# Community Solar

## Plan Text

The United States federal government should substantially increase Feed in Tariffs for solar power for those below the poverty line in the United States.

## **Inherency**

#### No Feed in tariffs in the US.

Cecilia, 8/7/12, Director of market development for Kyocera Solar, “Feed-In Tariffs: A Good FIT for the U.S. Solar Market”, <http://www.dailyenergyreport.com/2012/08/feed-in-tariffs-a-good-fit-for-the-u-s-solar-market/>, Dil)

The Great East Japan Earthquake and Tsunami of March 2011 was one of the worst natural disasters of modern times. Consequent meltdowns and explosions at the Fukushima Daiichi nuclear power station have left the Japanese people with deep concern about the safety of nuclear power, leading to a fundamental rethinking of their nation’s energy mix. As a result, Japan is now moving toward reduced reliance on nuclear power and much greater use of renewable energy.¶ On July 1, the Japanese government enacted a solar Feed-in Tariff, or “FIT,” enables people who generate solar power to sell that renewable energy back to the grid at a fixed price – a price, in fact, about triple the rate paid by industrial users of Japan’s utility power. Industry analysts expect this new FIT program to stimulate investment of up to $9.6 billion in new solar installations throughout Japan while adding gigawatts of renewable energy capacity.¶ This new incentive has Japan poised to surpass Italy as the world’s second-largest market for solar power, and many believe Japan will even eclipse Germany as No.1.¶ You might be scratching your head at this point, thinking, “Why are Japan, Italy and Germany ahead of the U.S. in adopting solar power?”¶ Much of the answer lies in policy: The U.S. relies on tax breaks to incentivize solar, while the rest of the world uses some variation of the FIT program. The difference is key. A FIT program rewards people who invest in solar energy according to how much power they generate, in kilowatt hours (kWh). A tax incentive rewards solar adopters according to how much money they spent on their system.¶ Under a FIT, the system owner gets paid only for the electricity they produce, thus creating a strong disincentive against technologies that are unproven or don’t perform well over time. The U.S. tax incentive system, by contrast, doesn’t reward the performance of a system at all — only the cost.¶ America’s investment tax credit works poorly for two reasons. First, not everyone who wants the benefits of clean, renewable energy can benefit from tax incentives. Second, since U.S. tax credits are

## Advantage: Poverty

#### Poverty is the worst form of violence; kills more than an ongoing nuclear war

Abu-Jamal, prominent social activist and author, ‘98
A Quiet and Deadly Violence, Sept 19,

It has often been observed that America is a truly violent nation, as shown by the thousands of cases of social and communal violence that occurs daily in the nation.¶ Every year, some 20,000 people are killed by others, and additional 20,000 folks kill themselves. Add to this the nonlethal violence that Americans daily inflict on each other, and we begin to see the tracings of a nation immersed in a fever of violence.¶ But, as remarkable, and harrowing as this level and degree of violence is, it is, by far, not the most violent features of living in the midst of the American empire.¶ We live, equally immersed, and to a deeper degree, in a nation that condones and ignores wide-ranging "structural' violence, of a kind that destroys human life with a breathtaking ruthlessness. Former Massachusetts prison official and writer, Dr. James Gilligan observes;¶ By "structural violence" I mean the increased rates of death and disability suffered by those who occupy the bottom rungs of society, as contrasted by those who are above them. Those excess deaths (or at least a demonstrably large proportion of them) are a function of the class structure; and that structure is itself a product of society's collective human choices, concerning how to distribute the collective wealth of the society. These are not acts of God. I am contrasting "structural" with "behavioral violence" by which I mean the non-natural deaths and injuries that are caused by specific behavioral actions of individuals against individuals, such as the deaths we attribute to homicide, suicide, soldiers in warfare, capital punishment, and so on. --(Gilligan, J., MD, Violence: Reflections On a National Epidemic (New York: Vintage, 1996), 192.)¶ This form of violence, not covered by any of the majoritarian, corporate, ruling-class protected media, is invisible to us and because of its invisibility, all the more insidious. How dangerous is it--really? Gilligan notes:¶ [E]very fifteen years, on the average, as many people die because of relative poverty as would be killed in a nuclear war that caused 232 million deaths; and every single year, two to three times as many people die from poverty throughout the world as were killed by the Nazi genocide of the Jews over a six-year period. This is, in effect, the equivalent of an ongoing, unending, in fact accelerating, thermonuclear war, or genocide on the weak and poor every year of every decade, throughout the world. [Gilligan, p. 196]¶ Worse still, in a thoroughly capitalist society, much of that violence became internalized, turned back on the Self, because, in a society based on the priority of wealth, those who own nothing are taught to loathe themselves, as if something is inherently wrong with themselves, instead of the social order that promotes this self-loathing. This intense self-hatred was often manifested in familial violence as when the husband beats the wife, the wife smacks the son, and the kids fight each other.¶ This vicious, circular, and invisible violence, unacknowledged by the corporate media, uncriticized in substandard educational systems, and un- understood by the very folks who suffer in its grips, feeds on the spectacular and more common forms of violence that the system makes damn sure -that we can recognize and must react to it.¶ This fatal and systematic violence may be called The War on the Poor.

#### Energy poverty is the worst kind of poverty. Solar power can be used, not only by those in cities, but also by those in the country to connect to the grid. It is the best way out of poverty.

Walsh. 2011. Brian Walsh, “The Worst Kind of Poverty: Energy Poverty,” Time Magazine, October 11, 2011. – M.E.

"Lacking access to electricity affects health, well-being and income," says Fatih Birol, the chief economist of the International Energy Agency (IEA). "It's a problem the world has to pay attention to."¶ Fortunately that attention is finally forthcoming. The U.N. has already declared 2012 the International Year of Sustainable Energy for All, and on Oct. 10 the IEA released a special report that details the problem of energy access and outlines how a universal power grid might be financed. The need for clean cooking stoves — 2.7 billion people lack them, an offshoot of the energy-access problem — is rising up the development agenda as well. The experts' analyses about how solvable these problems are is surprisingly sunny: according to the IEA's analysis, it would be possible to achieve universal energy access for the world by 2030 with around $48 billion a year in global investment. "We very much have the capacity to make a difference in this field," says Birol, who has worked for years to call attention to electricity access. No one needs to stay in the dark.¶ At a time when even developed countries are feeling poor — or at least poorer than they once were — $48 billion a year sounds like a fair chunk of change, but it actually only amounts to about 3% of yearly global energy investment, which should give you a sense of just how vast the worldwide energy industry is. But right now the world is falling well short of that necessary target — perhaps $9 billion a year is currently invested in shrinking the energy gap, with much of it coming from foreign aid and other public sources that are unlikely to grow in a straitened global economy. Nearly all of that investment goes toward improving grid access in urban areas, which leaves those in rural villages out of luck. Even if investment rises to $14 billion a year, the IEA expects that 1 billion people will still be without power in 2030. "What's being done now clearly isn't enough," says Birol. [(See photos of power in cities.)](http://www.time.com/time/photogallery/0%2C29307%2C2026653%2C00.html%22%20%5Ct%20%22_blank)¶ And the problem will get worse rapidly thanks to rising oil prices, which could put a crimp in development. It's worth noting that when rich nations were at roughly the same economic stage as developing countries are today, oil cost an average of around $22 per barrel. Though the price has fluctuated recently, the $100-a-barrel threshold is increasingly being crossed. For developing countries that are net oil importers, those high prices can quickly eat up a national budget; oil-import bills in sub-Saharan Africa, for example, went up by $2.2 billion in 2010, more than one-third higher than the increase in official development aid. Environmentalists sometimes welcome higher energy prices as a spur to conservation and efficiency, but that's true mostly in rich countries; in developing, energy-starved ones, high prices can be economically crippling.¶ Beyond ensuring that there's more overall investment in closing the energy gap, there's the question of how the money should be spent. The tendency has been toward big projects — major fossil-fuel plants and electrical transmission lines. That sort of infrastructure can serve cities well, but it's not going to reach the rural villagers that are the most energy-starved — not to mention the fact that it's not the best idea to lock in carbon-heavy power sources in a warming world. That's where renewables might have a practical advantage, as well as an environmental one. Solar power can be installed quickly and cheaply far off the grid, providing enough power for light and basic services — and it's not as if sub-Saharan Africa is lacking for sunlight. With smart and green investment, the IEA believes that achieving universal energy access would increase global carbon emissions by only 0.7% by 2030 — a drop in the climate bucket. "Solar is going to play a huge role in improving energy access," says Birol. "It's one of the best ways to meet challenges off the grid."¶ Energy poverty is, of course, only a piece of larger economic poverty, but it's one of the best ways out of it too. If you need one more reminder of that fact — and of how radical the difference is between the world's haves and have-nots — take a look at a satellite photograph of earth at night, with large swathes of the planet radiating light and other stretches cloaked in darkness, an electric map of wealth and poverty. The very least we can do is wake up to the fact that everyone deserves a light.

## Advantage: Decentralized Energy

#### A small number of profit driven elites control energy

Hoffman and Pippert 5 [Steven M. Hoffman, PhD, Professor of Political Science at the University of St. Thomas in St. Paul, Minnesota, and Angela High-Pippert, PhD, Director of Women's Studies at the University of St. Thomas, and serves on the ACTC Women's Studies Coordinating Committee, “Community Energy: A Social Architecture for an Alternative Energy Future”, Bulletin of Science Technology & Society 2005 25: 387]

The evolution of the industrialized world’s electrical system represents one of the great technological achievements of the 20th century. The articulation of a grid-based system of electrical generation, transmission, and consumption required groundbreaking technical accomplishments in electronics, metallurgy, engineering, and myriad other scientific fields, as well as the development of complex organizational and managerial systems. The grid also required a good deal back from society, including a social structure that paralleled the technical requirements of the system. The greatest of these demands was an autonomous decision-making system run by technical elites largely free from the world of democratic citizenship. As pointed out by Lovins (1977) almost 30 years ago, the so-called hard path required a major “social commitment under centralized management . . . and compulsory diversion [of resources] from whatever priorities are backed by the weakest constituencies” (p. 54). Within the past 20 years, however, technologies have emerged that present the opportunity for a distinctly new type of electricity system based on a range of distributed technologies that were largely uneconomic¶ experiments at the time Lovins first proposed¶ his so-called soft-path-alternative. Today, however,¶ wind energy is a competitive alternative rapidly maturing¶ to the point of becoming a viable baseload option,¶ solar technologies are rapidly declining in cost, and¶ fuel cells continue to be a promising alternative¶ (Sawin, 2004).

#### Elite control of energy leads to violence

Champain 11 [Phil, Director of Programs at the peacebuilding NGO International Alert, “Changing energy provision – a peacebuilding opportunity?”, January]

Consider the conflict management challenges inherent within the system of energy provision based on oil and gas, as depicted in the flow diagram below. The chart illustrates the difficulties involved in managing energy provision in ways which do not lead to tension and violence. The system creates price hikes in electricity and other oil based products for example, preventing access for many; elite capture of oil and gas revenues keeps power in the hands of an unaccountable few; the withholding of oil and gas supplies enables some states to manipulate others; and the extraction of resources is sometimes only possible if large numbers of people are forcibly moved from their homes. These and other factors can lead to violence and instability, inhibiting development and security for vulnerable communities.

#### FITs take power away from large corporations and gives it to communities

Cecilia, 8/7/12, Director of market development for Kyocera Solar, “Feed-In Tariffs: A Good FIT for the U.S. Solar Market”, <http://www.dailyenergyreport.com/2012/08/feed-in-tariffs-a-good-fit-for-the-u-s-solar-market/>, Dil)

Distributing economic development throughout many communities in the same way that distributed generation provides power “close to home.”¶ Because of these obvious benefits, some U.S. municipal utilities are actually creating FIT programs of their own on a voluntary basis. So why is there no active state-wide or national FIT program for the rest of America?¶ The problem seems to lie in a lack of understanding about the benefits of the FIT incentive model. Adopting a national FIT program will require utility companies and policymakers to undergo a paradigm shift. We are accustomed to thinking of wholesale energy in rigid terms, produced only by a central power plant in the middle of nowhere. National or state-wide FIT programs would make it more common for a collection of much smaller systems, integrated seamlessly into rooftops and parking lots, to power city blocks. However, getting there will require a new mentality that allows us to view roof-tops and parking lots as sites for small power plants.¶ FITs allow entire communities to “democratize” their energy production. Anybody can be a power producer. You and I can establish our own solar electricity generation plant on top of our own roofs and realize instant economic benefits. In Germany, church parishioners band together to install their own mini PV farms and sell the energy back to the community. It allows everybody to participate in producing renewable energy — not just those who are hungry for tax incentives

#### **FIT produces a market for decentralized electricity production**

Behles ’12 (Deborah, law prof and clinical attorney at Golden Gate U, "An Integrated Green Urban Electrical Grid," 36 Wm. %26 Mary Envtl. L. %26 Pol’y Rev. 671)

The energy grid structure that most commonly still exists in urban areas, even the areas transitioning to renewable energy, relies on large centralized power generation facilities that transmit and distribute generated energy across long transmission lines. In fact, the initial focus of the renewable energy sector was primarily on constructing large decentralized renewable generation resources. These large renewable resources would still rely on the old grid transmission and distribution system to transport electricity over substantial distances to load centers. More recently, the benefits of distributed generation, or local generation close to load centers, have become more evident. Policymakers in the United States and throughout the world are recognizing the substantial benefit in distributed generation. For example, a recent study predicts that Europe could generate up to forty percent of its energy from decentralized power sources in 2020, which would lead to the displacement of centralized power plants. The prime example of this shift is Germany, which has installed tens of thousands of small distributed generation systems close to load centers. This increased emphasis on decentralized generation is necessary to efficiently transition urban environments away from their fossil-fuel dependence to a new urban grid.

## Advantage: Warming

#### Use of fossil fuels causes warming

**Hansen, Director of the NASA Goddard Institute for Space Studies, 12**

(James, January 30, 2012, “Top Climate Scientist on Need for Clean Energy Action”, http://cleantechnica.com/2012/01/30/top-climate-scientist-on-need-for-clean-energy-action/, 7/17/12, atl)

The threat of human-made climate change and the urgency of reducing fossil fuel emissions have become increasingly clear to the scientific community during the past few years. Yet, at the same time, the public seems to have become less certain about the situation. Indeed, many people have begun to wonder whether the climate threat has been concocted or exaggerated. Public doubt about the science is not an accident. People profiting from business-as-usual fossil fuel use are waging a campaign to discredit the science. Their campaign is effective because the profiteers have learned how to manipulate democracies for their advantage. The scientific method requires objective analysis of all data, stating evidence pro and con, before reaching conclusions. This works well, indeed is necessary, for achieving success in science. But science is now pitted in public debate against the talk-show method, which consists of selective citation of anecdotal bits that support a predetermined position. Why is the public presented results of the scientific method and the talk-show method as if they deserved equal respect? A few decades ago that did not happen. In 1981, when I wrote a then-controversial paper ([http://pubs.giss.nasa.gov/abs/ha04600x.html](http://pubs.giss.nasa.gov/abs/ha04600x.html%22%20%5Ct%20%22_blank)) about the impact of CO2 on climate, the science writer Walter Sullivan contacted several of the top relevant scientific experts in the world for comments. He did not mislead the public by dredging up and highlighting contrarian opinion for the sake of a forced and unnatural “balance”. Today most media, even publicly-supported media, are pressured to balance every climate story with opinions of contrarians, climate change deniers, as if they had equal scientific credibility. Media are dependent on advertising revenue of the fossil fuel industry, and in some cases are owned by people with an interest in continuing business as usual. Fossil fuel profiteers can readily find a few percent of the scientific community to serve as mouthpieces — all scientists practice skepticism, and it is not hard to find some who are out of their area of expertise, who may enjoy being in the public eye, and who are limited in scientific insight and analytic ability. Distinguished scientific bodies such as national science academies, using the scientific method, can readily separate charlatans and false interpretations from well-reasoned science. Yet it seems that our governments and the public are not making much use of their authoritative scientific bodies. Why is that? I believe that the answer, and the difficulty in communicating science to the public, is related to the corrosive influence Academy of Sciences, USA. The paper includes more than 100 scientific references supporting the discussion in my statement below. The abstract summarizing our paper is [posted at the top]. Science, as described in numerous authoritative reports, has revealed that humanity is now the dominant force driving changes of Earth’s atmospheric composition and thus future climate. The principal climate forcing is carbon dioxide (CO2) from fossil fuel emissions, much of which will remain in the atmosphere for millennia. The climate system’s inertia, which is mainly due to the ocean and the ice sheets on Greenland and Antarctica, causes climate to respond slowly, at least initially, but in a very long-lasting way to this human-made forcing. Governments have recognized the need to limit emissions to avoid dangerous human-made climate change, as formalized in the Framework Convention on Climate Change. Despite this, the Kyoto Protocol, established in 1997 to reduce developed country emissions and slow emissions growth in developing countries, has been so ineffective that the rate of global emissions has since accelerated to almost 3%/year, compared to 1.5%/year in the preceding two decades. There is a huge gap between rhetoric about reducing emissions and reality. Governments and businesses offer assurances that they are working to reduce emissions, but only a few nations have made substantial progress. Reality exposes massive efforts to expand fossil fuel extraction, including oil drilling to increasing ocean depths, into the Arctic, and onto environmentally fragile public lands; squeezing of oil from tar sands and tar shale; hydro-fracking to expand extraction of natural gas; and increased mining of coal via mechanized longwall mining and mountain-top removal. Governments not only allow this activity, but use public funds to subsidize fossil fuels at a rate of about 500 billion US$ per year. Nor are fossil fuels required to pay their costs to society. Air and water pollution due to extraction and burning of fossil fuels kills more than 1,000,000 people per year and affects the health of billions of people. But the greatest costs to society are likely to be the impacts of climate change, which are already apparent and are expected to grow considerably. Climate change is a moral issue of unprecedented scope, a matter of intergenerational injustice, as today’s adults obtain benefits of fossil fuel use, while consequences are felt mainly by young people and future generations. In addition, developed countries are most responsible for emissions, but people in less developed countries and indigenous people across the world are likely to be burdened the most while being least able to adapt to a changing climate. The tragedy of human-made climate change, should the rush to exploit all fossil fuels continue, is that transition to clean energies and energy efficiency is not only feasible but economically sensible. Assertions that phase-out of fossil fuels would be unacceptably costly can be traced to biased assumptions that do not account for the costs of fossil fuels to society or include the benefits of technology innovations that would emerge in response to an appropriate price on carbon emissions. Fossil fuel emissions so far are a small fraction of known reserves and potentially recoverable resources, as shown in Figure 1. There are uncertainties in estimated reserves and resources, some of which may not be economically recoverable with current technologies and energy prices. But there is already more than enough fossil fuel reserve to transform the planet, and fossil fuel subsidies and technological advances will make more and more of the resources available. Burning all fossil fuels would create a different planet than the one that humanity knows. The paleoclimate record and ongoing climate change make it clear that the climate system would be pushed beyond tipping points, setting in motion irreversible changes, including ice sheet disintegration with a continually adjusting shoreline, extermination of a substantial fraction of species on the planet, and increasingly devastating regional climate extremes. Phase out of fossil fuel emissions is urgent. CO2 from fossil fuel use stays in the surface climate system for millennia. Failure to phase out emissions rapidly will leave young people and future generations with an enormous clean-up job. The task of extracting CO2 from the air is so great that success is uncertain at best, raising the likelihood of a spiral into climate catastrophes and efforts to “geo-engineer” restoration of planetary energy balance. Most proposed schemes to artificially restore Earth’s energy balance aim to reduce solar heating, e.g., by maintaining a haze of stratospheric particles that reflect sunlight to space. Such attempts to mask one pollutant with another pollutant almost inevitably would have unintended consequences. Moreover, schemes that do not remove CO2 would not avert ocean acidification. The pragmatic path is for the world to move expeditiously to carbon-free energies and increased energy efficiency, leaving most remaining fossil fuels in the ground. Transition to a post-fossil fuel world of clean energies will not occur as long as fossil fuels remain the cheapest energy in a system that does not incorporate the full cost of fossil fuels. Fossil fuels are cheap only because they are subsidized directly and indirectly, and because they do not pay their costs to society. Costs of air and water pollution caused by fossil fuel extraction and use, via impacts on human health, food production, and natural ecosystems, are borne by the public. Similarly, costs of climate change and ocean acidification will be borne by the public, especially by young people and future generations.

#### **Warming causes extinction**

**Tickell, Climate researcher 2008**

(Oliver, Climate Researcher, The Gaurdian, “On a planet 4C hotter, all we can prepare for is extinction”, 8-11, http://www.guardian.co.uk/ commentisfree/2008/aug/11/ climatechange)

We need to get prepared for four degrees of global warming, Bob Watson told the Guardian last week. At first sight this looks like wise counsel from the climate science adviser to Defra. But the idea that we could adapt to a 4C rise is absurd and dangerous. Global warming on this scale would be a catastrophe that would mean, in the immortal words that Chief Seattle probably never spoke, "the end of living and the beginning of survival" for humankind. Or perhaps the beginning of our extinction. The collapse of the polar ice caps would become inevitable, bringing long-term sea level rises of 70-80 metres. All the world's coastal plains would be lost, complete with ports, cities, transport and industrial infrastructure, and much of the world's most productive farmland. The world's geography would be transformed much as it was at the end of the last ice age, when sea levels rose by about 120 metres to create the Channel, the North Sea and Cardigan Bay out of dry land. Weather would become extreme and unpredictable, with more frequent and severe droughts, floods and hurricanes. The Earth's carrying capacity would be hugely reduced. Billions would undoubtedly die. Watson's call was supported by the government's former chief scientific adviser, Sir David King, who warned that "if we get to a four-degree rise it is quite possible that we would begin to see a runaway increase". This is a remarkable understatement. The climate system is already experiencing significant feedbacks, notably the summer melting of the Arctic sea ice. The more the ice melts, the more sunshine is absorbed by the sea, and the more the Arctic warms. And as the Arctic warms, the release of billions of tonnes of methane – a greenhouse gas 70 times stronger than carbon dioxide over 20 years – captured under melting permafrost is already under way. To see how far this process could go, look 55.5m years to the Palaeocene-Eocene Thermal Maximum, when a global temperature increase of 6C coincided with the release of about 5,000 gigatonnes of carbon into the atmosphere, both as CO2 and as methane from bogs and seabed sediments. Lush subtropical forests grew in polar regions, and sea levels rose to 100m higher than today. It appears that an initial warming pulse triggered other warming processes. Many scientists warn that this historical event may be analogous to the present: the warming caused by human emissions could propel us towards a similar hothouse Earth.

## Solvency

#### Solar panels solve fossil fuel consumption, energy emission, agricultural problems, food shortage and energy shortages.

Heckeroth. 2008. Steve Heckeroth, “Solar is the Solution,” Mother Earth News, December, 2007/ January, 2008. Accessed from: http://www.motherearthnews.com/Renewable-Energy/2007-12-01/Solar-is-the-Solution.aspx

¶ A Bright Solar-electric Future¶ A solar-electric economy is well within our reach. We’re already generating solar electricity at the utility scale using powerful concentrating solar power technology. We’re also generating electricity through wind energy, which many experts consider an indirect form of solar energy because it’s driven by temperature differences.¶ But also consider that simply incorporating passive solar design strategies (see “Homes Powered by the Sun,” below), energy efficiency, conservation and other active solar heating strategies in the construction of buildings can save up to 95 percent of the energy used in conventional buildings. With the addition of building-integrated photovoltaics, buildings can be turned into net energy producers. Energy from the sun can be used to power our vehicles, and that includes not only our cars, but also heavy vehicles such as tractors.¶ Electric Vehicles & Plug-in Hybrids. Electric vehicle drivetrains are inherently five to 10 times more efficient than internal combustion engines and they produce no greenhouse gases at the tailpipe. Even if powered by fossil-fuel electricity, emissions at the power plant are much lower per mile traveled than with internal combustion engines. In addition, electric vehicles can be charged directly from renewable sources, thereby eliminating emissions altogether.¶ One of the main excuses the auto industry offers for the lack of electric vehicles is that “the batteries are not developed yet.” But consider how quickly cell phone batteries developed, transforming mobile phones from heavy, bulky, short-lived nuisances to amazingly light, small and long-lasting necessities. The oil companies are doing a good job of protecting the American consumer from “dangerous” batteries, but in parts of the world where oil companies have less control, large format battery development is progressing at rapid speeds.¶ Electric Tractors and Agriculture. Experts have estimated that it takes eight to 10 units of fossil energy to put one unit of food energy on American tables, and that it takes the equivalent of 10 barrels of oil to feed each person in the country. Hearing those figures, it’s frightening to imagine what will happen as oil prices rise. To begin with, how would we fuel our farm machinery?¶ The good news is that not only can tractors run on electricity, they run even better on electricity than passenger vehicles do because of their greater weight and slower speeds. An electric tractor can quietly accomplish all the tasks necessary to maintain productivity on a small farm.¶ Dealing with the rising cost of mobility and energy are huge challenges, and the biggest challenge facing humanity may be maintaining an affordable and nourishing food supply. But we can have fresher and more nourishing food without fossil fuels. What it will take is public support for a switch to local food production on small organic farms using solar irrigation pumps and solar-charged electric tractors. ¶ We Have the Power¶ It’s easy to feel confused, cynical and even hopeless about the state of the planet these days. But I am excited and optimistic because I know we have the technology now that will allow us to wean ourselves from fossil fuels and move to a renewable solar-electric energy system.¶ Yes, I know — solar panels are still too expensive for many of us. But 10 years ago, nobody gave hybrid cars a chance of succeeding. Today, the Toyota Prius is the hottest thing going. Plug-in hybrids and all-electric options should be available soon. If we all work together and demand that our government set a wise energy policy and use taxes to support the right renewable energy options, I predict we can put the brakes on climate change and enjoy clean, true-green energy.

#### Solar energy can end our dependence on fossil fuels, stop global warming and halt civil unrest caused by limited resources. Now is the key time to switch to a solar economy.

Heckeroth. 2008. Steve Heckeroth, “Solar is the Solution,” Mother Earth News, December, 2007/ January, 2008. Accessed from: http://www.motherearthnews.com/Renewable-Energy/2007-12-01/Solar-is-the-Solution.aspx

We know that relying on coal, oil and natural gas threatens our future with toxic pollution, global climate change and social unrest caused by diminishing fuel supplies. Instead of relying on unsustainable fossil fuels, we must transform our economy and learn to thrive on the planet’s abundant supply of renewable energy.¶ I have been studying our energy options for more than 30 years, and I am absolutely convinced that our best and easiest option is solar energy, which is virtually inexhaustable. Most importantly, if we choose solar we don’t have to wait for a new technology to save us. We already have the technology and energy resources we need to build a sustainable, solar-electric economy that can cure our addiction to oil, stabilize the climate and maintain our standard of living, all at the same time. It is well past time to start seriously harnessing solar energy.

#### Solar power dwarfs all other energy options. Crude oil, natural gas, nuclear power and coal mining are all dangerous, increase global warming, expensive and non-renewable. At best, the total amount of the three combined is equivalent to approximately one month’s worth of sunlight. Solar energy is the best method of solvency for the future.

Heckeroth. 2008. Steve Heckeroth, “Solar is the Solution,” Mother Earth News, December, 2007/ January, 2008. Accessed from: http://www.motherearthnews.com/Renewable-Energy/2007-12-01/Solar-is-the-Solution.aspx

¶ Fossil-fueled Problems¶ Before you read on, take a moment to study the two corresponding [pie charts](http://www.motherearthnews.com/uploadedFiles/articles/issues/2007-12-01/RenewableEnergy.pdf%22%20%5Ct%20%22_blank%22%20%5Co%20%22pie%20charts), which compare the Earth’s estimated total reserves of non-renewable energy resources with the annual renewable energy options. You’ll see that the potential of solar energy dwarfs all other options, renewable or otherwise. To understand why a solar-electric economy is our best option, let’s look at the energy resources we currently depend on and compare them with the solar energy available to us.¶ Coal is burned mainly to produce electricity, and coal-fired power plants produce more than half the electricity used in the United States. But burning coal has serious drawbacks. One is that it releases carbon dioxide, which contributes to global warming. It also releases heavy metals, such as mercury and sulfur. These toxins that were locked in the Earth’s crust over billions of years are suddenly spewed into the atmosphere and thus degrade our air, water and soil. The exhaust from burning coal contains more pollutants and global warming emissions per unit of energy produced than any other fossil fuel. In addition, the methods used to mine coal are destructive to the land and dangerous for the miners.¶ Now consider that coal is enormously inefficient from a total energy perspective. It took billions of years of solar energy to form the coal we have today. And while coal is the most abundant fossil resource, the total amount of energy produced by burning all the coal on the planet would only be equivalent to the solar energy that strikes the Earth every six days.¶ Natural gas supplies more than half the fuel used to heat buildings and about 15 percent of the electricity in the United States. Natural-gas-fired power plants only emit about half the pollutants produced by coal plants, as long as the fuel is extracted close to where it is burned. However, U.S. natural gas extraction can no longer keep up with demand, so expensive and hazardous methods to liquefy and ship foreign natural gas are being devised. In the future, natural gas for the United States would have to be imported from countries such as Russia, Kazakhstan, Qatar and Iran, which together have 60 percent of the world’s reserves. When all the externalities, such as the cost and pollution caused by liquefying and transporting this fuel, are included, liquefied natural gas (LNG) is much more expensive than coal, and almost as dirty.¶ Natural gas is the second most abundant fossil fuel, but its total potential energy is equivalent to only about 1 1/2 days of sunshine striking the Earth.¶ Nuclear power plants fueled by radioactive isotopes of uranium produce 20 percent of the electricity used in the United States. When radioactive materials were sequestered and dispersed deep under the Earth’s surface, they presented very little threat to life. But we’ve made those materials far more dangerous by mining and concentrating them, and the byproducts left over after a nuclear reaction are even more dangerous than the original isotopes. Nuclear power plants create hundreds of thousands of tons of radioactive waste that will continue to be a threat to life for longer than humans will walk the Earth.¶ Even if the problem of radioactive waste could be solved, the recoverable world reserve of fissionable uranium is equivalent to less than 1 1/2 days of the energy striking the Earth from the nuclear reaction of the sun.¶ Oil-fired power plants have all but disappeared in the United States, but oil (mostly diesel fuel and gasoline) powers nearly all our transportation. More than 60 percent of the oil consumed in the United States is now imported. Demand for petroleum will soon exceed world production capacity and at that point the price of fuel will start to rise dramatically. We should be asking ourselves how we will cope with gas prices as they rise from $2.50 to $5 to $10 per gallon and keep rising. It’s hard to imagine the hardship that will be faced by countries that remain addicted to oil, and even harder to imagine the suffering in countries that have oil, but do not have the strength to protect their resources or themselves.¶ Now consider that the entire recoverable world oil reserve is equivalent to the solar energy that strikes the Earth in one day.¶

#### Solar panels alleviate poverty and cause a snowball effect upon communities.

Rheannon 11(Francesca, degrees from UWM in History, American U in Economics, University of Massachusetts Amherst in Counseling, University of Connecticut in Social Work, Solar Power To The People, CSRWire Talkback, 4/26/2011 http://goo.gl/j0Te9 \\stroud)

Jones was making the point that the high cost of solar power means “wealthy people have the solar panels while the poor people pay the big energy bills” when he added that the rich live under trees in the shade, while poor people live in neighborhoods where the sun beats down on their houses. It was an apt metaphor for our topsy-turvy energy policy that rewards the profits-bloated energy giants - all heavily invested in dirty fuels - with huge and ongoing subsidies while leaving the struggling solar sector scrambling for crumbs that threaten to evaporate year after year. Jones, who founded Green For All to bring good green jobs to low-income communities in the U.S., argued for affordable solar energy as a form of distributive justice, saying, with solar panels on their roofs, not only would poor people pay less for energy, they could actually earn money by selling power to utilities. That would allow them to “put food on the table.” But he also made a crucial connection when he said, “The Earth can’t afford for poor people not to have solar panels.” Whether in Oakland, California or the Okavango Delta in southern Africa, bringing clean power from the sun to those who need it is fundamental to solving the climate crisis. By 2030, developing nations will use 70 per cent more energy than developed nations. And, with fuel costs skyrocketing, the middle class losing ground and ranks of the poor swelling, making energy affordable in the U.S. - the second largest producer of greenhouse gases in the world - could significantly help cut global carbon emissions. The cost of solar is already coming down. Solar panels are 100 times cheaper than in the 1970s. But the cost of solar isn’t at parity with fossil power—yet. One company is working hard to remedy this is Chinese solar giant, Suntech, the world’s largest producer of solar panels. Suntech’s VP of Marketing Wei-Tai Kwok told CSRwire, “We’re targeting to reach retail grid parity in 50% of world markets by 2015. In other words, it will cost less to install panels and generate solar electricity than to buy electricity from the grid, without government subsidies.” The company figures it can do that through a combination of technological innovation and achieving economies of scale. “We will continue to invest in solar R&D and increase production scale to make solar affordable everywhere under the sun,” said Wei-Tai Kwok. But even if retail parity per kwH is reached, poor- and middle-income households in the U.S. face a daunting barrier: the upfront cost of installing solar. That’s why it will take more than technological change - important as that is in bringing down costs - to bring solar energy to every home. So how can we accomplish this? Some are turning to the power of social networks. “Crowdfunding,” for example. At Power Shift, Van Jones announced a new initiative in Oakland to bring jobs and clean energy to the economically challenged city. Intended to be a pilot program for replication around the country, Solar Mosaic Oakland is a partnership of community and business leaders that will use the power of the Internet to raise funds for solar energy - and the jobs installing it - in the community. Another model that’s spreading is enabling homeowners (or landlords) to rent solar power installations, instead of buying them. For example, SolarCity claims its SolarLease can begin saving consumers money on their utility bill “from the very first day.” (Although the amount saved depends on how much was spent before going solar.) One of the biggest companies in the business, it has expanded operations from the West Coast to states in the East, including New York and Massachusetts. Another way is community solar for clustered housing, such as coops, co-housing communities, condominiums and apartment complexes. GeoGenix in New Jersey is one company able to get the costs down for customers by giving them a package deal: sweeping into a complex to put solar on all the buildings. That’s what they did for one 55 and over community in New Jersey. The community saved even more by taking advantage of federal and state support: a federal energy tax credit of 30% of the net cost and New Jersey’s Solar Renewable Energy Certificates (SREC) - tradable certificates earned each time a system generates 1,000 kilowatt-hours of electricity. And speaking of support, getting banks to give homeowners low-interest loans for installing solar - and making it easy to obtain them - is something else government could do to nudge the banking industry in the right direction. Europe - especially Germany - has simplified financing through the use of feed-in tariffs. But there’s so much more government could do to bring solar power to its people. Many in the environmental community argue subsidies for fossil fuel companies should go instead toward funding clean energy development. I agree. But those subsidies are in the many billions of taxpayers’ dollars. Why not give some of it back to taxpayers by paying for or subsidizing residential solar power? (It could be graduated according to need.) It would be deficit-neutral, create jobs, boost disposable income (by decreasing energy costs), support (clean energy) business - and cut carbon emissions. A win-win-win-win-win solution. A recent study showed that the more homes in a community that install solar power, the more other homes decide to do the same thing - in other words, solar power is “contagious.” So if government helped to bring solar power to the masses, why, even rich folks might follow suit. That’s a kind of trickle-up economics that benefits all.