15 billion of "green" taxpayer money is either gone or still at risk, and the majority was funneled to Obama and Democrat cronies — percentage of cronyism is hovering around 60% (29 of the 50).

Please check back, as you can see it changes weekly...

Department of Energy Collateral Damage

1. Aptera Motors
2. Bright Automotive
3. Solar Trust*

*Denotes companies/projects with confirmed cronyism and/or corruption.

The is the complete list of faltering or bankrupt green-energy companies by [The Heritage Foundation](#), October 18, 2012 (updated later to reflect 34) — [President Obama's Taxpayer-Backed Green Energy Failures](#)

The complete list of faltering or bankrupt green-energy companies:

1. [Evergreen Solar](#) (\$25 million)*
2. [SpectraWatt](#) (\$500,000)*
3. [Solyndra](#) (\$535 million)*
4. [Beacon Power](#) (\$43 million)*
5. [Nevada Geothermal](#) (\$98.5 million)
6. [SunPower](#) (\$1.2 billion)
7. [First Solar](#) (\$1.46 billion)
8. [Babcock and Brown](#) (\$178 million)
9. [EnerDel's subsidiary Ener1](#) (\$118.5 million)*
10. [Amonix](#) (\$5.9 million)
11. [Fisker Automotive](#) (\$529 million)
12. [Abound Solar](#) (\$400 million)*
13. [A123 Systems](#) (\$279 million)*
14. [Willard and Kelsey Solar Group](#) (\$700,981)*
15. [Johnson Controls](#) (\$299 million)
16. [Schneider Electric](#) (\$86 million)
17. [Brightsource](#) (\$1.6 billion)
18. [ECOTALITY](#) (\$126.2 million)
19. [Raser Technologies](#) (\$33 million)*
20. [Energy Conversion Devices](#) (\$13.3 million)*
21. [Mountain Plaza, Inc.](#) (\$2 million)*
22. [Olsen's Crop Service and Olsen's Mills Acquisition Company](#) (\$10 million)*
23. [Range Fuels](#) (\$80 million)*
24. [Thompson River Power](#) (\$6.5 million)*
25. [Stirling Energy Systems](#) (\$7 million)*
26. [Azure Dynamics](#) (\$5.4 million)*
27. [GreenVolts](#) (\$500,000)
28. [Vestas](#) (\$50 million)
29. [LG Chem's subsidiary Compact Power](#) (\$151 million)
30. [Nordic Windpower](#) (\$16 million)*
31. [Navistar](#) (\$39 million)
32. [Satcon](#) (\$3 million)*
33. [Konarka Technologies Inc.](#) (\$20 million)*
34. [Mascoma Corp.](#) (\$100 million)

*Denotes companies that have filed for bankruptcy.

HERITAGE CORRECTION:

Figures for four companies have been updated: [Beacon Power received \\$43 million](#) from the U.S. government, not \$69 million as originally reported. [Azure Dynamics received \\$5.4 million](#) from the federal government, not \$120 million as originally reported. [Compact Power Inc. received \\$151 million](#) as part of the stimulus, not \$150 million as originally reported. [Willard and Kelsey Solar Group received \\$700,981](#) in government funding, not \$6 million as originally reported.

The following companies have been removed from the original list: AES's subsidiary Eastern Energy, LSP Energy and Uni-Solar did not receive government-backed loans, based on additional research. The National Renewable Energy Lab did receive \$200 million in stimulus funding, but it is a government laboratory.

UPDATE December 1, 2012: I am taking off AES Eastern Energy/Energy Storage*, yet on August 2, 2010 they did receive [\\$17.1 million DOE conditional commitment](#) "to support the construction of a 20 megawatt (MW) energy storage system using advanced lithium-ion batteries" — a project Johnson City, New York, and according to a December 23, 2010 press release by [Energy.gov](#), "DOE Completes \$17 Million Loan Guarantee for New York Energy Storage System with Recovery Act Funds." However, AES is not listed as one of the [DOE's Loan Program's Office projects](#), yet they did go bankrupt: [December 31, 2011](#).

NOTE: My blog reflects the Heritage "corrections," however, I kept in AES and the National Energy Lab — and [we initially](#) had four unconfirmed bankruptcies:

- LSP Energy
- Mountain Plaza Inc.
- Olsen Crop Service/Olsen Mills

So far, at least \$15 billion of "green" taxpayer money is either gone or still at risk, and the majority was funneled to Obama and Democrat cronies

As you can see tracking President Obama's failed green-energy expenditures is like aiming at a moving target, and calculating the exact dollar amount is even more difficult to pinpoint. This is partly due the fact that companies/projects received multiple green government subsidies that weren't recorded or tracked properly (federal and state loans, grants and special tax credits, and from various programs and agencies). Also, some of these firms were given a loan guarantee, yet didn't have access to the entire amount, prior to their bankruptcy. However, as a ballpark figure, I'd say that at least \$15 billion that we know of at this time. And here's why...

I had purposely listed the bankrupt and troubled from the Department of Energy's Loan Guarantee Program (DOE LGP) first. Since 2009, the DOE has guaranteed \$34.7 billion – 46% through the 1705 (\$16 billion of which 90% are politically connected), 30% through the 1703 (\$10.3 billion—AREVA and Georgia Power), and 14% through the ATVM (\$8.4 billion and 3 of the five loans are tied directly to Obama).

Marita and I covered eleven companies from the DOE LGP (Solyndra, Abound Solar, Beacon Power, Fisker Auto, Telsa Motors, AREVA, BrightSource Energy, First Solar, Nevada Geothermal, NextEra Energy's Genesis Solar Project, and SunPower/NRG Energy's California Valley Solar Ranch), noting that from *that* program alone, close to \$10 billion of taxpayer money is already gone, while, as you can see, some is still at risk. What's interesting to note is that of the "26 loan guarantees under the 1705 program, of which the DOE doled out in excess of \$16 billion, "23 of the loans were rated "Junk grade" due to their poor credit quality, while the other four were rated BBB, which is at the lowest end of the 'investment' grade of categories."

Meaning that the DOE had already put the majority of that \$16 billion into excessively risky investments. And to add insult to taxpayer injury, the driving force behind these decisions weren't based merit as the DOE would have you believe — obviously it was cronyism and corruption. My [April 2012 analysis](#) of the Committee on Oversight and Government Reform [March 2012 report](#) confirmed that over 90% have *meaningful* political ties to President Obama and high ranking Democrats, or both, which gives credence to Congressman Ryan's *jab* to the so-called "Stimulus Sheriff," Vice President Joe Biden during the [VP debate](#). "\$90 billion in green pork to campaign contributors and special interest groups." Ryan went on to call the Obama green-energy expenditures what *it is*, "crony capitalism and corporate welfare."

In case you missed our Obama Green Energy Failures, Three Part Series:

- Part One — [Obama Never Admits Green Failure](#) (September 30, 2012 @ Townhall.com); Obama Green Energy Investments: Bankrupt. My "in the weeds" edition here, [Special Report Part One: Obama, the Green Loser: Cronyism Inc.](#)
- Part Two [Romney to Obama: "You Pick the Losers."](#) (October 7, 2012 @ Townhall.com) Obama Green Energy Investments: Troubled. My "in the weeds" edition here, [Special Report Part Two: Obama, the Green Loser: Cronyism Inc.](#)
- Part Three — [Obama's Green Jobs Promise: 355 Jobs and Counting](#) (October 15, 2012 @ Townhall.com). My "in the weeds" edition here, Special Report Part Three: [Where are the 5 Million Green Jobs Candidate Obama Promised?](#)

PS: If anyone cares to add up these failed green-energy expenditures, drop me a line and I'll post it here. Thanks, Christine [@calfit32@gmail.com](mailto:calfit32@gmail.com)

SUBMITTED BY CHARLES CVRK

NATIONAL REVIEW

Wind-Energy Sector Gets \$176 Billion Worth of Crony Capitalism

It takes enormous amounts of taxpayer cash to make wind energy seem affordable.

By Robert Bryce — June 6, 2016

Last month, during its annual conference, the American Wind Energy Association issued a press release trumpeting the growth of wind-energy capacity. It quoted the association's CEO, Tom Kiernan, who declared that the wind business is "an American success story."

There's no doubt that wind-energy capacity has grown substantially in recent years. But that growth has been fueled not by consumer demand, but by billions of dollars' worth of taxpayer money. According to data from Subsidy Tracker — a database maintained by Good Jobs First, a Washington, D.C.-based organization that promotes "corporate and government accountability in economic development and smart growth for working families" — the total value of the subsidies given to the biggest players in the U.S. wind industry is now \$176 billion.

That sum includes all local, state, and federal subsidies as well as federal loans and loan guarantees received by companies on the American Wind Energy Association's board of directors since 2000. (Most of the federal grants have been awarded since 2007.) Of the \$176 billion provided to the wind-energy sector, \$2.9 billion came from local and state governments; \$9.4 billion came from federal grants and tax credits; and \$163.9 billion was provided in the form of federal loans or loan guarantees.

General Electric — the biggest wind-turbine maker in North America — has a seat on AWEA's board. It has received \$1.6 billion in local, state, and federal subsidies and \$159 billion in federal loans and loan guarantees. (It's worth noting that General Electric got into the wind business in 2002 after it bought Enron Wind, a company that helped pioneer the art of renewable-energy rent-seeking.)

guarantees worth \$5.5 billion. That's more than what the veteran crony capitalist Elon Musk has garnered. Last year the *Los Angeles Times*'s Jerry Hirsch reported that Musk's companies — Tesla Motors, Solar City, and Space Exploration Technologies — have collected subsidies worth \$4.9 billion. NextEra's haul is also more than what was collected by such energy giants as BP (\$315 million) and Chevron (\$2.2 billion).

About \$6.8 billion in subsidies, loans, and loan guarantees went to foreign corporations, including Iberdrola, Siemens, and E.On. Those three companies, and five other foreign companies, have seats on AWEA's board of directors.

Many of the companies on the AWEA board will be collecting even more federal subsidies over the next few years. In December, the Congressional Joint Committee on Taxation estimated that the latest renewal of the production tax credit will cost U.S. taxpayers about \$3.1 billion per year from now until 2019. That subsidy pays wind-energy companies \$23 for each megawatt-hour of electricity they produce.

That's an astounding level of subsidy. In 2014 and 2015, according to the Energy Information Administration, during times of peak demand, the average wholesale price of electricity was about \$50 per megawatt-hour. Last winter in Texas, peak wholesale electricity prices averaged \$21 per megawatt hour. Thus, on the national level, wind-energy subsidies are worth nearly half the cost of wholesale power, and in the Texas market, those subsidies can *actually exceed* the wholesale price of electricity.

Of course, wind-energy boosters like to claim that the oil-and-gas sector gets favorable tax treatment, too. That may be so, but those tax advantages are tiny when compared with the federal gravy being ladled on wind companies. Recall that the production tax credit is \$23 per megawatt-hour. A megawatt-hour of electricity contains 3.4 million Btu. That means wind-energy producers are getting a subsidy of \$6.76 per million Btu. The current spot price of natural gas is about \$2.40 per million Btu. Thus, on an energy-equivalent basis, wind energy's subsidy is nearly three times the current *market price* of natural gas.

MidAmerican Energy Company, a subsidiary of Berkshire Hathaway, has a seat on AWEA's board. Berkshire's subsidy total: \$1.5 billion — and it's primed to collect lots more. In April, the company announced plans to spend \$3.6 billion on wind projects in Iowa. Two years ago, Berkshire's CEO, Warren Buffett, explained why his companies are

NextEra Energy, the largest wind-energy producer in the U.S., has received about 50 grants and tax credits from local, state, and federal entities as well as federal loans and loan

in the wind business. “We get a tax credit if we build a lot of wind farms. That’s the only reason to build them,” he said. “They don’t make sense without the tax credit.”

Keep in mind that the \$176 billion figure in wind-energy subsidies is a minimum number. It counts only subsidies given to companies on AWEA’s board. Not counted are subsidies handed out to companies like Google, which got part of a \$490 million federal cash grant for investing in an Oregon wind project. Nor does it include the \$1.5 billion in subsidies given to SunEdison, the now-bankrupt company that used to have a seat on AWEA’s board. (To download the full list of subsidies garnered by AWEA’s board members, click here.)

Nor does that figure include federal money given to J. P. Morgan and Bank of America, both of which have a seat on AWEA’s board. The two banks received federal loans or loan guarantees worth \$1.29 trillion and \$3.49 trillion, respectively. In an e-mail, Phil Mattera, the research director for Good Jobs First, told me that the loan and loan-guarantee figures for the banks include the federal bailout package known as the Troubled Asset Relief Program as well as “programs instituted by the Federal Reserve in the wake of the financial meltdown.” When all of the subsidies, loans, and loan guarantees given to the companies on AWEA’s board are counted, the grand total comes to a staggering \$5.1 trillion.

According to Wikipedia, crony capitalism “may be exhibited by favoritism in the distribution of legal permits, government grants, special tax breaks, or other forms of state interventionism.” Wind-energy companies are getting favoritism on every count. The U.S. Fish and Wildlife Service wants to give those companies permits allowing them to legally kill bald and golden eagles with their turbines for up to 30 years. The industry is getting grants, tax breaks, and loans worth billions. And thanks to federal mandates like the Clean Power Plan and state renewable-energy requirements — nearly all of which are predicated on the specious claim that paving vast swaths of the countryside with wind turbines is going to save us from catastrophic climate change — the industry is surfing a wave of state interventionism.

AWEA’s Kiernan likely has it right. In a country where having a profitable business increasingly requires getting favors from government, the U.S. wind industry is definitely a “success.”

— *Robert Bryce is a senior fellow at the Manhattan Institute. His latest book, Smaller Faster Lighter Denser Cheaper: How Innovation Keeps Proving the Catastrophists Wrong, was recently issued in paperback.*