



SolarTimes

Summer, 2016

Energy Democracy, Evolution and Transformation, brought to you by ...

McCune Solar Works & One World Co-op: "Making a huge difference with a small footprint"

ARE YOU PAYING ATTENTION?

There is a growing consensus among activists, researchers and the scientific community that the convergence of climate disruption with a host of other environmental, social and economic factors now poses an imminent threat to all life on earth ...

by Sandy LeonVest and Chuck McCune

The most recent research from the National Aeronautics and Space Administration (NASA) shows that the likelihood of a climate "doomsday scenario" may be much more imminent than all previous estimates suggest.

Earlier this year, NASA confirmed that Earth's temperature surged in February (2016), passing a major milestone.

February was the first month in the history of climate record keeping that shows global average temperatures passing the 1.5 degree Celsius mark. And while this surge is likely only temporary, it is a major milestone moment for humanity -- and its relationship to the planet.

A difference of half a degree centigrade may be barely noticeable day to day, but the difference between 1.5C and 2C of warming marks a shift into a new, and far more dangerous climate regime, NASA warns in the agency's first comprehensive analysis of the issue.

In May, 2016, NASA researchers published yet another groundbreaking study, this one confirming for the first time that global warming caused by humans is affecting clouds -- and not in a good way.

The study by a team from the Scripps Institution of Oceanography shows that clouds are being pushed up and out of mid-range latitudes toward the poles.

"It's really the first credible evidence that we have of climate change and clouds in the observed record," said Scripps atmospheric scientist Joel Norris.

"The cloud shift could push temperatures even higher than current predictions ..."

The researchers found that storms in the middle latitudes both south and north of the equator had shifted toward the poles, and that the tops of the highest clouds had also moved upwards.

"That matches the scariest predictions created by computer climate models" Norris said.

But the growing list of concerns for humans and other species currently inhabiting the planet is not limited to global temperature rise.

A host of social, economic and environmental factors now threaten to converge, any one of which -- or a combination -- could imminently threaten life as we know it here on Planet Earth.

These include:

NUCLEAR POWER

The ongoing proliferation of nuclear power, both internationally and domestically -- with its accompanying waste (and no effective storage), accidents and radiation exposure does not bode well for species survival.

Earthquakes threaten all nuclear power plants and increasingly warmer temperatures mean nuclear plants will lack essential cooling water, while a single terrorist event could collapse the entire society if it involved a nuclear facility.

Federal state and local governments have in the past been overwhelmed in the face of catastrophic

events requiring mass relocation, food and water shortages etc., and there is no viable plan in the event of loss of commerce -- local or national -- and/or habitable areas.

HYDRAULIC FRACTURING (FRACKING)

The growing--and virtually uncontained -- number of hydraulic fracturing sites across the US, with their climate disrupting methane emissions, are already poisoning air, food and water. We are seeing an alarming increase in reports of poisoned water in rivers, oceans and aquifers, of which many can be directly attributed to the growth in fracking -- oil and gas.

RESOURCE DEPLETION

Hotter and colder extremes mean increases in A/C and heating consumption, while ongoing deforestation exacerbates green house gas, climate disruption and loss of species.

SECURITY ISSUES

Climate disruption is already causing crop failures and food security issues, and Genetically Modified Organisms (GMOs) and glyphosate (a broad-spectrum systemic herbicide and crop desiccant) are causing continuous crop failures, health consequences and species/environmental decline - no bees, no people.

Meanwhile, ongoing global conflicts over natural resources escalate homeland security concerns;

CHANGING SEAS AND SHIFTING WEIGHTS

Rising sea levels mean low lying coastal cities will be inundated, requiring relocation of many millions of people and causing loss of habitat;

Ocean acidification, pollution, ongoing fallout from Fukushima, over-fishing. (Current projections warn that all ocean fish could disappear by 2030).

It is not known how changing the distribution of weight on earth due to melting ice sheets will unfold, nor do we understand how this redistribution will impact seismic activity.

THE UNKNOWN POTENTIAL OF INACTION

Regional climate changes are shifting the boundaries for more virulent diseases and species such as mosquitoes, while pre historic viruses continue to be released from melting permafrost for which humans have no immunity.

It's worth mentioning as well that unforeseen "black swan" events or accidents are bound to occur in a time where so many variables are at play, and these have very unpredictable outcomes.

Widening economic disparity -- "all against all" wars, increasing mass shooter violence and mental illness are all on the upswing, along with (antibiotic resistant) pandemic illnesses exacerbated by depleted immune systems and resources.

And, when it comes to convergence, this is just the "short list" of factors that threaten to disrupt "life as we know it" here on our fragile planet. This convergence could occur today, tomorrow or ten years from now. But, in the absence of immediate mitigatory action, it will happen. That, we can count on.



EDITOR'S DESK



Here at SolarTimes, we work hard to offer sustainable solutions in an inherently unsustainable economic culture

This dilemma is one we think about a lot.

We live in a culture of mass denial -- one which seems all but

inextricably woven into the fabric of our societal habits. And SolarTimes finds it worrisome that, even at this late date, the vast majority of "consumers" continue to live their lives as if oblivious to the inherently unsustainable and omniscidal nature of their actions -- and that these actions take place within the context of an economy that thrives on unlimited growth.

We find it more than concerning, for instance, that none of the 2016 presidential candidates -- with the possible exception of the Green Party's Jill Stein -- appears even remotely concerned with rampant consumerism as an economic imperative of capitalism.

It concerns us as well that none of the candidates appears even close to questioning the basic (and demonstrably erroneous) assumption that consumerism and infinite growth on a planet of finite resources is a sustainable economic model.

Because this is the lens through which SolarTimes views the world, our message, as well as that of One World Coop/McCune Solar Works, stands in direct contrast to the presidential candidates' rhetoric. And our products reflect that attitude.

For myriad reasons, not the least of which I've laid out above, the outlook for a "livable future" now appears grimmer by the day. More and more it begins to seem as if runaway climate change, resource depletion, habitat destruction, endless war, vast (and growing) disparities in income and lifestyles, etc. are only manifestations of a far more insidious and deeply rooted flaw in the human species.

That flaw is exacerbated by a cultural sickness which plagues primarily western capitalist cultures, known as "consumerism," and is spread via political leaders, educational institutions and non-stop, cradle-to-grave propaganda.

Whether or not this sickness ultimately proves fatal to the species remains to be seen. What is certain is that if there is to be anything resembling a "livable future" where humans and other living things are concerned, we will require an entirely new economic model.

Recently, I posted a piece on SolarTimes' Facebook page, authored back in 2014 by economist, teacher, author and environmental researcher Richard Heinberg. I did this in hopes that resurrecting it might also resurrect a long over-due conversation on the subject of economic growth.

And while I am beginning to think that the planet and those who inhabit it may have passed too many tipping points to create a "future to believe in," it may just be possible that, with the kinds of actions we talk about here at SolarTimes -- and promote with our Boycott Ecocide campaign -- we can at least buy a little more time.

<http://www.postcarbon.org/how-to-shrink-the-economy-withou.../>

www.mccunesolarworks.com

www.oneworld.coop

by Greg Mello

The Crisis at Hand, the Emergency Mode, and the Need for Full-Scale Mobilization

What is the purpose of our life in this world? Why are we here? What is the goal of our work and all our efforts? What need does the earth have of us? It is no longer enough, then, simply to state that we should be concerned with future generations. We need to see that what is at stake is our own dignity. Leaving an inhabitable planet to future generations is, first and foremost, up to us. The issue is one which dramatically affects us, for it has to do with the ultimate meaning of our earthly sojourn ... Our inability to think seriously about future generations is linked to our inability to broaden the scope of our present interests.

[Encyclical of Pope Francis, "Laudato Si: On Care of Our Common Home"]

There are many ways to enter the healthy "emergency mode" we need. As the old gospel song says, there are twelve – which is to say many – "gates to the City."

We can pour efforts into building renewable infrastructure and the new or transformed institutions we need. We can educate ourselves and others. We can protect vulnerable people, species, and places. We can resist the empire of violence in all its forms, stop its predations one at a time, and in the process change ourselves and our society.

We must do all of these.

What do we mean by the "emergency mode," and why is it essential? Why do we need "full-scale mobilization?"

As Margaret Salomon writes on her excellent web site, theclimatopsychologist.com/, the "emergency mode" is what all healthy people and groups switch into when there is a life-threatening crisis. Emergency mode occurs when an individual or group faces an existential threat, accepts that there is a life-threatening emergency and reorients by:

- Adjusting their hierarchy of priorities so that solving the emergency is the clear top priority;
- Deploying a huge amount of resources toward solving the crisis; and
- Giving little priority to personal gratification and self-esteem enhancement for their own sake, and instead seeking them through engagement with the emergency. People seek to "do their part" to solve the crisis and build their skills to contribute more effectively.

There is no greater crisis, in all of human and post-Cretaceous ecological history, than the climate crisis we

Greg Mello is the Secretary, Executive Director and co-founder of the Los Alamos Study Group (LASG). He spends most of his time doing policy research, environmental analysis, congressional education and lobbying. In his spare time he is active in community organizing, litigation, advertising, and the nuts and bolts of running a small nonprofit. Greg has served as a consulting analyst and writer for other nuclear policy organizations.

He was educated as an engineer (Harvey Mudd College, 1971) and regional planner (Harvard, 1975). He led the first environmental enforcement at LASG. In 2002 Greg was a Visiting Research Fellow at Princeton's Program on Science and Global Security. Greg's research, analysis, and opinions have been published in the New York Times, Washington Post, The Bulletin of the Atomic Scientists, Issues in Science and Technology, in the New Mexico press, and elsewhere.

face today. That crisis is wrapped up with parallel crises of capitalism, resources, and war – just to identify three strands in the Gordian knot we face. Like Alexander, we need to cut the knot, not just pick at it.

A healthy response to the emergency we face means taking appropriate action and staying connected – with

the collapse of civilization, killing billions of people, and millions of species. These horrific outcomes await us during this century, possibly even in the first half of it if things truly slip out of control.

This is not a matter of "protecting the planet for future generations" but protecting our own lives and those of the people we care about.

We are in danger now and in coming years and decades. The climate crisis is, far and away, our top national security threat, top public health threat, and top threat to the global economy.

As if this weren't enough, there are even more reasons to "get with the program."

As it turns out, the very gradual reform of our present energy-hogging, climate-destroying arrangements is not just an "enervated" approach that won't work. It is also not possible. It won't happen. We are not just facing a climate crisis, by itself. We are facing a multifaceted environmental and social crisis, a crisis in war and peace, a crisis in democracy, and more.

There are thresholds in all these we do not want to pass, thresholds after which recovery could be difficult – and full-scale energy transition, impossible. We must therefore mobilize while we can, before the emergency comes to us as an overpowering storm.

One critical aspect of our predicament involves oil. By itself, without considering other problems, our oil dependence is bringing an early end to "business as usual."

No, we are not running out of oil. That's not the problem. We are running out of oil acquired cheaply enough in terms of net useful energy. Our economy grows on energetically-cheap oil. This kind of oil is now in the rear-view mirror, a momentous fact. It means real economic growth is over. The catch is that our economy as it is currently organized must grow in order to function at all, because of debts.

Only a fraction of the energy in each barrel of oil does useful work for society as a whole. Still less supports new investment. A large and increasing fraction goes to maintaining the oil industry, including finding and producing more oil and providing everything employees need. Without paying those bills, the oil industry would cannibalize itself. It is starting to do that right now.

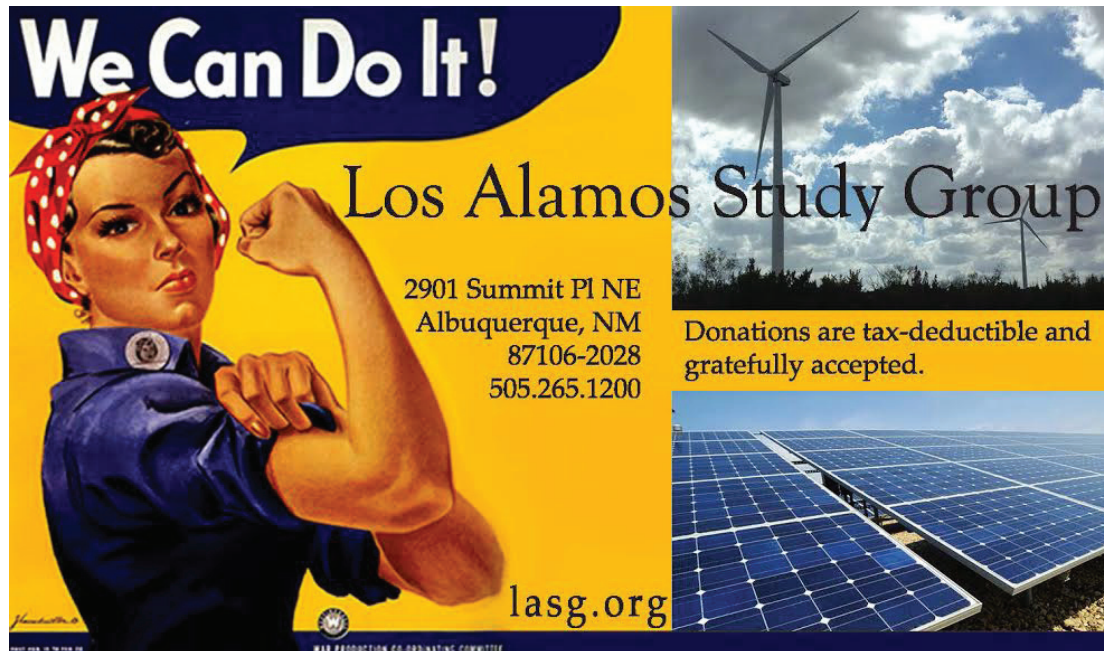
A significant fraction of each barrel is wasted as heat. Mr. Carnot, in 1820, told us the theoretical maximum efficiency we could achieve in any engine. The rest of the barrel – if anything is left – supports growth. We are scraping the bottom of the net oil barrel.

Any complex oil-based capitalist economy needs to be supplied with oil obtained very efficiently. That isn't happening, and it will never happen again. We've pretty much run through all the easy oil. "Tight oil" produced by fracking and bitumen from oil sands don't pay for themselves. The rest of society subsidizes these industries, in net useful energy terms.

The upshot is, first of all, that we have to leave oil before it leaves us, and second, we can't count on economic health henceforth. We certainly can't tolerate the vast misallocations of money, energy and attention embodied in our global empire, not even considering all its other risks and costs. That empire currently costs in the neighborhood of \$5,000 per household per year. What fraction of that should we bill to the oil industry?

We don't have the luxury to gradually build out solar, wind, tidal, and geothermal generation facilities until we have substituted all of these "cleaner" energy sources for the dirty ones we have, from either the climate or the oil perspectives.

We don't have time.



reality and to each other. Dysfunctional responses include endless distractions, despair, and any of the numerous policy fantasies available to us at little cost. What many people don't understand is just how rewarding the emergency mode can be. Salomon quotes Mihaly Csikszentmihalyi, who pioneered study of what he called "flow states:"

That is, being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought follows inevitably from the previous one. Your whole being is involved, and you are using your skills to the utmost. The best moments in our lives are not the passive, receptive, relaxing time

The best moments usually occur if a person's body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile.

When applied to our human and ecological responsibilities this experience is not some attempted transcendence out of the world, or a hobby, or a sport. It is transcendence into the world, the path of maturity and fulfillment since time immemorial.

As Salomon rightly says, people very much like being "in the zone," utilizing their entire capacity, whether they are playing sports, performing musically, studying intensely, or responding to an emergency." "It is," someone said, "the church of what is happening now."

Nanao Sakaki sings,
**Farming the ancient way
Singing with coyotes
Singing against nuclear war—
I'll never be tired of life.**

Salomon points out that the "emergency mode," like the normal mode, is contagious. "We must," she points out, exit normal mode and abandon the gradual policy advocacies and enervated emotional states that accompany it. Instead, we must seek to restore a safe climate at emergency speed. To accomplish this, the climate movement must lead the public into emergency mode. First we must go into emergency mode ourselves, and then communicate about the climate emergency and need for mobilization with clarity, dedication, and escalating assertiveness.

In order to lead people into emergency mode, it is critical that the emergency threat is paired with an emergency solution (whenever it is available). First and easiest, the climate movement must fully adopt the language of immediate crisis and existential danger. We must talk about climate change as threatening to cause

Continued on back page ...

ONE WORLD CO-OP

Summer, 2016

McCune SolarWorks & One World Co-op: Products and Services



PV STOR™ and the 10-3 Autonomous Energy System

For sustainability and security, Solar PV and energy storage combined are the Holy Grail.

Here at McCune, we looked for ways to provide the highest quality, longest-lived components for a sovereign energy system, and we discovered the best PV modules available -- Canadian Solar glass/glass modules. Although these modules come with a 30 year warranty, we think they will last 100 years.

During the course of our extensive research and battery chemistry testing, McCune found that Lithium Ion has fire and hazmat disposal risks, lead acid a short hazardous life, and salt, though safe, is incredibly heavy.

Lithium Iron Phosphate is the best solution. It has no fire danger, requires no maintenance, has a longer life with better charge/discharge properties, and is not made with hazardous materials.

While other companies are still selling lithium ion, lead acid, salt etc., our customers get the most sustainable system available in the energy market today. We've combined our PV and battery storage with state of the art charge controllers, inverters and electronic components for the lowest cost installations and Do-it-Yourself friendly to those with an interest in saving money and taking responsibility for their own energy needs. For those without the skills, time or ability to install themselves, the simplicity of the configurations make for less expense and time in hiring professional installers. Either way you save money.

McCune does not promote grid-tied Solar PV installations because it is an investment in centralized grid energy which is not sustainable. Instead, we advocate for a grid parallel system -- you keep your utility meter and run your solar and battery storage in parallel. That way, you don't need the utility's permission to install your energy system. All you need is an electrical permit for the wiring to your household panel and circuits.

Any financial benefit to grid-tie systems will disappear

soon, and in a traditional grid-tied installation, your inverter must shut off all but one 1500 watt emergency circuit for you to run an extension cord to your kitchen, leaving the rest of your solar PV energy unavailable.

What good is that in an extended emergency and what right does an energy company have to assert such limitation? Energy companies have been notorious stewards of environment and totally irresponsible for any effective cleanup or waste management.

The 10-3 Autonomous Energy System is a 10KWH LifePo4 Battery system with 3000 watts of Solar PV. It will provide for a very sustainable level of energy for a conserving household. The PV STOR™ battery system can be added onto to provide more hours of storage. The included inverters and other equipment allow additional solar modules to be added as well without removal and replacement of existing equipment, ensuring your energy investment will not be obsolete in a few years.

PV STOR™ Specs:

- **Warranty: Ten years [prorated]**
- **Efficiency: 92% to more than 96%.**
 - **Depth of Discharge: 86%**
 - **Voltage: 48-53 Volts (VDC)**
- **Current: 200 Amperes (A) maximum current available, 500 A surge current for 10 seconds**
 - **Single phase and 3-phase systems compatible**
- **Operating Temperature: 40 degrees C to 50 degrees C**
 - **Enclosure: Rated for indoor installation**
 - **DIY installation, plug and play. *Electrical connections must comply with the National Electric Code and local jurisdictions.**
 - **Weight: 220 pounds**
 - **Dimensions: 35 3/4" X 17 1/8" X 14 1/2"**
 - **Certification: Excepting batteries, all components U/L certified.**

Put the Squeeze on Bad Energy

At McCune Solar Works and One World Co-op, we aggregate high quality materials/methods and our own proprietary technology into long lasting, safe and affordable product solutions to energy production and green living.



One World Co-op Store:

A member buying club with available emergency/mitigation products, green living products and a wish list for accumulating group purchasing on specific product requests.

(More information at www.oneworld.coop)

Products include

- Parallel/Off-grid, Stand-alone PV Production System
- LiFePO4 Battery System
- Step by step Do-It-Yourself (DIY) instructions, or use one of our recommended certified installers

Services include

Conservation:

With conservation a solar PV and battery storage system can be acquired for well under \$20k. We help you achieve a consumption level that will make your energy production system affordable.

Budgeting Assistance:

- Lay away Plan
- Financing options
- Incremental buying of Energy System components

Planning Assistance

- Plan your time of day consumption
- Plan location of energy production and configuration
- Plan to be without grid power
- Plan for energy sovereignty, in your home and community
- Interactive energy calculator

Local Activism

- We give you the tools to set an example with your own conservation practices;
- We'll help you interact with your local government official and regulators;
- We supply free document templates for local micro-grid creation and state filing;
- By joining One World Coop, you'll be promoting the concept of local cooperatives;
- We encourage you to support your local farmers, grocers, solar companies, book sellers, and any locally owned businesses and non-profits;
- We'll help you learn about microgrids and community-owned energy production;
- Members of One World Co-op participate in funding and income from all community power cooperatives planned by One World Co-op
 - One World Co-op will help any community or neighborhood to form their own Power Cooperative.

We Ship Anywhere!

To order, visit www.oneworld.coop or www.mccunesolarworks.com

Phone: 505 242-2384 or call our toll-free line: 866 622-8630

or email: mccune@mccuneworks.com

One World Co-op Member Services:



- **Workshops (Sliding Scale)**
- **FREE subscription to SolarTimes newspaper**
 - **Tips on mitigation and sustainability**
 - **Library of survival resources**
 - **DIY recipes and project plans**
 - **Green Building guidance**
 - **Green living resources and information**
 - **Consumption analysis**
 - **Conservation tips**
 - **Free interactive energy calculator**
 - **Articles from guest activists/experts**
- **Volume purchasing of green living and green energy products**
 - **Ongoing efforts in ecocide aversion**
 - **Organic living resources**
 - **Community building programs**
 - **Yearly Dividends**

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ONE WORLD CO-OP

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SolarTimes

TAKE BACK THE POWER! SUSTAINABLE LIVING SIMPLY PUT

WALKING the TALK

From making your own bar soap to building your own greenhouse, sustainability is as simple and doable as planting a seed. One need only learn, do the research, acquire some basic skills, adhere to some rules of safety and self-reliance is within reach.

The examples on this page are a small sampling of the ways you, your family and/or an entire community can take meaningful action to reduce carbon footprint, mitigate the impacts of accelerating climate change and increase the odds of meaningful survival in the event of a catastrophic event or convergence of events.

Pictured here (top left), Nok McCune makes soap with a “no heat” method that uses no gas or electricity, while Elle McCune sorts her organic seeds (some saved from prior years), labels, and plants seedlings (top right).



Elle McCune sorts her organic seeds (some saved from prior years), labels, and plants seedlings

Below (left), Elle puts together the foundation of a greenhouse, and (right) reaps the rewards of her efforts

The McCune’s plan to grow food year-round within the greenhouse environment to insure food security and provide healthful organic food for the family.

Committed to reducing consumption, the McCune family generates less than 1 cu ft of trash per week and about the same in recycling most of the time.

Making things that usually come from the store saves money. The homemade McCune laundry detergent costs about \$2 for a 6-8 month supply, and eliminates the need to continually recycle plastic containers.

By maintaining a backup emergency food storage the McCunes eliminate spontaneous trips to the store, as the food needs to be cycled through anyway, thus reducing burning additional fossil fuel by running nonessential errands. Errands are aggregated and driving routes planned for the least consumption of resources.

The family has reduced its electricity consumption to almost 1/3 the national average of 900+ kwh/mo/ household.

Rule of Thumb: Reduce, Re-purpose, Re-use, THEN Recycle



Nok McCune mixing the ingredients for bar soap
*Note safety equipment



Elle McCune fastens the first pieces of the McCune family’s greenhouse foundation



Elle enjoying her work maintaining the “individuals” growing within her greenhouse

SolarTimes



IT'S YOUR CHOICE -- FOR NOW

The Fossil Fuel Industry Continues to Lie, while Accidents Just Keep Happening

A massive fracking explosion in New Mexico this July caused 36 oil tanks to catch fire

On July 11, in the wake of massive protests and warnings this summer by environmentalists over the destruction caused by oil bomb trains, an oil field in San Juan County, New Mexico exploded, and erupted in flames. The incident underscored yet again the ongoing and increasing dangers of the fossil fuel industry.

According to local news sources, the fire broke out around 10:15 PM on an otherwise calm Monday evening at a fracking site owned and operated by WPX Energy, setting off several explosions and temporarily closing the nearby Highway 550. Fifty-five local residents were forced out of their homes.

The photo below features the aftermath of a pipeline explosion which severely injured a man earlier this summer in Pennsylvania.



Kerry Jobe via AP

Below, SolarTimes lists some of the more significant oil & gas accidents occurring in just the first half of 2016. These represent only a small subset of reported incidents:

- January 2: Three people were injured, and numerous homes damaged in Oklahoma City, when gas leaked from a weld seam on the gas main entered a home.
- January 9: A 30-inch Atmos Energy gas transmission pipeline exploded and burned in Robertson County, Texas. 4 families were evacuated.
- February 16: An explosion and fire at a gas plant in Frio County, Texas. 2 employees at the plant were injured.
- On April 2, the TransCanada Corporation Keystone Pipeline was observed by a local resident to be leaking, near Freeman, South Dakota. The cause was a crack in a girth weld, and amount of tar sands dilbit spill was about 1,700 gallons.
- On April 12, a pipeline at a gas plant in Woodsboro, Texas exploded, killing 2 men, and injured another worker.
- On April 17, a petroleum products pipeline failed in Wabash County, Illinois, resulting in a massive oil slick across the Wabash River. Some 48,000 gallons of diesel fuel was spilled.
- On April 29, a 30-inch pipeline owned by Texas Eastern/Spectra Energy exploded, injuring a man, destroying his home and damaging several others. The incident was reported in Salem Township, Westmoreland County, Pennsylvania.
- On May 20, a Shell Oil Company pipeline leaked near Tracy, California, spilling about 21,000 gallons of crude oil.
- On June 23, a Crimson Pipeline crude oil line leaked in Ventura County, California. Final reports estimate 45,000 gallons of crude were spilled.

<https://stateimpact.npr.org/pennsylvania/2016/04/29/1-injured-after-gas-pipeline-explosion-in-western-pa/>
https://en.wikipedia.org/wiki/List_of_pipeline_accidents_in_the_United_States_in_the_21st_century

ONE WORLD CO-OP

Summer, 2016



GOOD ENERGY UPDATES

Microgrids: The Future of Energy Democracy

A microgrid is a discrete energy system which utilizes distributed energy or distributed generation (DG) -- ideally from clean, renewable sources.

The beauty of microgrids is that they provide a closer proximity between

power generation and power use than traditional electrical grids. This is key to their efficiency, since power loss, also known as "line loss" during transmission



and distribution (T&D) can be as high as thirty percent, according to the Electrical Engineering Portal (EEP).

Simply put, the more miles electrons must travel through the transmission grid, the higher the power or "line loss" that is incurred.

Microgrids integrate with renewable energy sources such as solar, wind, small hydro, geothermal and combined heat and power (CHP) systems.

These autonomous systems include demand management, storage, and generation -- and loads capable of operating in parallel with, or independently from, the main power

grid. Microgrids capable of operating independently from the transmission grid are known as "islanded microgrids."

In the context of an energy revolution or Energy Democracy, "islanded microgrids" are ideal, since these autonomous systems

can ensure clean, local, reliable, and affordable energy security for urban and rural communities. Islanded or not, microgrids can offer clean solutions for commercial, industrial, and

federal government consumers. Other benefits of microgrids include lowering greenhouse gas (GHG) emissions and lowering stress on the transmission and distribution system.

The University of California San Diego's microgrid (pictured here) produces 92 percent of its annual electricity load and 95 percent of its heating and cooling load. A fuel cell powered by directed biogas is a cornerstone of the operation.

In Sonoma Valley, California, a unique microgrid experiment is taking place.

The project has potentially far-reaching implications.



The Stone Edge Farm microgrid can operate as an island completely independent of the larger regional electrical grid, or it can be fully integrated into that regional grid as either an energy user or energy supplier. As such, it provides a potential model that can be replicated in other locations and could provide redundancy and resiliency in the event that the larger regional grid is disabled or shut down by unforeseen events.

Sources for this article included, but were not limited to:
<http://electrical-engineering-portal.com/total-losses-in-power-distribution-and-transmission-lines-1>
<http://www.generalmicrogrids.com/#!about-microgrids/c1r3e>
<http://sonomasun.com/2016/07/16/sonoma-valleys-very-own-micro-grid/>

CRACKS IN TESLA BUSINESS PLAN GROW DEEPER, WIDER

by Chuck McCune

Here at SolarTimes, McCune Solar Works and One World Co-op, we are at once proponents and critics of Tesla.

Not as a business, or a product, or even in our position as an asymmetrical competitor in energy, but as a societal phenomenon, where a complacent society now looks to Musk and Tesla to solve its energy and environmental crisis.

So, we say with tongue firmly planted in cheek, that in the adjacent photo, Musk might be praying for consumers to conserve energy, so that he might become the messiah for which many in the environmental movement are waiting.

Complacent consumers can now justify waiting to go renewable while Tesla births it babies, rather than do the work to cut consumption, so that renewable goals can be realized.

As competitors, we welcome any Tesla development kicking down the doors of obstruction to Energy Democracy, even as Tesla invests in grid tied dependence, furthering US investment in centralized "power."

McCune views Elon Musk as a very smart business man, a visionary with a great deal of forward thinking capability. And since we also look at our energy future through the eyes of business futurism we think that

if Musk were to pray for a "Solutions Project," (an environmental group of which Musk is a member) he should also pray for the capital to enable him to build the required production capacity to meet those 2050 goals of 100% renewable energy -- which would require not one, but some 500 Giga-factories.

Here, it is appropriate to look at our ability as an industry to meet the consumption requirements of the world in the context of supply and demand. And it is a matter of well-recognized fact that our supply cannot meet our current demand within a reasonable time frame to avert environmental calamity.

This is not to say that most renewable energy companies won't prosper over the coming decade by offering quality products and engaging in honest business practices and responsible customer service.

It is simply to say that under the weight of our current demand for energy we won't get to provide the energy needed in the future -- because we can't even catch up with the overwhelming demand as it is.

With the influx of Electric Vehicles on the market, our energy demands actually increase at the electric meter. And, as evidenced in a 2007 PBS interview, Musk suggested that the US build more nuclear power generation, confirming his awareness that current consumption cannot be met with current renewable production capability.

So what do we do? Well, we lead by example. We demonstrate to ourselves and to others that austere cuts in our energy consumption are not only necessary -- but entirely possible.

We conserve and use less energy now, or live with much less energy later.

Chuck McCune is the founder and CEO of McCune Solar Works and co-founder of the Prizm Foundation (<http://www.prizm.org/>). He is a longtime social justice, clean energy and environmental activist, as well as a fierce advocate for Energy Democracy.



ONE WORLD CO-OP

Summer, 2016

TAKE BACK THE POWER!

TRANSFORMATION BEGINS HERE:



2013 Average Monthly Bill- Residential

(Data from forms EIA-861- schedules 4A-D, EIA-861S and EIA-861U)

State	Number of Customers	Average Monthly Consumption (kW ^h)	Average Price (cents/kWh)	Average Monthly Bill (Dollar and cents)
New England	6,221,890	648	16.22	105.09
Connecticut	1,454,963	752	17.55	132.07
Maine	704,775	551	14.35	79.13
Massachusetts	2,708,759	638	15.83	100.97
New Hampshire	603,628	629	16.33	102.66
Rhode Island	438,198	602	15.20	91.48
Vermont	311,567	569	17.14	97.45
Middle Atlantic	15,761,832	706	15.70	110.88
New Jersey	3,461,109	687	15.73	108.10
New York	7,027,866	602	18.79	113.16
Pennsylvania	5,272,857	857	12.79	109.66
East North Central	19,652,153	797	12.14	96.77
Illinois	5,120,607	755	10.63	80.19
Indiana	2,771,260	1,005	10.99	110.44
Michigan	4,265,264	665	14.59	96.95
Ohio	4,875,346	892	12.01	107.07
Wisconsin	2,619,676	703	13.55	95.21
West North Central	9,145,587	969	10.94	106.03
Iowa	1,343,500	909	11.05	100.41
Kansas	1,222,985	926	11.64	107.85
Minnesota	2,329,734	817	11.81	96.51
Missouri	2,708,934	1,086	10.60	115.21
Nebraska	810,867	1,034	10.31	106.65
North Dakota	348,486	1,205	9.12	109.85
South Dakota	381,081	1,055	10.26	108.21
South Atlantic	26,256,056	1,088	11.39	123.93
Delaware	403,519	944	12.95	122.25
District of Columbia	235,322	720	12.57	90.51
Florida	8,756,322	1,078	11.27	121.53
Georgia	4,101,351	1,088	11.46	124.67
Maryland	2,218,948	1,031	13.25	136.63
North Carolina	4,268,019	1,098	10.97	120.52
South Carolina	2,135,432	1,124	11.99	134.86
Virginia	3,273,502	1,156	10.84	125.36
West Virginia	863,641	1,118	9.52	106.44
East South Central	8,093,582	1,210	10.40	125.91
Alabama	2,158,898	1,211	11.26	136.36
Kentucky	1,935,245	1,154	9.79	112.95
Mississippi	1,260,892	1,220	10.78	131.49
Tennessee	2,738,547	1,245	9.98	124.25
West South Central	14,998,178	1,180	10.74	126.75
Arkansas	1,339,680	1,133	9.59	108.64
Louisiana	2,011,044	1,273	9.43	119.98
Oklahoma	1,693,151	1,142	9.67	110.47
Texas	9,954,303	1,174	11.35	133.33
Mountain	9,162,929	876	11.31	99.15
Arizona	2,630,595	1,049	11.71	122.85
Colorado	2,169,365	712	11.93	84.91
Idaho	680,930	1,055	9.32	98.35
Montana	477,266	860	10.33	88.85
Nevada	1,094,770	924	11.89	109.94
New Mexico	865,195	655	11.68	76.56
Utah	981,194	798	10.37	82.79
Wyoming	263,614	894	10.16	90.85
Pacific Contiguous	17,890,314	674	13.48	90.84
California	13,359,503	557	16.19	90.19
Oregon	1,650,803	976	9.90	96.58
Washington	2,880,008	1,041	8.70	90.55
Pacific Noncontiguous	699,661	561	28.56	160.32
Alaska	277,275	632	18.12	114.56
Hawaii	422,386	515	36.98	190.36
U.S. Total	127,882,182	909	12.12	110.20

Boycott Dirty Energy

Guide to reducing power consumption:

Look at the chart, look at your electric bill, and get busy cutting your consumption

- Use LED Bulbs
- Shut down A/C whenever possible and/or limit to smaller part of home
- Don't use dishwasher
- Limit clothes dryer usage
- Avoid purchasing products with excessive packaging
- Combine errands when driving
- Keep backup disaster food to eliminate running to store



- Grow an organic garden if possible -- and compost
- When baking cook more than one thing while oven is on
- Unplug phone chargers and other phantom loads when not in use
- Use power strips to disconnect multiple phantom loads
- Use vacuum carafe for coffee and shut off coffee maker after brewing
- Shut down computer when not in use
- Install solar - even if only small charger panels for phones, computers etc., use solar garden lights - bring in at night
- Don't buy plastic bags for food storage
- Buy in bulk when possible
- Don't eat meat, especially factory farm meat, (huge green house gas/water problem)
- Don't buy anything you don't need!!

ONE WORLD CO-OP

Summer, 2016

SolarTimes



Transformation, Evolution and Energy Democracy

Interactive Energy Calculator

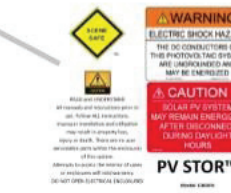
(Use for analyzing consumption and planning for conservation.)

- Enter the number of each appliance used in number column
 - Enter number of hours each appliance is used in either/both day and/or night hours column
- (Use decimals for usage under an hour – ie 15 minutes = .25)
 - Graphs and totals populate as data is entered
- Graphs indicate categories of usage/consumption and day/night usage for sizing PV arrays and battery storage

* Online version does not save. Members can download a working interactive model (requires spreadsheet program). Totals are in Day /Night, Daily and Monthly kWh usage.



CanadianSolar



COMPLETE AUTONOMOUS ENERGY SYSTEMS—PV & STORAGE
 OFF GRID — GRID PARALLEL — GRID TIED RETROFIT
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McCune Solar Works Energy Calculator

User Input Fields are this Color

This is a tool to calculate one's power consumption, OR, to analyze a number of what-if conservation scenarios. Check the nameplate ratings of your actual equipment for adjustments. Only the No., Hrs, and Watts for Other equipment accept input from the user. Use whole numbers or decimals rather than fractions i.e. 15 minutes = .25 hrs. Graphs will generate as user input is calculated.

Energy Calculator by Equipment and Time of Usage kWh

Household Utility	No.	Watts	Hrs	Day Time	Hrs	Night Time	Actual Usage Breakdown
Central A/C	1	4500	4	18,000	0	22,500	
Well Pump		1000		0		0	
Boiler/Furnace		700		0		0	
Split System		4500		0		0	
Electric Water Heater	1	1500	1	1,500	1	1,500	
Other		1500	1	0	0	0	
Total				19,500		24,000	

Kitchen Laundry Bath	No.	Watts	Hrs	Day Time	Hrs	Night Time
Electric Clothes Dryer NA	1	4,000	0.2	800	0.2	800
Clothes Dryer Gas		350		0		0
Oven		3,000		0		0
Hair Dryer	1	1,538	0	0.1		154
Dishwasher		1400		0		0
Coffee Machine	1	1,500	2	3,000		0
Microwave		1,500		0		0
Popcorn Popper		1,400		0		0
Toaster oven	1	1,200	0.2	240	0.2	240
Hot Plate		1,200		0		0
Iron		1,100		0		0
Toaster	1	1,100	0.1	110		0
Microwave	1	1,000	0.1	100	0.1	100
Room Air Conditioner NA		1,100		0		0
Vacuum Cleaner		500		0		0
Water heater		479		0		0
Sink Waste Disposal	1	450	0.1	45		0
Espresso Machine		360		0		0
Dehumidifier		350		0		0
Blender		300		0		0
Humidifier		700		0		0
Other				0		0
Total				4,295		1,294

LifeStyle	No.	Watts	Hrs	Day Time	Hrs	Night Time
Exercise Equipment 1/2 HP	1	374	1	374		0
TV	3	200	1	600	5	3,000
Cable Box	1	20	12	240	12	240
Satellite Dish		30		0		0
Stereo		60		0		0
Laptop(s)	3	200	2	1,200	5	3,000
Computer(s)	1	270		0	3	810
Other				0		0
Total				2,414		7,050

Miscellaneous	No.	Watts	Hrs	Day Time	Hrs	Night Time
Telephone		2		0		0
Cell Phone Chrgs	3	4	12	144	12	144
MP3 Player		0.4		0		0
Portable/Ceiling Fan		100		0		0
Portable Heater		1500		0		0
Clock Radio	1	7	12	84	12	84
Other				0		0
Total				228		228

Refrigeration/Freezer	No.	Watts	Hrs	Day Time	Hrs	Night Time
20 cu. ft. (AC)	1	1411 watt-hours/day*	3	235	3	235
16 cu. ft. (AC)		1200 watt-hours /day*	3	0	3	0
15 cu. ft. (Upright)		1240 watt-hours /day*	3	0	3	0
15 cu. ft. (Chest)	1	1080 watt-hours /day*	3	235	3	235
Total				470.33		470.33

Lighting	No.	Watts	Hrs	Day Time	Hrs	Night Time
100W incandescent bulb	6	100		0	3	1,800
25W compact fluor. bulb		28		0		0
8W AC LED	6	8		0	3	144
40W DC halogen		40		0		0
20W DC compact fluor.		22		0		0
CFL Bulb (60W equivalent)		18		0		0
Other				0		0
Total				0		1,944

Tools	No.	Watts	Hrs	Day Time	Hrs	Night Time
Hedge trimmer		450		0		0
Weed eater		500		0		0
1/4" drill		250		0		0
1/2" drill		750		0		0
1" drill		1000		0		0
9" disc sander		1200		0		0
3" belt sander		1000		0		0
12" chain saw		1100		0		0
14" band saw		1100		0		0
7-1/4" circular saw	1	900	1	900		0
8-1/4" circular saw		1400		0		0
Other				0		0
Total				900		0

Total Usage Daily	Day Time	Night Time
	27,807	34,986

Note - Adjust for seasonal appliance usage for each month.
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THE CRISIS AT HAND

Continued from page 2 ...

There's also another problem. It takes energy – in our case mostly fossil fuel energy – to transform infrastructure. It takes energy to make renewable energy hardware and install it. The faster we go and the greater the scale of transformation, the more greenhouse gases we spew.

This isn't to say that we shouldn't undertake the transition. We must do it, and as quickly as possible! But at the same time we must simplify our society's wants, and not just our own, so as to complete the necessary transition as soon as possible.

In this transition we must protect those who even now are being thrown under the bus. "Will this help the poor?" is the first test of any sound policy, as Gandhi taught us.

To make this concrete, consider photovoltaic (PV) systems. The energy return on energy invested (EROEI) for PV installations is estimated variously but appears to lie in the general vicinity of 10.

Assuming this, to produce 25 kilowatt-hours (kWh) of electricity over the life of a system requires investing roughly 2.5 kWh of energy up front to make, transport, and install the system's components.

Supposing a system life of 25 years, that 25 kWh of PV electricity will come in at a rate of about 1 kWh per year. But it will cost 2.5 kWh of energy in the year it is manufactured and installed. Of this, roughly 2 kWh will be fossil fuel energy. Thus in its first year of operation we get 1 kWh of renewable energy, costing 2 kWh of fossil fuel energy the previous year.

Under these assumptions we don't break even until the end of the second year of operation.

Suppose we double PV installations every year, which is the kind of

rapid build-out we need to address climate change. We end up increasing greenhouse emissions every year during the transition. Net progress in reducing greenhouse gas emissions only starts when rapid build-out ends.

This front-end problem applies to all aspects of renewable energy and energy efficiency. Electric cars? They're a net energy and climate sink for the first years because their tremendous embedded costs. Electric cars aren't the future standard, though we will need some. Electric bikes, which use 1% of the resources of cars, might be. That's the direction we are headed, like it or not. Small remains beautiful.

Does it need to be said that nuclear energy, with its great dangers and tremendous embedded fossil fuel costs and greenhouse gas commitments, provides no magical solution either? That is the kind of information its huge price tag is whispering to us, if we would only listen.

We just can't replace all the fossil fuel sources we have now with renewable energy. We can replace some of them, a small fraction as it turns out, and that will have to be enough. We've already used up our safe allowance of greenhouse gases, and we've used up the cheap oil.

The arctic is melting and its ocean absorbing more heat from the sun; our forests are succumbing to beetles and fires and releasing their stored carbon; in a dozen other ways the capacity of earth's ecosystems to buffer and absorb our pollution has been exhausted.

For our own well-being and dignity then, let's work together and build a truly just, sustainable future, while we can.

Links to SolarTimes' Story Sources Can Be found at:
<http://oneworld.coop/resources.htm>

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Summer, 2016