

Lombardo's Executive Order

WHEREAS, in order to achieve the objectives of Senate Bill 358 (2019) while still maintaining adequate energy resources, Nevada must pursue a balanced approach to energy use and development by utilizing all available energy and storage resources, including natural gas, solar, geothermal, hydroelectric, wind, hydrogen, energy efficiency and energy storage projects;

Senate Bill 358 is special interest legislation benefiting large players participating in the the solar scam industry. The state senator, Chris Brooks, most responsible for 358, was in the solar energy business, a blatant conflict of interest. Lombardo's list of energy sources is a list of impractical energy sources except for natural gas.

The Governor blew his chance to tell the people that green energy is a scam. He has given legitimacy to bizarre energy schemes that benefit special interests.

The Future Disaster

The \$2 billion Gemini solar farm is under construction north of Las Vegas. To meet the objectives of Senate bill 358 many more huge plants must be built. Without or without subsidies solar electricity is enormously expensive.

The construction cost of these plants becomes a debt payable by the people of Nevada via their electric bills. The developers sell the plants as conservative investments to infrastructure funds as soon as possible. Traditionally the power delivery agreements are long term, fixed price contracts. The Gemini contract is for 25 years. If high interest rates and inflation continues these contracts will suffer catastrophic declines in value. The consequence is likely to be bankruptcies and financial turmoil. We have already seen financial failure in the Crescent Dunes plant near Tonopah, Nevada. The Ivanpah plant just over the border in California was granted an increase in the price of electricity due to technical failures.



Solar Energy - A Green Dream?

The delivery of solar energy depends on the weather. There is no solar energy at night or when it is cloudy. But we need energy even when it's cloudy or at night. That unpredictability is the defining failure of solar energy.

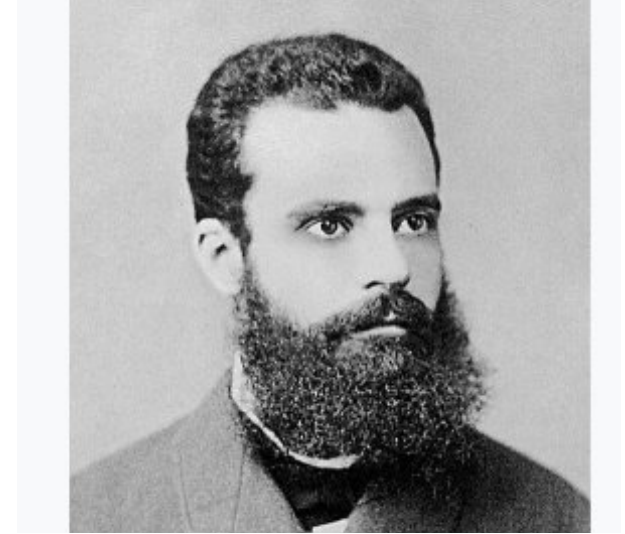
The cost of solar energy is extremely high and every existing fossil fuel generating plant must be retained to fill in when solar isn't available.

Nevada's massive solar energy building program is a foolish boondoggle.

Solar Electricity is Superstition, Not Science

A century ago, Vilfredo Pareto pointed out that men's beliefs are more the result of passion than of logic. Solar energy should be evaluated based on science and economics, but it has become an object of spiritual belief, part of what some thinkers call the Religion of Green.

[Video: Religion of Green](#)



The Irrational State Definitions of Green Energy

Definitions are embedded in the laws of Nevada and many other states. Generally they follow the definition pushed by the Sierra Club. The three No's:

No Fossil Fuels

No Hydroelectricity if a Dam is Involved

No Nuclear

After the three No's you are left with a gaggle of niche energy sources, and wind and solar. Wind and solar are the only scalable energy sources that obey the three No's. You can have as much wind or solar as you are foolish enough to pay for.

[White Paper: Renewable Energy Reality Check](#)



Solar Energy is “grotesque”

In a Boston Globe op ed, James Hansen, the scientist most responsible for calling attention to the projected global warming problem denounced renewable energy, including solar, as “grotesque” and “fantastical.” He has declared that nuclear energy is the only practical method for reducing CO2 emissions. Many other activists, like Michael Shellenberger and Stewart Brand, take the same position. These activists have noticed that wind and solar are totally impracticable instruments for reducing CO2 emissions because they are insanely expensive and can substitute for fossil fuels only to a limited extent.

Unfortunately the nuclear industry in the U.S. has been destroyed by green activists, so nuclear is not an easy option.



[Video: Hansen and Shellenberger](#)

[Climate Scientists for Nuclear Website](#)

Utility Scale Solar Electricity Costs 5-10 Times More

Existing fossil fuel plants cannot be replaced by solar because they supply electricity when solar doesn't. The economic contribution of solar is saving fuel in the backup fossil fuel plants. The value of the fuel saved is five times less than the cost of the wind or solar. As the penetration of wind and solar in the grid increases it becomes necessary to add storage batteries to the wind or solar, increasing the cost disparity to ten times.

Wind or Solar \$80 per megawatt hour, cost amortized for 25 years and operation expense,

Natural Gas marginal cost \$15 for fuel per megawatt hour.

The Rooftop Solar Scam - Everyone Else Pays

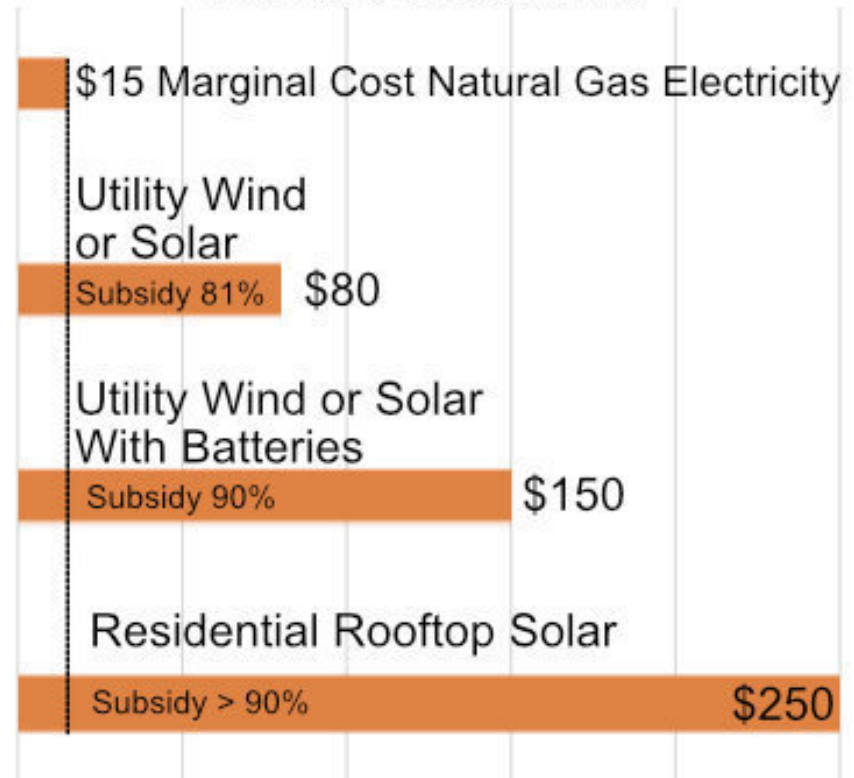
Rooftop solar, lacking economies of scale, generates electricity for approximately 25-cents per kilowatt hour. Subsidies and electricity banking may make rooftop solar competitive with utility power. With rooftop solar the utility loses almost all revenue and provides backup generation capability without compensation. Electricity banking in some jurisdictions forces the utility and taxpayers to substitute 25-cent power for 1.5-cent power. The cost of using more fuel in natural gas plants is 1.5 cents per kilowatt hour. Everyone else pays for the homeowner's saving, if any. (The "bank" where electricity is stored for later use is an accounting fiction.)



Solar has colossal subsidies

Wind and solar displace natural gas electricity that costs far less per megawatt hour. A subsidy is typically provided by various government programs and higher electricity costs. The industry pretends that the subsidies are small and may soon be phased out.

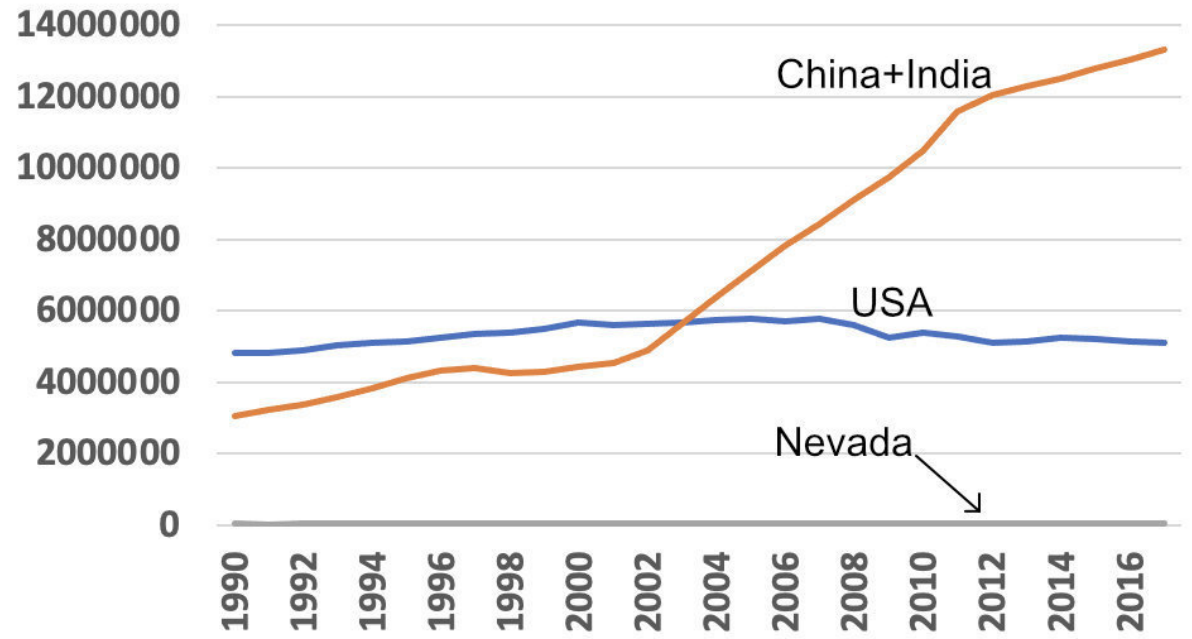
Cost of Electricity and Percent Subsidized



The CO2 Reduction Fallacies

Displacing electricity from fossil fuels by wind or solar does reduce CO2 emissions, but the price is exorbitant, approximately \$200 per metric ton of carbon dioxide emissions reduced. It is difficult to reduce emissions by more than 50 percent. Informed opinion demands nuclear for CO2 reduction. The CO2 problem, if there is one, is in Asia, not the U.S.

China+India Compared to USA Thousands Metric Tons CO2 Emissions 1990-2017



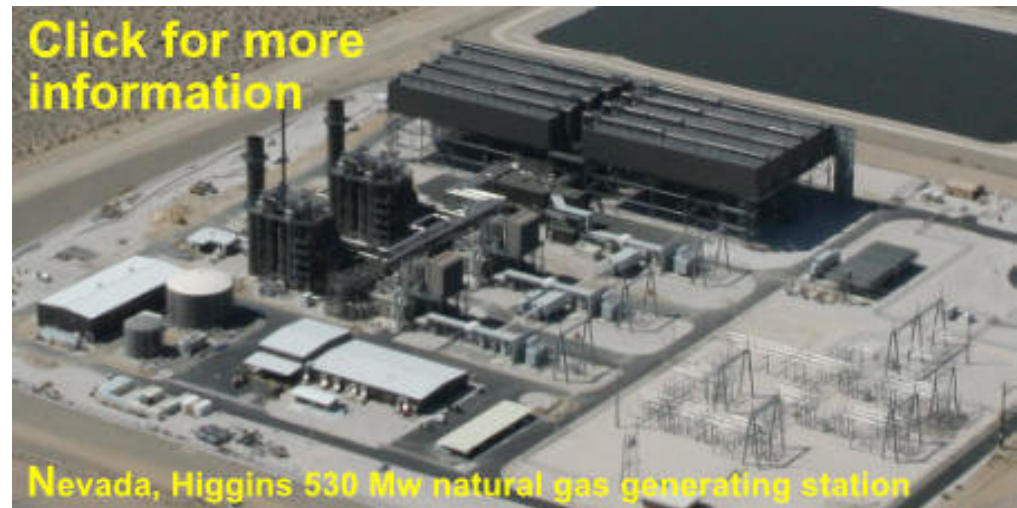
Purchase Carbon Offsets for \$10

You can't replace fossil fuels with wind and solar

Wind and solar generate electricity according to the weather. Sometimes they generate nothing or very little. A full fleet of dependable plants must be on standby to take over when the wind and solar die. In addition the backup fossil fuel plants, usually natural gas, smooth the erratic flow of electricity from wind or solar, filling in when wind and solar power is reduced.

The outstanding properties of combined cycle natural gas plants make them a natural candidate to fulfill these vital backup functions.

[Video: The Duck Curve Problem](#)



[Click for more information on plant](#)

Hitting the Wind and Solar Wall

When solar electricity exceeds about 20 percent of the electricity in a grid, a big problem of too much electricity emerges. For wind the threshold is about 30 percent. This is because wind and solar are peaky, with large peak output compared to average output.

When the wall is reached, either the renewable electricity must be discarded, or else stored in batteries for later use. Discarding is not an option except in emergencies because there is usually a quota for renewable electricity. Batteries are horribly expensive and can double the cost of the electricity.

Wind and solar are not near grid parity

Wind or solar would reach grid parity if they were competitive with other fuels. The advocates claim that wind and solar are approaching grid parity by presenting a fake analysis. To reach grid parity wind or solar need to supply electricity for less than \$15 per megawatt hour. \$15 is the cost of generating the same megawatt hour with a backup natural gas plant. The backup plants cannot be eliminated or replaced because you can't count on wind or solar. The only additional cost to use the backup plant instead of wind or solar is the fuel that costs \$15 to generate a megawatt hour. Either wind or solar cost from \$80 to \$300 per megawatt hour, not remotely close to \$15, or grid parity.

Climate Justice - A Political Tool

The non-existent climate catastrophe becomes a tool for recruiting supporters of the Democratic Party if they can be convinced that they are being oppressed by the climate.

From the governor's Nevada's Climate Strategy

Climate Justice

Across the United States and in Nevada, low-income communities, people of color, and Indigenous populations have disproportionately borne the burden of climate change impacts. As temperatures continue to rise and climate-related challenges expand and intensify, particular attention must be paid to these vulnerable populations. Through climate action, there is the opportunity to reconcile the social justice challenges Nevadans face.

The Wind and Solar Mafia

Wind and solar is a gigantic industry. At least \$100 billion is entirely wasted each year on subsidies, overpriced electricity and dumb energy projects. The industry is a parasite sucking life from the economy. The waste will become much worse if states continue to pursue “renewable portfolio” goals for wind and solar electricity.

Many people and organizations have a stake in supporting the industry. Advice and intellectual support is provided by consulting firms and academic experts that are in on the racket. The mass media largely has no understanding of the real economics and thus act as dumb conduits for industry propaganda. The utilities are only too happy to build dumb energy projects as long as their electricity customers are mandated to pay for them.

Non-profit environmental organizations, always on the lookout for a new crisis to excite their patrons, embrace dumb energy for its phony environmental benefits. These organizations specialize in advocating policies of the loony tunes variety.

[Video: Religion of Green](#)



Sierra Club Propaganda

[Click for Details](#)

[Click for Details](#)

Insanely expensive batteries

If you keep adding wind or solar to the grid a point is reached when the grid can't handle peak generation from wind or solar. A certain number of fossil fuel plants must be on line to regulate the grid, setting a maximum peak amount of wind or solar allowed. If wind or solar becomes too strong it has to be curtailed, meaning that the energy is effectively thrown away. State laws that force adding more wind or solar than is easily handled have forced utilities to supplement wind or solar with batteries, added to absorb peaks and move the power to a different time of day. The Gemini project near Las Vegas will cost \$1.5 billion and generate electricity for about 10 times as much as using existing gas plants. The Gemini battery system will cost \$500 million and the batteries will have to be replaced periodically at a cost of \$300 million each time.

Coming: lithium battery fires

Lithium batteries are increasingly being added to wind and solar installations. These expensive batteries must be air conditioned. They store vast quantities of energy making for energetic fires. The battery proposed for the Las Vegas Gemini project costs \$300 million and stores as much energy as 5-million (yes, 5-million) sticks of dynamite. Explosions are possible. At Surprise, Arizona a utility battery fire caused an explosion and injured 4 firefighters.

Arizona Battery Fire



Nuclear: Practical renewable

The nuclear industry in the U.S. has been destroyed by hysterical environmentalists. But it is thriving in places like France, China and South Korea. Nuclear emits no CO2. Nuclear fuel is 3-times cheaper than natural gas and natural gas is very cheap. Nuclear has an excellent safety record and new generation reactors are even safer. Nuclear in the U.S. is not competitive currently with fossil fuels but it is less costly and more practical than wind or solar. The high cost of nuclear in the U.S. is due to legal attacks and over-regulation. For example, a small nuclear plant in the U.S. may have 500 employees, often pushing papers and implementing regulations, but the same size gas plant has 25 employees. Reform and pushback against environmental extremism is needed.



Millstone 1 Nuclear Power Plant
660 megawatts Cost \$101 million 1966

Millstone 1, near New London, CT was constructed in 5 years and operated from 1970 to 1998. Two other reactors, units 2 and 3 are still operating on the site.



Shoreham Nuclear Power Plant
820 megawatts cost \$6 billion 1973

The Shoreham plant on Long Island, NY was under construction for 11 years. In June, 1979 thousands of protestors gathered at the plant and 500 were arrested. The plant was finally scrapped in 1989 and never generated electricity.

Nuclear Cost Escalation

Case for Nuclear

How the Sierra Club destroyed the nuclear industry.

Forbidden Science: Low Level Radiation and Cancer.

Wind and solar no help for blackouts

Wind and solar installations depend on the fossil fuel plants in the grid to establish synchronization with the grid. They can't supply electricity on a stand-alone basis.

Kills birds, makes noise, blights landscape

Rural residents fight against wind farms that are forced on them by big companies. Birds can't get out of the way of the rotors and are often killed. The low frequency noise bothers neighbors. The gigantic towers are installed on top of ridges to catch the best wind but this destroys views. A type of solar called thermal solar also kills birds by setting them on fire from intense solar energy focused by fields of mirrors. These wind and solar installations serve no useful purpose, being expensive energy and ineffective for reducing CO2 emissions.



[Video: Wind Turbine Kills Bird](#)

Self-Interested Cheerleaders

Consulting and media firms such as Lazard renewable energy, Bloomberg New Energy Finance (BNEF), Greentech Media, and many others make their living by promoting renewable energy. The same applies to the employees of the federal National Renewable Energy Laboratory and various academic organizations. As a consequence, in my opinion, these organizations and their employees consistently present a biased view of the economic and environmental benefits of renewable energy. Renewable energy is promoted by important non-profits like the Sierra Club and Greenpeace. Renewable energy skeptics are represented by individuals, or non-profit think tanks, like the Heartland Institute, The Institute for Energy Research and the CO2 Coalition. The promoters vastly outgun the skeptics as billions are spent each year on renewable energy. The Sierra Club alone has a budget exceeding \$100 million as well as more than a million members. Lazard, for example, publishes a widely referenced levelized cost of energy analysis that purports to demonstrate the competitiveness of wind and solar. The analysis neglects the very important subsidy of tax equity financing and neglects the subsidy effect of renewable portfolio standards. Lazard's analysis also makes the elementary error of ignoring the effect of the erratic nature of wind and solar.

[Article: Big Consulting Firms Engage in Green Energy Propaganda](#)

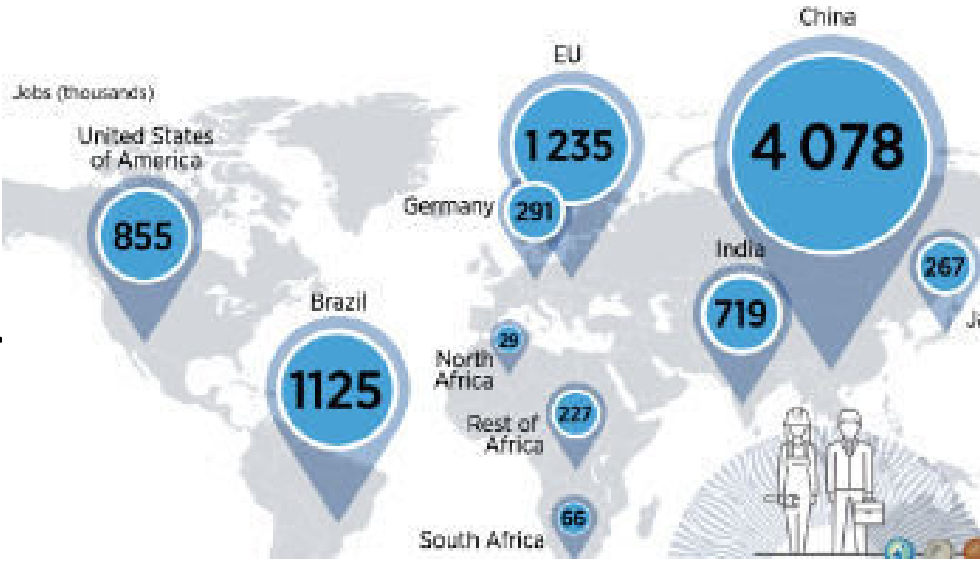
Sierra Club Beyond Coal

Quotes from the Sierra Club Beyond Coal campaign: "We want to close all US coal plants." "We support solutions like wind, solar, and geothermal." It is impossible to replace coal with the erratic generators wind and solar. Closed coal plants are replaced with natural gas plants. Geothermal is an expensive niche technology. Coal is safe, and modern plants are extremely clean. The Sierra Club makes hysterical claims to the effect that coal is killing thousands of people and damaging children. By photographing smokestacks with the sun behind the stack they create staged photos that make smokestacks emitting white "steam" look like they are emitting black smoke. The photo on the right is an example. The giveaway is the clear water vapor at the top of the stack before it mixes with the cool air and condenses into white steam. Undoubtedly the scare campaign energizes the Sierra Club base and brings in plenty of money. The nation wastes billions closing perfectly good coal plants.



The Renewable Energy Economic Sector

According to the International Renewable Energy Agency (IRENA) 855,000 people are employed in the sector in the United States. Many are occupied with installing imported equipment to construct wind and solar farms. This is a parasitic sector propped up by subsidies and favorable legislation. These workers' salaries are financed by taxpayers and electricity consumers buying electricity for 5-times what it is worth. 855,000 workers constitute a potent political force. It will be difficult to rationalize this sector of the economy.



Why utilities love to build renewable energy plants

If the state public utility commission approves a renewable energy plant it does not matter if the cost of the renewable electricity is 5-times greater than using existing plants. As long as the public utility commission approves, the cost of the plant is passed to electricity consumers and the utility makes additional profit.



RENEWABLES

Xcel Energy Announces Plans for Four New Wind Farms

"This is a big day for Xcel Energy and our customers as we take our wind leadership to a new level, while bringing value to our customers," said Chris Clark, president, Xcel Energy–Minnesota. "We're building an energy future with low-cost wind that delivers the renewable energy customers want at an affordable price." -T&DWorld 2016

More Information

The misuse of science for profit is a big industry. It's quite shocking how easy it is to enforce conformity to various money science schemes like solar electricity.

An PDF version of this poster with links enabled is available here:

<https://www.renewablepuzzle.com/more-on-solar.html>

Sincerely,

Norman Rogers

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