

The Power Trick Report

Preliminary Draft

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Abstract

The industrial age of the past three hundred years is identifiable by its explosive growth in human population and standards of living, marked by consumption of vast amounts of stored fossil fuel energy and other resources of the earth, often characterized by enormous waste. We have been spending our energy savings. The post-industrial age is identifiable for its explosive growth in technology and reliance on renewable energy and lower overall energy consumption per capita. We will have little choice but to begin to spend our energy income from the sun. A transition is unfolding and inevitable.

As the world transitions from the industrial age to the post-industrial age, questions begin to arise as to how a more sustainable and healthy world will be achieved and who will manage it. Indeed, we are all involved in the transition, and we all will have opportunities to contribute, but what are the governing principles? What is the basic structure and strategy for moving ahead in a fair and judicious manner, with protection for the remaining resources of the earth? The answers are already emerging, as free market capitalism is embraced on a supranational scale, with globalization of commerce and ideas becoming more and more under the control of corporations. Nationalism is giving way to corporatism. Can we maintain democracy, and thus fairness to each other and future generations, with this reality?

This report takes a regional look at the emerging renewable energy industry. As corporations continue to influence our lives, generally in a good way, there is a tendency for abuses to creep into the economic processes under way. Corporate self-interests are increasingly intertwined with public interests. As a result of advanced industrialization, we seem to embrace the technological solutions presented by corporations before fully understanding how the public domain is served and protected. Whether the general public knows it or not, their future is under less and less control by governments and elected officials, and more and more control by corporations. There is a need for populism to arise to assure a balance and ultimate accomplishment of goals for sustainability.

The fundamental goal of corporations (and business in general) is profit. The growth principle allows for ongoing profit while investments are made to improve profitability in the presence of competition, limited natural resources, and regulation. The key to growth is marketing and advertising. When there are public institutions and non-profit organizations available, marketing a product like renewable energy (which is presumably in the public interest) can be made quite inexpensive and expansive. We have seen, though, abuses in our region. Mass media like newspapers, television, and radio expect money for using their advertising space. Corporations have traditionally been expected to pay for their access to the public and, thus, to paying customers. Using public institutions such as governments, schools, economic development councils, and public utility districts, and using public oriented entities such as non-profit educational organizations (for example, the American Solar Energy Society and Solar Washington) and local newspapers (playing on their interest in reporting news and public interest stories), a corporation can achieve absolutely free marketing and advertising, thus, growth in business and profits. This report looks at this subtle abuse of the public domain for private profit and ill effects to the public good.

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Introduction

Indeed, the subject of this report is the dynamic interplay of corporatism and populism and its important role in achieving a sustainable economy and healthy environment. Corporatism is the tendency and effort to emphasize corporations as the main organizing scheme for humans, characterized by profits, boardrooms, marketing and the private realm. Populism is the tendency and effort to emphasize people as the main organizing and controlling entities in sustaining humans and their activities on earth, characterized by people, grassroots, education, and the public realm.

What prompted this report? The intentional and wrongful exclusion of a local business – Olympic Energy Systems, Inc. – from participation in the North Peninsula Builders Association (NPBA) Remodeling and Energy Expo in Sequim, WA in March 2008. The NPBA (representing primarily business and corporate interests) violated their rental agreement with the Sequim School District (a public institution), through acts of discrimination in who exhibits at the event. As the Sequim High School, site of the Expo, is a public facility, and whereby the rental agreement with the NPBA specifically prohibits discrimination of any kind, and whereby circumstantial evidence and actual first-hand evidence reveals active discrimination, and whereby the said local business faces huge losses as a result, the report is a necessary task, if protection of the public domain from corporate manipulation is to be achieved.

The main beneficiary of the aforementioned discrimination at the Remodeling and Energy Expo was the Power Trip Energy Corporation, who was allowed to exclusively exhibit solar energy at the Expo. This author has seen a consistent and persistent effort by Power Trip over the years to achieve private gain through manipulation of the public domain. How much is mere corporate philosophy and how much is sheer theft from others is the subject of this report. A local corporation, with witting or unwitting help from associated entities, has played a trick on the public.

History

First Clallam County Solar Grid-Tied System [2003]

When the client advocate and system architect firm, Olympic Energy Systems, Inc., brought Power Trip Energy Corporation on board in early 2003 with its client, who was the first solar grid-tied system owner in Clallam County, Washington, there was no special obligation placed on Power Trip. They were to provide hardware at cost, as part of an advertised offer (a part of the “*Spin Your Meter Backwards*” marketing) to their first 5 grid-tie customers. OES was to help its client save thousands of dollars, but project errors and misjudgments caused thousands of dollars in added costs, eliminating the savings. Perhaps this reality is why Power Trip left Olympic Energy Systems out of the local newspaper article on the project, so as to get only positive and exclusive attention, while not having to give credit where credit is due. That’s corporatism for you. Power Trip then got the benefit of almost three years of exclusive solar referrals from the Clallam County PUD, who were duped into thinking it was appropriate to help that firm.

Olympic Energy Expo [2001 – 2003]

Olympic Energy Systems, Inc. was a co-organizer of the annual Olympic Energy Expo in Port Angeles from 2001 to 2003. The goal of the Expo was the engagement of the public on the subject of energy and energy efficiency. The diversity of participants and exhibitors was intended to encourage as many people as possible in the improvement of our energy situation, plagued with limited supply, security, and environmental issues. The OES founder had actively participated in the preparation and fundraising for the first annual Energy Roundup in Fredericksburg, TX in 2000. The Roundup is an ongoing and successful fair that emphasized diversity and inclusiveness.

National Solar Tour [2002 – present]

When Jefferson County participated in its first American Solar Energy Society (ASES) Solar Home Tour (now called the National Solar Tour) in 2002, there were 4 sites on the tour, which was coordinated by the OES founder. The OES founder coordinated the tour out of his interest in volunteer work, but recognized the inherent conflict of interest with a for-profit business helping a non-profit organization do education of the public. When the solar tour coordinator position was handed over to the founder of Power Trip in 2003, a surprising thing happened on the way to the publisher of the tour booklet...Olympic Energy Systems, Inc. was left out of the company directory. So, the general public of Washington State participating in the tour of 2003 did not see Olympic Energy Systems, Inc. as a solar provider. The primary beneficiary of that omission was Power Trip.

The fact that the long term president of Solar Washington (the state chapter of ASES, a 501(c)(3) organization) is married to the owner of Puget Sound Solar, who performed the 1st Clallam County solar grid-tie installation for Power Trip, and the fact that the president has persistently refused to assign another tour coordinator for Jefferson County (allowing the Power Trip founder to host the start of the tour at his business for several years), it goes without saying that Power Trip enjoys the benefit of a conflict of interest situation, to the detriment of others.

As Power Trip funneled the public to their business since 2004 for the National Solar Tour (annually in early October), Power Trip has been able to tell the public in 2004, as stated by a touring person, that Olympic Energy Systems does mainly hydro and not solar, was able to invite the public to a Solar Workshop in 2005 (a workshop ostensibly for public education, but really for marketing of Power Trip, and with its own dirty happenings, as explained later), was able to convince (albeit with a false storyline) The Leader (newspaper) to do a full page article on Power Trip in 2006 (erroneously implying Power Trip had put on the tour, failing to tell the public about the ASES National Solar Tour, and naming sites half of which were Olympic Energy Systems clients, without mentioning Olympic Energy Systems), and gaining another full page story just before the tour of 2007, Power Trip has indeed enjoyed the benefits of an ongoing conflict of interest. You guessed it, the public (and other solar firms) lost out on that relationship.

Solar Grid-Tie Workshop [2005]

When the founder of Power Trip involved himself in an existing energy forum that was meeting regularly in 2005, he had public manipulation in mind. Pushing the energy forum away from open discussions about the broad aspects of energy, and pushing for a name change to Jefferson Energy Center, the founder of Power Trip managed to get the forum to organize a solar workshop, only the subject of the solar workshop was to be solar grid-tie systems, the main product line of Power Trip. In order to obtain sponsorship money and ties to important community people, the founder of Power Trip misrepresented Jefferson Energy Center as a 501(c)(3) non-profit (erroneously referring to the group as a chapter of Solar Washington, which it was certainly not) in order to obtain funding from the Jefferson County Economic Development Council and other sponsors with stipulations that their money be spent on legal non-profit organizations. The workshop in 2005 was recognized, albeit undeservedly, as a Power Trip accomplishment worthy of a newspaper article and adorations. But, it was actually a betrayal of the public trust and a very limited, self-serving workshop on solar energy. The main beneficiary of the workshop was not the public, but Power Trip.

The founder of Power Trip, who was to prepare the PowerPoint presentation for the workshop to include those slides (given to Power Trip ahead of time) of the Olympic Energy Systems founder, and presenter at the workshop, but failed to have the slides ready for the workshop presentation, left the OES founder in a bind.

Even the keynote speaker at the workshop, a former president of Solar Washington, had a hidden conflict of interest. Though he was touted as a passive solar designer, one who is not primarily engaged in the business of grid-tie solar electric systems, the OES founder was to find out a day after the workshop that the keynote speaker was actually in the Solar PV panel wholesale business! Thus, the workshop benefited the keynote speaker, who did in fact obtain solar site visit business with sites on the North Olympic Peninsula, some 45 miles from his home.

Perspective

Corporatism, though perhaps a legitimate approach to economics on the one hand, tends to see the public as an entity to be manipulated and used for gain. Corporatism plays on the ignorance and fears of people. The only “truth” is the public perception of reality...which can and often is defined by corporate interests. Energy is a subject with which the general public has limited knowledge and understanding, for it is vast, esoteric, scientific, and technical. The dizzying aspects of “spinning your meter backwards”:

- Do not account for the embedded energy content of renewable energy (solar) systems; embedded energy represents the non-renewable energy used in making it
- Betray sustainable economics and economy of scale
- Put emphasis on energy production rather than conservation...there are for more ecological products and approaches to spinning your meter backwards than solar

Further Perspective

“Tackling Climate Change in the U.S.” – Potential Carbon Emissions Reductions from Energy Efficiency and Renewable Energy by 2030, released from ASES, Charles F. Kutscher, Editor, January 2007

This report should be read by anyone interested in the science and strategy of dealing with the link between our energy regime and climate change. The report is compiled from several papers presented at the Solar 2006 conference in Denver, Colorado, and represents ideas, plans, and goals, but not predictions per se.

Here are some numbers that represent reasonably thought out plans for reducing carbon emissions, on the path to more reductions by 2050, with the renewable source and resulting **reductions** by 2030:

[**Million Tons of Carbon** per year]

Energy Efficiency	688
Concentrating Solar	63
Solar PV	63
Wind	181
Biofuels	58
Biomass	75
Geothermal	83

It will take a 500 fold increase in the installed PV by 2030...250 GW, above industry predictions of 200 GW. Notice how important efficiency will be!

Experiences

The original and still ongoing goal of Olympic Energy Systems, Inc. is the development of a renewable energy industry on the North Olympic Peninsula. By encouraging the involvement of a large number of licensed contractors (electrical and general contractors for Solar PV installations), the public has more choice and more potential to save on installation costs. The process for developing solar electric grid-tied systems is actually straightforward, as equipment is off the shelf, while the solar knowledge required involves basic geometry, not rocket science. The solar energy system basics involve:

Solar knowledge: Assessing solar access at sites for performance predictions

Equipment knowledge: Solar PV panels, mounting structure, and inverters [specs on-line]

System knowledge: Solar PV array basics, in forming series and parallel strings and keeping within the parameters of the inverters; knowing impacts of roof orientations

Electrical Code knowledge: Familiarity with NEC 690; knowing how to interpret code

Utility knowledge: Familiarity with Net Metering agreements

Before ever doing solar projects, contractors have most of the basic knowledge needed to develop and install systems. Olympic Energy Systems fills in the rest, until the contractor becomes experienced enough to call itself a solar firm. Most technicians would say that it is easier than you think. In fact, Olympic Energy Systems has helped homeowners develop solar electric and hot water systems themselves, in a consultant role (helping only with economic and technical decisions).

2007 was a good year for Power Trip, as they have published that they essentially doubled their total installations that year. It is no coincidence that a full page feature article in the local newspaper highlighting only Power Trip, to the exclusion of others, occurred a few months before, in October 2006. Thousands of people in the region were introduced to seemingly the only solar firm in town. Most of those 2007 system owners (documented on Power Trip's website) never even contacted Olympic Energy Systems (a client advocate firm), so one might ask if diligence should apply to the people...not if it is market capture that a company wants. Where was the diligence in the newspaper in supposedly preparing an accurate article? The 2006 feature article was rife with erroneous and misleading information, to the benefit of Power Trip. The impression was that Power Trip had alone developed a bunch of solar energy systems (half of the owners in the published list were OES clients) and that they had hosted the tour (which was actually done by the national organization, ASES, which was not mentioned in the article). One should ask whether or not Power Trip's founder knew about the company-enhancing errors before the publishing of the article. After all, there were interviews and photo ops. The article demonstrates just how easy it is to get access to the public...you just have to lie a little.

Another Trick by Power Trip

A relatively new employee of Power Trip at the time (in May 2007) contacted Olympic Energy Systems, suggesting at a subsequent visit to Olympic Energy's local office that both companies work together to bring renewable energy to the peninsula. A spirit of cooperation was suggested, it seems, at the time. The new employee also asked that criticisms of Power Trip be removed from Olympic Energy's website, which had merely listed the past indiscretions of Power Trip. Olympic Energy is, after all, a client advocate firm, which means assuring protection from unscrupulous contractors. Olympic Energy initially responded by removing descriptions of the past indiscretions of Power Trip.

Just a few days later, Olympic Energy was to find out that Power Trip had hired Olympic Energy's lead installer away, signing an exclusivity agreement barring the installer from working for other companies. The spirit of cooperation suggested in words by Power Trip's newest employee Jeff Randall ran in stark contrast to their actions, which held up three pending renewable energy installations for lack of manpower. In another example of *The Leader's* partiality to Power Trip, an October 2007 article (again excluding Olympic Energy Systems in its content) featured the face of Jeff Randall, which also appeared in the local *Peninsula Daily News* at about the same time, the time of the annual National Solar Tour. Solar Washington's president (Pamela Burton) had refused to assign another ASES National Solar Tour coordinator in Jefferson County, giving it to

Power Trip for the 5th time in a row! It is great for business, to use a non-profit educational organization for one's business marketing. Do you think every one else should benefit, too? The public should ask Power Trip that question.

Any More Tricks by Power Trip?

Seems like Power Trip Energy Corporation should no longer have to:

- Maintain an annual conflict of interest hold on the Solar Tour coordinator position in Jefferson County
- Lie to the editor of *The Leader* to obtain a full page feature article
- Lie to the director of the Economic Development Council to obtain NPO funds (in lieu of paying for a workshop – a marketing workshop – themselves)
- Manipulate the PUD into publishing exclusive solar referrals to their company

Most of the unethical discretions happened out of the public view. Now that the company is in full view and under wide familiarity by the public, the old tricks are no longer needed. But, there is an emerging renewable energy industry in the area. In fact, this past year, a long established local electrical contracting firm came out for the first time in the Solar Energy portion of the local yellow pages. Expect subtle, but in the open, manipulation by Power Trip in the future, including company involvement that puts them in the pages of the local newspapers. Power Trip hates to pay for their own advertising, as seen in the past by their marketing through Solar Washington (and its affiliated National Solar Tour, which is supposed to celebrate the people, not companies), a conflict of interest benefit accruing probably to the tune of tens of thousands of dollars.

Facts Relied Upon

In a technological business like renewable energy you would not accept allegations merely on the surface. One would insist on a basis in fact. There exists “open” email communications, meeting minutes, written correspondence, newspaper articles, website pages, and other published information to support the allegations herein. On account of privacy and confidentiality concerns, there are some facts relevant to the allegations contained herein that are not publishable, as in “closed” communications with persons such as the President of Solar Washington, the director of the Economic Development Council, members of a trade association, or personal communications of third parties with an expectation of privacy.

As ignorance and fear are the vulnerabilities of the general public when it comes to manipulation by corporations – to get you to buy or to support their solution to the world’s problems, knowledge and lack of fear on the part of the public are the strengths. Reading books, journals, magazines, and other records and asking questions would be a good place to start the knowledge building. The growing sustainability concerns of the world naturally prompt us to ask 1) From where the product comes, 2) How healthy is the product, and 3) Where does the product go when its useful life is exhausted? Should these questions not apply to the renewable energy industry?

Does one automatically believe the accuracy and veracity of everything they read in the newspapers? Who really checks out those facts? The author herein actually read communications between the Power Trip founder and a local newspaper that indicates a willingness to bend the truth. Members of the public should ask the Power Trip founder for the background on how the company was started, as a storyline was actually concocted to meet the requirements for publication of a feature article about the company, following previous attempts of which had been refused without the storyline.

Many of the facts supporting allegations herein are independently verifiable. For example, the Power Trip founder’s insistence of an energy forum as a legal non-profit 501(c)(3) organization, enabling it to obtain funds to pay for a solar workshop and to obtain lists of potential invitees with influence and standing in the community, should be documented with the Jefferson County Economic Development Council or the secretary of the Jefferson Energy Center. You can even ask the Power Trip founder directly.

Analysis

A local solar firm, calling themselves most appropriately “Power Trip”, has achieved what it set out to do. That is, to develop solar energy systems and make a profit. Olympic Energy Systems had the same plans for Power Trip, seeing the potential of a complementary relationship, where mutual growth in the local industry was possible, even in the fledgling solar energy business. Most would not argue that solar energy systems are expensive. We could analyze those reasons quite extensively. We simply have seen general patterns of conduct from Power Trip that go more to their self-interests than to any public good purported by going solar.

In general, Power Trip has exhibited a lack of ethics, misrepresented facts to public institutions, and extensively manipulated the public through acts of omission or deception, carried out against those deeply believing in the potential of solar, but lacking in any deep knowledge of the technological, ecologic, and economic realities of solar energy at present.

Solar grid-tied systems have noticeably been developed in Washington State, but at a higher rate on the North Olympic Peninsula. In fact, the equipment available today is installable “off the shelf”. A homeowner could develop his own solar grid-tied system. If a relatively inexperienced, non-technical person can start a solar energy firm and develop several dozen solar grid-tied systems, then anyone could do it, right? The reality is that no other legitimate firm, particularly licensed electrical contractors and general contractors, will ever have the opportunity to have the benefits of the raw, unchecked, abusing corporatism that Power Trip has enjoyed. That amounts to a dreaded loss for the cause of solar energy. Should we let self-interested business and corporations dictate our relationship to energy?

Public Subsidies

The taxpayers have subsidized the vast majority of solar electric systems, and many of the solar thermal systems, installed since 2005. A 30% federal tax credit (uncapped, except for residential systems capped at \$2,000) has meant savings of \$2,000, or much more in some cases, for individuals or commercial businesses. In Washington State, where many utilities, including the largest (PSE, which serves East Jefferson County), have implemented the taxpayer-subsidized production incentive payments, solar electric (and other renewable energy) system owners will be receiving annual payments through 2014, totaling from \$1,000 to over \$5,000 each. Since the 1990’s, Washington State solar electric system owners, and more recently solar thermal system owners, have enjoyed a sales tax exemption, allowing savings from \$100’s to \$1,000’s per system.

All said, taxpayers have subsidized over \$150,000 of the costs of the approximately 100 solar electric systems on the North Olympic Peninsula, with another \$100,000 surely to happen. Even the providing of the Sequim High School to the NPBA for its annual Expo, which highlighted Power Trip Energy in 2008, but refused entry to Olympic Energy Systems, is a form of subsidy, as public space is used for private, commercial business.

Conclusions

Education of the public, though always touted as the mission of a host of organizations, should really get down to teaching the basics of energy, of science, and of solar. That means that organizations like Solar Washington (and other state chapters of the highly revered American Solar Energy Society) should avoid conflicts of interest and should grow as a participatory and diverse organization, not led by entrenched solar firm owners.

The Power Trick of which this report speaks is a result of a number of factors, including greed, overzealousness, ignorance, fear, and general indifference of the public to matters needing effort to understand. Corporatism, if continued unchecked, will likely lead to the public perceiving that our energy woes can be solved with a mere consumer purchase of some kind of technology, here now or soon to be upon us. Note, the vast number of solar panels put on rooftops in the US today contain (50 years) old and obsolete (crystalline PV) technology. Is there a problem with people knowing this fact? As low priced thin-film PV is just a few years away, why tell the buying public? Economic and ecologic (global warming combating) reasons suggest we should think about educating the public. May we suggest that the education not be done by a for-profit corporation?

Solar energy is a highly subsidized industry, done so ostensibly to meet public goals for a sustainable society. One must always be alert to abuses of having so much free money around, as the subsidies definitely go to the business growth of firms like Power Trip Energy Corporation. Some benefits even go to firms like Olympic Energy Systems, Inc., whose owner and founder is actually philosophically against subsidies to established industries (and the renewable energy industry and its growing cadre of investors are definitely established). Subsidies can potentially corrupt the development process and promote corporatism. Subsidies to solar electric system owners are indirect subsidies to the industry.

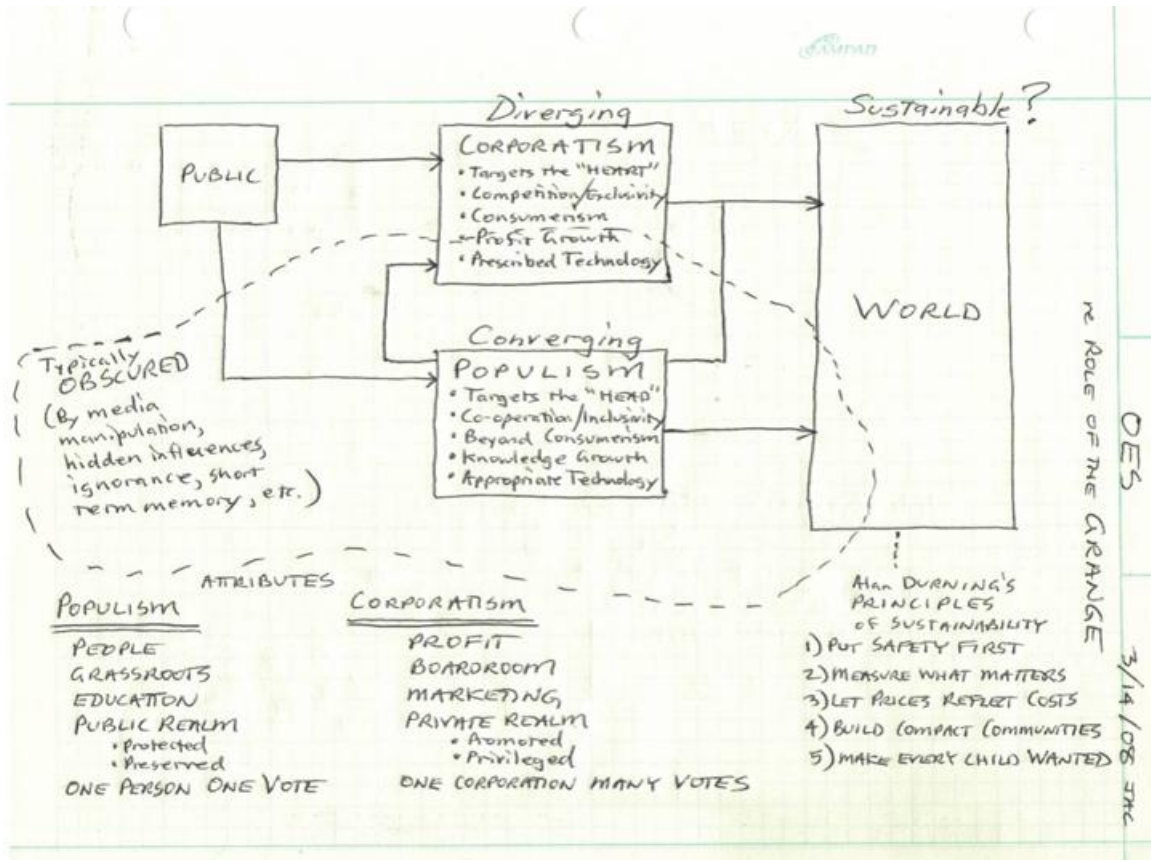
The result of years of incentives at the state and federal level is the suspended higher prices of equipment, which actually negatively impacts the small system owners who would have pursued systems with or without subsidies. Those small system owners have been the focus of Olympic Energy Systems from its incorporation in April 2001. Subsidies are not the only incentives possible. For example, a legally mandated premium price for solar electricity would have grown solar in the US, with costs (of the big solar grid-tied systems) born by the market, not the taxpayers, allowing a very important incentive to enter the picture...more expensive electricity would have incentivized energy efficiency investments by consumers. The net result could have been actual reductions in carbon emissions between 2005 and 2030. Where we are headed now, we will actually see increases in carbon emissions.

Supporting Data

The attached charts demonstrate the principles conveyed in this report. Populism acts to limit, but not eliminate, in a feedback capacity, the power of Corporatism to impact the world. Corporatism can strive and the public domain can be preserved and protected through an organized and fair interplay with Populism.

The embedded energy of PV, coupled with the planned ramp up of PV systems in the next 25 years to combat global warming by reducing carbon emissions, actually presents a surge of carbon emissions in the initial stages of development, thus, actually contributing to global warming. Indeed, over time, a solar electric regime can reduce average overall carbon emissions by half, it is done so only after a very long time frame, approaching 40 or 50 years. With global warming and its consequences, can we afford the possibly misguided effort to use corporate-prescribed technology at a very high economic cost over other alternatives?

Attached are descriptions of some solar energy systems developed by Olympic Energy Systems. Actually, Olympic Energy only helped the owners develop the systems.



Corporatism v. Populism (the essential dynamic in our free market capitalistic system)

OES

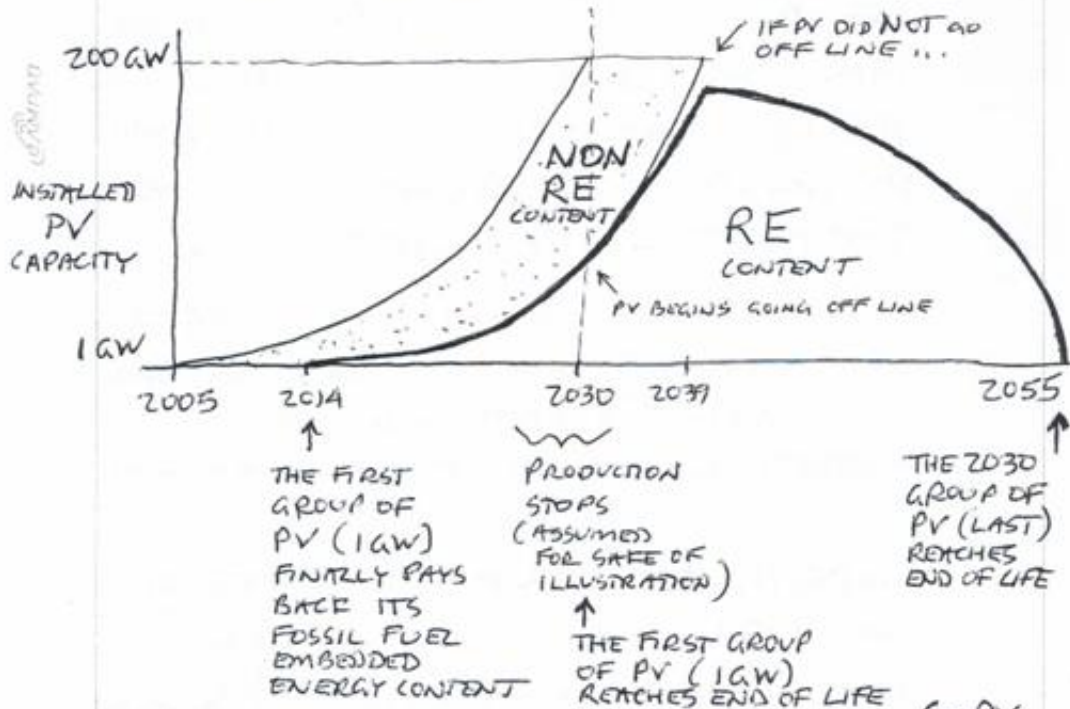
4/10/08 JAC

RE PUBLIC NOTICE

GIVEN:

- ACCELERATED RAMP UP OF PV 2005-2030
- EXPECTED PV SERVICE LIFE OF 25 YEARS
- ESTIMATED 9 YEAR EMBEDDED ENERGY PAYBACK

INSTALLED ELECTRICITY CAPACITY FROM PV FOLLOWS:



TOTAL ENERGY = NON-RE + RE

$$\frac{\text{NON-RE}}{\text{TOTAL ENERGY}} \approx 33\% \left[\frac{9}{25 \text{ to } 30?} \right]$$

SO PV ULTIMATELY "HELPS" REDUCE CO₂ EMISSIONS

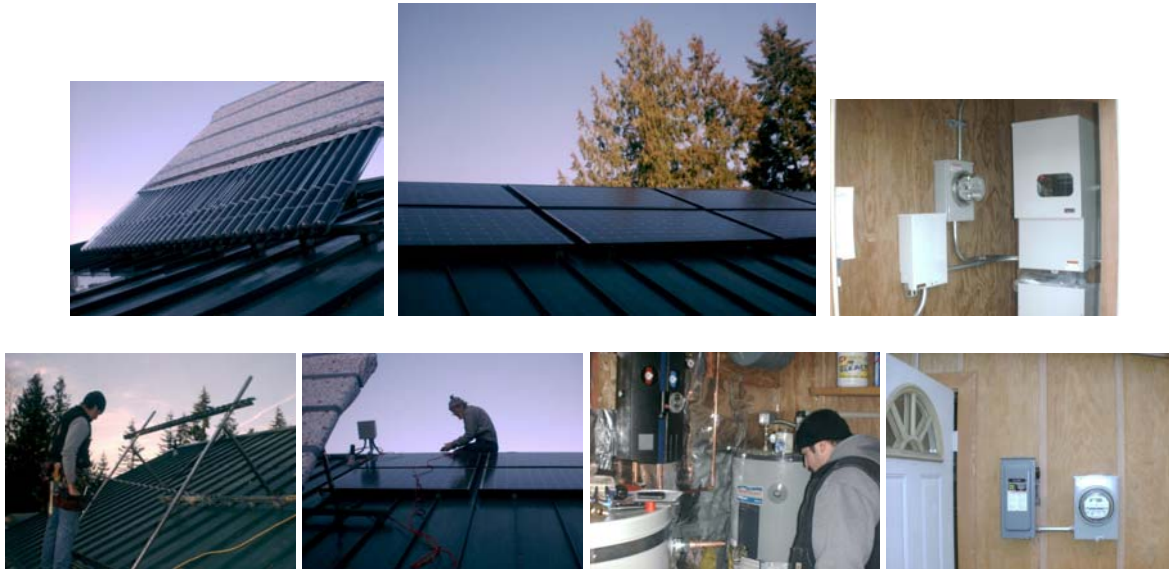
$$\frac{\text{NON-RE}}{\text{TOTAL ENERGY}} \approx 66\%$$

ENERGY DELIVERED BY PSE TO E. Jefferson County $\approx 33\%$ RE [Hydro]

BUT, DURING THE FIRST 25 YEARS OF PV RAMP UP, THE VAST MAJORITY (IN FACT, ALL) OF THE ASSOCIATED CO₂ EMISSIONS ARE RELEASED, GIVING AN EFFECTIVE NON-RE CONTENT OF OVER 66%!

Indeed, there is long term potential for solar PV to reduce the actual level of carbon emissions, that is, to have a low enough embedded energy content to improve upon our current sourcing of electricity from a mix of sources that include largely coal and natural gas. The "Tackling Climate Change in the U.S." report (ASES 2007) sees the potential for Solar PV to contribute 63 M of the planned 1211 M tons of carbon reductions, or 6%.

Sequim, WA



SOLAR PHOTOVOLTAIC and HOT WATER SYSTEMS

Sanyo HIP-200BA3 PV, 200 Watt, n=16 for 3200 Watts Total
Outback PS1 Inverter System, Grid-Tied, Battery Backup (48 V DC)
S-5! Clamp System (with standing seam metal roof)
Conventional KWh Meter and Base (for production metering), to grid and backup panels
Thermomax Mazdon Evacuated Tube Collector (30 tubes), with tilt kit (stainless steel)
Thermomax Solar Pump Station and SMT100 Differential Temperature Controller
Superstor Ultra, SSU-SE (Solar Edition) 60 gallon tank, w/ heat exchanger (PREHEAT)

The grid-tie inverter provides 120 Volt AC power to the utility grid, per a Net Metering Agreement. In February 2008, the system was already delivering more than 5 KWh per day. An electrical backup panel furnishes backup AC power to receptacles in the house, garage, and pump house, backing up the solar hot water system and well pump system.

The Clallam County PUD is planning to offer renewable energy production incentive payments, per the Senate bills passed in July 2005. This owner should receive over \$400 per year through 2014 or later (if the utility chooses) in incentive payments, on top of the avoided retail cost (over \$200 per year), a \$500 per KW rebate from the PUD, and three \$2,000 federal tax credits (PV Year 1, PV Upgrade, and SHW system).

The photovoltaic system was developed by Olympic Energy Systems, Inc. Greenspace installed the PV array and evacuated tube thermal collectors, H2O installed the plumbing, and Hanson Electric performed the electrical installation. Olympic Energy Systems emphasizes energy awareness, conservation, and efficiency measures first and foremost.



Port Townsend, WA



SOLAR PHOTOVOLTAIC SYSTEM

Xantrex GT2.5 2500 Watt Grid-Tie Inverter
Evergreen 180 SL 180 Watt Spruce Line Photovoltaic Panels (8) on detached garage roof
Uni-Rac Solar Mount (flush mount system)
Conventional KWh Meter Base (for production metering; meter supplied by the utility)

The grid-tie inverter provides 240 Volt AC power to the utility grid, per a Net Metering Agreement. The 1440 Watt array is expected to produce about 10 KWh per day at the inverter output in the summer. Provisioning enables capture of incentives in the future, including doubling the PV array size, using the west side of the garage roof. The system is maintenance-free and requires only casual monitoring.

The utility, Puget Sound Energy, offers renewable energy production incentive payments, per the Senate bills passed in July 2005, implemented as REAP (Renewable Energy Advantage Program). This owner should receive over \$400 per year through 2014 or later (if the utility chooses) in incentive payments, on top of the avoided retail cost (over \$150 per year), a \$600 per KW rebate from the utility, and a \$2,000 federal tax credit.

The photovoltaic system was developed by Olympic Energy Systems, Inc. Greenspace installed the PV array and Hanson Electric performed the electrical installation. Olympic Energy Systems emphasizes energy awareness, conservation, and efficiency measures first and foremost, above and beyond installation of renewable energy systems.



Sequim, WA



GRID-TIED SOLAR PHOTOVOLTAIC SYSTEM

SMA Sunny Boy 4000U Inverter, 4000 Watts AC (up to 4800 Watts DC)
Integral DC and AC Disconnects, attached to inverter
Evergreen 190 Spruce Line Solar PV Panels, (12) for 2280 Watts re initial array
Provision for additional PV (12 more PV Panels for a total 4560 Watts in 2008)
UniRac Solar Mount System

The owners live in a beautiful cedar home. The Solar PV array is one of a growing list of energy efficiency projects implemented or in the works. The modest 4/12 pitched roof sections face east and west. A site assessment and follow-on analysis showed that the site will still receive over 80% of its yearly potential. The total system size of 4560 Watts should produce enough electrical energy in a year to ZERO out the utility meter!

Olympic Energy Systems, Inc. developed the photovoltaic system, as consultant and system architect, having met the owners at an OES-sponsored solar energy fair.

Jarmuth Electric (of Sequim) performed their first solar electrical installation with this system, and they did a good job. A General Contractor, Greenspace Landscaping, installed the roof-mounted PV array. Olympic Energy Systems emphasizes energy awareness, conservation, and efficiency measures first and foremost, above and beyond installation of renewable energy systems.



Port Angeles, WA



SOLAR PHOTOVOLTAIC SYSTEM

Outback PS1 Inverter, Grid-Tied, Battery Backup
Sanyo HIP-200BA3 200 Watt Photovoltaic Panels, (8) on roof, for 1600 Watts Total
Uni-Rac Solar Mount (flush mount system)
Backup Electrical Panel (powered from the PS1)

The grid-tie inverter provides 120 Volt AC power to the utility grid, per a Net Metering Agreement. The entire house power is backed up with a battery and inverter system (Outback PS1). Provisioning enables capture of incentives in the future, including doubling the PV array size, possibly with a pole mount installation in the back yard. The system is maintenance-free and requires only casual monitoring.

The Clallam County PUD is planning to offer renewable energy production incentive payments, per the Senate bills passed in July 2005. This owner should receive over \$200 per year through 2014 or later (if the utility chooses) in incentive payments, on top of the avoided retail cost (over \$100 per year), a \$500 per KW rebate from the PUD, and a \$2,000 federal tax credit.

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Port Angeles, WA



SOLAR PHOTOVOLTAIC SYSTEM

Xantrex GT2.5 2500 Watt Grid-Tie Inverter
Evergreen 180 SL 180 Watt Spruce Line Photovoltaic Panels (8) on roof
Uni-Rac Solar Mount (flush mount system)
Conventional KWh Meter and Base (for production metering)

The grid-tie inverter provides 240 Volt AC power to the utility grid, per a Net Metering Agreement. In May the 1440 Watt array was already producing over 7 KWh per day at the inverter output. Provisioning enables capture of incentives in the future, including doubling the PV array size, possibly with a pole mount installation in the back yard. The system is maintenance-free and requires only casual monitoring.

The City of Port Angeles utility is planning to offer renewable energy production incentive payments, per the Senate bills passed in July 2005. This owner should receive over \$400 per year through 2014 or later (if the utility chooses) in incentive payments, on top of the avoided retail cost (over \$150 per year), a \$500 per KW rebate from the city utility, and a \$2,000 federal tax credit.

The photovoltaic system was developed by Olympic Energy Systems, Inc. Greenspace installed the PV array and Hanson Electric performed the electrical installation. Olympic Energy Systems emphasizes energy awareness, conservation, and efficiency measures first and foremost, above and beyond installation of renewable energy systems.

