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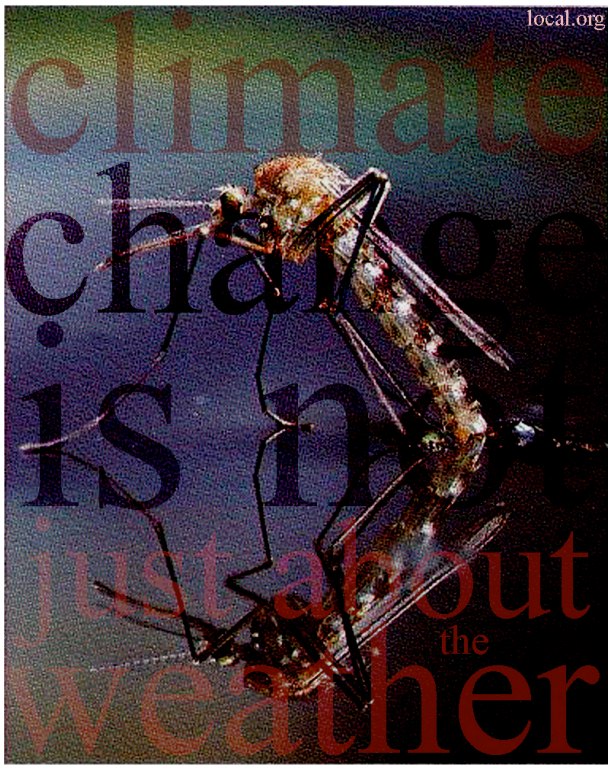
Climate Panic

San Francisco's Answer to Nuclear Revival in the Climate Crisis
by Paul Fenn



With dramatic evidence that Climate Change is advancing much faster than believed possible, many scientists are now declaring that it is in fact too late to avert catastrophe by reducing greenhouse gas emissions. Calling for public resources to focus on how to prepare for an approaching, permanent climate crisis - rather than focusing resources on prevention - climate scientists are in a panic at the dark severity of this overwhelming evidence that the world is truly on the brink of a devastating change that threatens civilization itself. Sound like Batman episode? A recent 740,000-year ice core study has proved that current carbon dioxide levels are higher than they have been in hundreds of thousands of years - laying to rest the relativistic rhetoric of the coal and oil industries that Climate Change is "natural." Caused by a relatively small number of corporations that provide electricity, automobiles and the fossil fuels that power them, a dramatic Climate Crisis, warns a united global scientific community, appears to be bringing dramatic, already visible changes throughout the world that could be utterly devastating within our lifetime frightened beyond even the feared nuclear winter of yesteryear. A panic has gripped formerly anti-nuclear scientists, such the British ecologist James Lovelock, one of the preeminent environmental thinkers of our time, to advocate a massive development of nuclear power plants worldwide.

With the nuclear industry already seven years into launching its "nuclear revival," Lovelock's conversion to nuclear reflects the epochal severity of Climate Change, based on conclusive study of atmospheric change back to the distant past. It is an apocalypse brought not by Divine punishment, but the hubris of industrialism, and the growth-addiction of the western addiction to economic growth.

It is a unique severity. Unlike previous threats to humanity, climate change will be effectively permanent, locking the world into extremely harsh weather for tens of thousands of years. It may very well be the tragic fall of modern civilization. Should this tragedy occur, the consequences could be equally harsh - a Dark Age, both natural and human, lasting thousands of years. As governments study the impacts of Climate Collapse, such as the Department of Defense's recent "Climate Shock" scenario covered by

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Fortune, the simplistic fantasy of flooded coastal cities and new beachfront property in Nevada and Vermont is being replaced by more accurate scientific predictions of environmental, economic and political crises beyond the Plague or Potato Famine, and threatening not just the usual victims of the Third World, but Americans, Europeans, and Japanese too – rich and poor. Every living human is threatened. Under the "Climate Shock" scenario feared by many scientists, global famine will follow as agricultural crops are devastated by changing weather; they point out that this is already happening in Australia and other countries. With permanently changed weather will come permanently changed ecosystems.

Descriptions of this scenario are panic inducing. Scientists predict uncontrollable mosquito-borne infectious disease will expand into northern populations hitherto protected by cold weather- such as Maine and other parts of the United States. This is only the tip of the iceberg; climate writers such as Ross Gelbspan[1], a permanent contraction of the world export economy, massive forced migrations, civil strife, further erosion of democracy, liberty and human rights - and a proliferation of resource wars will likely follow. The Department of Defense's study had similar conclusions: intensification of war worldwide, a loss of democracy. In short, First World pollution's greenhouse gases will overwhelm human governments and destroy modern life as we know it, delivering a Third World economic and political future for you and me.

Ecological Flip Flop

In the past year alone, a profound panic –based not on superstition but direct scientific knowledge of the most recent data on melting, atmospheric air, and ocean salinity has seized the scientific establishment by evidence that portends a genuine multiennial catastrophe. In a massive about-face, several notable figures have renounced their former opposition to nuclear power, advocating a rapid worldwide rollout of nukes as the only silver bullet to a climate crisis that may already be beyond human control. Leaders of the anti-nuclear movement such as Patrick Moore, one of the founders of Greenpeace, spoke before Congress in favor of nuclear power plants last May. A month before, Marin eco-philosopher Stewart Brand had announced his support for nuclear power in *Technology Review,* claiming it is too late for renewable energy to replace fossil fuels in time to avert the feared global atmospheric tipping point.

The nuclear frenzy had in fact all started a month before in March, when British scientist James Lovelock published a paper describing nuclear power as the last hope of a climate solution, declaring global warming too far advanced for a massive switch to renewable energy sources like solar or wind power to

[1] *The Heat is On* (1998), *Boiling Point* (2004).

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work in time. Famous for his "Gaia Theory" defining the Earth as one great living organism - and the human race as a kind of bacteria growing out of control, the work for which Lovelock is famous followed the systems theory of the great ecological thinker Gregory Bateson – Lovelock has most recently argued that we are “past the point of no return” for Climate Crisis, and has persuaded fading British Prime Minister to champion widespread development of new nuclear power plants as just the sort of measure that Lovelock espouses. This is not just a debate, but a political phenomenon that promotes new nuclear development worldwide – in the middle of a nuclear proliferation crisis in Iran and other countries.

It is indeed a frenzy of nuclear conversion; an American-British style revival for the Climate era. Today, the same ecologists who subscribed to Gaia are being persuaded to reverse decades of opposition to nuclear power, all based on climate panic, with Lovelock’s published assertion that only a dramatic, worldwide nuclearization of the power sector has a chance of reducing greenhouse gas pollution in time to turn us away from the rapidly approaching climate collapse. Pointing to France, many are now declaring nuclear power to be “green” or “non-carbon.”

The nuclear frenzy has breathed new life into the nuclear industry, rearing its ugly head on a lobbying and public relations routine newly bejeweled with the alarmist statements of Lovelock, Brand and Moore. The Bush Administration’s recent energy bill was introduced with a presidential speech about oil addictions that some viewed as crocodile tears. Making a token gesture to renewable energy, and proposing only minor reductions in Middle East oil Dependency, the United States is making a fast move for nuclear, already in the process of approving new uranium enrichment facilities in New Mexico and Ohio, and nuclear power plants at existing nuclear power facilities in Wisconsin and other states.

The debate about nuclear is so charged with ideology as to be dizzying. While the U.S. moves to build new uranium enrichment facilities on which the prestigious Stockholm International Peace Research Institute (SIPRI) has called for a worldwide ban and dismantling because of its tremendous potential for nuclear weapons proliferation, the U.S. government is threatening war against the nation of Iran specifically because Iran wishes to build the same kind of uranium enrichment facility. Mirroring the governmental crises predicted by Gelbspan and the Department of Defense, the U.S. Government, flanked by U.S. energy corporations, is aggressively promoting new nuclear power plants in China and India - and plans are already in place for several new nuclear power plants in the United States in decades – one potentially to be located in Governor Jeb Bush’s Florida.

Another reason for serious Americans to panic, say energy industry analysts, is that renewable energy, while growing in market share, is growing far too slowly, even to make a meaningful dent in overall electricity demand growth. Scientist like Lovelock do not see markets delivering in time to stop the melting of the North Pole. At the state level we have seen some Governors finally begin to assert a degree of moderate leadership on greenhouse gas reductions, and this is hopeful as a trend; but what makes Climate Crisis so uniquely urgent is the fact that the solution needs to happen immediately, non-incrementally. Lovelock reminds us: we are past the point of no return. If we are to survive, a dramatic industrial conversion must occur immediately. When was the last time that happened?

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The last time we saw such a massive mobilization was the Apollo Project, or the Cold War itself; but it has happened many times in any century of American history alone. Why have we not done anything until so late in the game?

At the core of this logjam, perhaps, is a remnant of the Cold War: a fear of new government programs in an age of privatization, and the treatment of energy as a mere commodity, a marketplace. As several historians have shown, U.S. Government activism in the power sector after World War II was directly red-baited by energy corporations, and claiming to be more efficient. This insistence has led the innocent down the nuclear path. The logjam is bigger than just energy. It is a core territory of Cold War ideological conformism in the United States.

A brief view of utility politics in America reveals that all sides are for monopolies and cartels, and against local control or democratic governance of energy. While Republicans push to deregulate power markets so that energy cartels like Enron *et. al.*, can take it over. Democrats tend to support old-style regulated monopolies that go back to the New Deal period and have proven prowess at the state legislature or city hall of Anytown USA. Neither major political party has ever seriously considered a major public sector role in re-engineering the power sector.

On the other hand, neither have the eco-visionaries like Lovelock. Why not? With many systems theorists also subscribing to Schumacher's "Small is Beautiful" mantra, many environmentalists are averse to a "large" approach to renewable energy, entertaining visions of returning to a rural, self-reliant pre-modern past. Ironically, the only entity that is prepared to implement energy sustainability on a scale that will make a difference for Climate Crisis is city governments. Asking Lovelock to visit City Hall is like asking a moral reformer to visit a whorehouse. Municipalities are historically the only government entity to implement local public works.

Environmental leaders like Lovelock, Moore, and Brand are illiterate about municipal politics – devoid of the constitutional democratic wisdom at the core of modern civilization – local control, self-government. America has a great tradition of municipal democracy; one that an increasing number of environmental activists hope will solve Climate Crisis.

Preferring the global view of solving problems, environmental groups have for decades focused their resources on national and international efforts, ignoring local governments as an annoying menace. Meanwhile, environmentalists in Washington face a federal government shrouded in a Cold War hostility to all Government, and a suspicion that even today rivals the public's distrust of corporations. While now fading with the star of Bush, Big Energy has never escaped the grim market-worship of the Cold War. Today, the American energy industry remains frozen in Cold War privateerism that has led us to Afghanistan, the Gulf Wars and now the Iran nuclear crisis: potentially a novel kind of energy war over nuclear power; and Washington has already rattled the nuclear saber as a "potential" measure to prevent Iran's nuclear self-arming.

In an age when visionary public works are desperately needed, those governments that must build them are generally asleep at the wheel. Most local governments in America have been busy privatizing any service they can over the past ten years. Yet even with that, today American local governments are the

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world's leaders in taking action on Climate Crisis and solar power both, and have also played this (largely unheralded) role in many countries.

While the Climate Crisis may yet make a fossil of Big Energy, its major corporations continue to insist that the public should have to wait for a solution until one that is market-based comes along; they say solar photovoltaics technologies shall not be deployed until they can be sold price-competitive on a retail basis, with fossil and nuclear power prices owned by electric utility monopolies. In this vein, policymakers have told an overwhelmingly pro-solar public that they must wait for the marketplace to deliver an end to the Crisis, and put nuclear on the table as the only solution – while we wait.

Will civilization end, as they say, with a whimper? Neither Republican nor Democratic leaders have considered whether the federal tax code should discontinue subsidization of petroleum imports, or whether it is not so smart for the taxpayers to assume the financial burden for the nuclear waste of every nuclear power plant ever built: a U.S. government taxpayer guarantee to assume responsibility and management of thousands of tons of lethal nuclear waste for 100,000 years (worth $ trillions in taxpayer debt). The utility monopolies enjoy similar privileges that they consider their corporate birthright, whether nuclear subsidies, bailouts, or their corporate "revenue requirements."

The U.S. power system resembles an abandoned lot littered with jet trash of the Cold War. State regulations on transmission tariffs still charge customers for the use of transmission lines even if they do not use it. Huge power plants a thousand miles away have their power delivery paid for by all ratepayers, even one who is buying solar power in one's neighborhood from a solar rooftop down the street.

Though the U.S. public has converted to Climate Believers in recent months, nothing has changed in the halls of power except a proliferation of green public relations and a modest infusion of investment money into green power. Politically, the power business, as with the oil industry, is business-as-usual. Despite the oil and gas wars in Iraq and Afghanistan, no change is anticipated. Exxon Mobil released a report on the Climate Crisis last year, saying the corporation's officers and legal counsel believe global warming is caused by people (themselves) and will be catastrophic, but that the catastrophe will drive up energy prices, resulting in higher profits. They said this without a trace of irony.

In the surrealistic court of King Energy, the industry is able to preside over Climate Crisis with a calm indifference, even contempt. With industry moguls so unimpressed and under motivated to do anything about the crisis, it is understandable that learned scholars like Lovelock would lose hope in solar, and declare his willingness to do business with the nuclear devil. But panic is not the answer. We must not allow Amerika (as Kafka called it), the surreal bureaucracy and sexual torture court TV show that America has become, to drive environmentalists into the arms of the nuclear military establishment (the utility-military complex), and the Nuclear Regulatory Commission, thrilled as they are to accept with condescending pity, our embrace, as if to make us more mature in the face of science.

A Killer Cure

Human madness before despair is a massive historical failure that is inevitably disastrous. As panic always fails, nuclear must not be embraced as a solution to Climate Crisis. In effect, nuclear power militarizes the energy supply. Specifically, if Lovelock and the Nuclear Energy Institute are successful, nuclear non-

proliferation will become a lost hope. Already, existing nuclear power plants are insecure to terrorists; one-third of the world's 130 civilian nuclear research reactors lack security upgrades needed to prevent theft of materials that terrorists could use to build an atomic bomb, according to the nation's chief U.S. nuclear proliferation official, Linton Brooks, director of the U.S. Nuclear Security Administration, told *USA Today* in March month that most of these reactors use highly enriched uranium, the easiest fuel used to make atomic bombs. Unsecured nuclear fuel poses the biggest risk for a nuclear weapon entering the USA, said Brooks and former senator Sam Nunn, D-Ga. That leaves 47 reactors with inadequate or questionable security in China, Ghana, Jamaica, Pakistan and Uzbekistan, according to an International Atomic Energy Agency list. There are also research reactors in countries hostile toward the United States, including Iran and North Korea. These reactors, often found at universities or hospitals, contain about 18 tons of highly enriched uranium, according to a 2004 Harvard University study. That is enough for 400 to 800 nuclear weapons. Brooks said upgrades of existing nukes in the US and Eastern Europe "were driven by concerns that the sites lacked the security of military bases."

With increasing links between power and security, inevitably, nuclear revival will introduce military security over the power sector in order to try to limit proliferation. It is already happening in the wake of 9/11: "With little fanfare, U.S. utilities have been buying uranium that once sat in Soviet nuclear weapons to fuel civilian nuclear power reactors," reported *USA Today* recently. "The program supplies half the uranium used by U.S. nuclear plants which, in turn, generate 20% of all U.S. commercial power. That means, essentially, that one in every 10 light bulbs in America is powered by uranium that once sat atop a Russian missile."

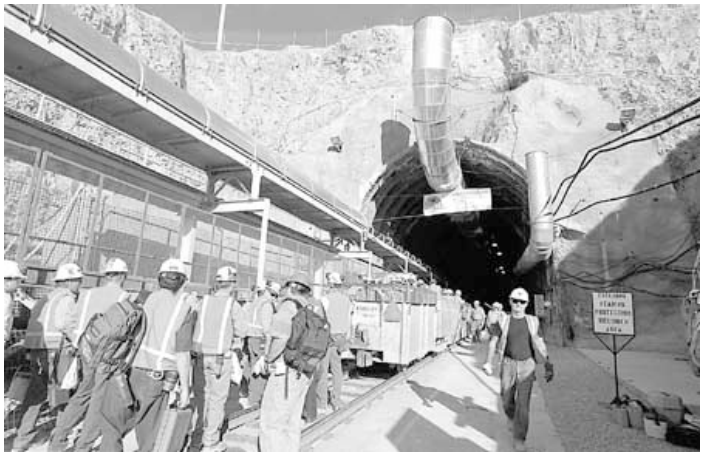
Nuclear revival would complete this merger of the military-utility complex. In this dark future, the electric utility and the military could become integrated, and ultimately merge. The same entity that powers your home and manages the deadly nuclear waste would also manage the nation's wars and control the U.S. nuclear arsenal: truly a new New Model Army, indeed. The Bush administration's threat to declare war on Iran over its desire to build the same kind of uranium enrichment facility that the U.S. already owns and is now developing in New Mexico, foreshadows a new kind of energy war in which nuclear proliferating states use military might to prevent other states from copying their technology.

According to experts, nuclear revival could inevitably also permanently block solar power and other environmentally benign alternatives. Apart from the profoundly disturbing threat to Democracy and Liberty, nuclear revival would indeed physically centralize the power supply in a time when intelligent technologies are decentralizing power technologies (and everything else). Requiring construction of many more transmission lines for new nuclear[2] megafacilities to reach distant subdivisions, nuclear revival would force ratepayers to finance massive investments in transmission as well as reactors, financially marginalizing decentralized technologies for decades. This, say solar advocates, will invest ratepayer dollars into nukes and high voltage wires that should be going into solar panels and other decentralized power. While becoming a military intrusion into civil society, say analysts, this investment would also be financially unstable, requiring increased power consumption to repay debts from new transmission corridors – more high voltage lines through neighborhoods, more suburbs, more highways, more

[2] "Love is Hate, War is Peace and Nuclear Power is Green," by Paul Fenn (*The Workbook*, Southwest Research and Information Center, 1999 – available on the internet at http://www.sric.org/workbook/features/V24_3/75.html

everything: this in an age of many environmental crises that call for reduced ecological footprints.

Third, uranium enrichment requires massive amounts of energy – the proposed new facility in New Mexico would require 12,000 cubic feet of natural gas being burned per hour and 30 Megawatts of electrical capacity to power some 100,000 homes[3] – just to make the uranium into a nuclear fuel or weapon.



Finally, the obvious reason to fear nuclear revival is the fact that it will inevitably introduce a massive, ubiquitous and permanent lethal dose of toxicity into our environment. Currently, the federal government, which assumed responsibility for all nuclear waste, has been working to force the nation's waste on a Native American tribe at Yucca Mountain, Nevada – threatening the Colorado River (the Los Angeles water supply) with contamination. While Nevada's governor, legislature and people strongly oppose the dump, Congress has voted to force it on them. More recently, the nation's existing nuclear plants have been discovered to be leaking radioactive water into the ground. Near Braceville, Illinois, the Braidwood Generating Station, owned by the Exelon Corporation, has leaked tritium into underground water that has shown up in the well of a family nearby. Exelon conducted a survey of its 10 nuclear plants, finding tritium in the ground at two others. Then it said it had had another spill at Braidwood, about 60 miles southwest of Chicago. The Attorney General of Illinois has announced she is filing a lawsuit against Exelon for six separate radiation leaks dating back to 1996. Residents living near these power plants can no longer drink their water – forever. In New York, at the Indian Point 2 reactor in Buchanan, workers digging a foundation adjacent to the plant's spent fuel rod storage pool discovered that the highly radioactive pool is leaking into the ground: new monitoring is now tracing the tritium's descent towards the Hudson River. In March, 2006, workers at the Palo Verde plant in New Mexico found tritium in an underground pipe vault. The Union of Concerned Scientists said recently that in the past 10 years, tritium had leaked from at least seven reactors. Exelon's public relations teams admit they have lost credibility by not publicly disclosing a huge fuel oil spill and spills of tritium from 1996 to 2003. Finally, demolition crews at the Connecticut Yankee reactor in Haddam Neck, Conn., found dirt contaminated with tritium and other materials.

Yet the nuclear industry is bullish about new nuclear plants. Utilities are planning to apply for 11 reactor projects, with a total of 17 reactors. The Palo Verde reactor was the last one that was ordered, in October 1973, and actually built. As the agency prepares to review license applications for the first time in decades, it is focusing on "materials degradation," meaning cracks, rust and other disintegration to which nuclear plants are prone.

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[3] Paul Fenn, "The Hazards of Natural Gas at U.S. Nuclear Energy Facilities": Expert Witness Statement Before the United States Nuclear Regulatory Commission, Louisiana Energy Services National Enrichment Facility License Application, April 4, 2004, p. 20).

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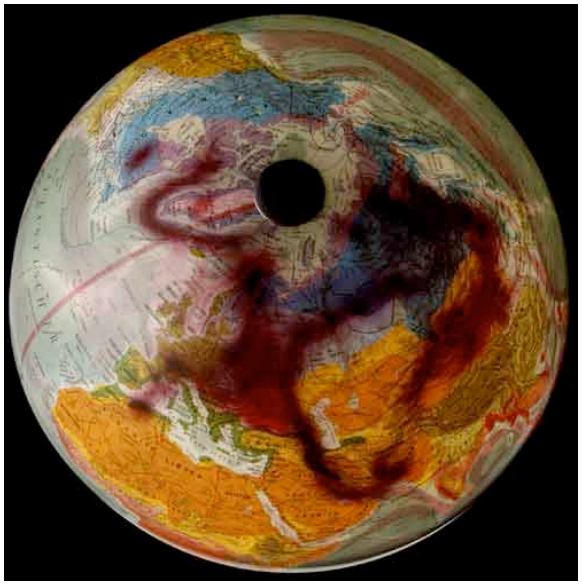

With nuclear now being promoted on every continent, the recent 20th anniversary of the Chernobyl nuclear meltdown has brought the dangers of nuclear power back into public discussion worldwide. Representatives from Northern, Southern, Eastern and Western countries gathered in Kiev for the conference "Chernobyl + 20: Remembrance for the Future" from April 23-25, 2006, and prepared a report for the conference, estimating "at a minimum some 30,000-60,000 fatal cancers can be expected worldwide" as a result of the Chernobyl accident. The report added that more than 6,000 thyroid cancer cases have been diagnosed so far in Belarus, Ukraine and Russia, and more are anticipated. "Recent scientific studies are revealing increased incidences of solid cancers, including breast cancer, as well as cardiovascular and ophthalmic effects. These effects have long latency periods of more than 20 years. The general state of health is in decline and contaminated territories show low birth rates, relatively high rates of prenatal losses and infant mortality."

All of this suffering and death – for a single lousy power plant. The Chernobyl+20 reported "there is widespread acknowledgement that the economic damage caused by the Chernobyl accident runs to the hundreds of billions of dollars, a cost still being borne primarily by Ukraine, Belarus and Russia, and which 20 years later still negatively affects these economies."

For a committed environmentalist, the idea of risking so many lives, entire cities, just to provide power could not be easily justified. One must appreciate the depths of despair that would make Lovelock embrace such a terrible risk. The despair comes from how little is now being done to stop dramatic and continuous increase of global greenhouse gas pollution in recent decades. A brief look at green power will reveal how token and pathetic the current rate of green power development is occurring relative to overall growth. Lovelock *et.al.* probably compared the current slow rate of renewable energy development to the much higher rate of pollution reduction that must be physically achieved within the next ten years. Yes, that was ten years – unthinkable in the "free" market, which currently cannot even come close to economic growth,

much less reductions from current greenhouse gas levels. Lovelock does not see how we can clean up our act as fast as we must to avert disaster.

We will choose this as Dr. Lovelock's basic error – a relatively minor one, and somewhat understandable, but potentially tragic. Perhaps Vice President Mr. Cheney's speech about "real" energy resources must have gotten to Lovelock. He must have believed, innocently, that nuclear power can be installed *quickly* through federal government commitments – and so, he presumed, is a "faster" way to replace fossil fuel-burning power plants. Probably, he also figured that Big Energy will get behind a nuclear revival (which they have), whereas Big Energy's addiction to controlling physically limited resources and vertical integration will always make it fight solar along Rockefellerian principles. Thus, Lovelock did the deal with the nuclear devil.

It was an admirable sacrifice, and appearing to have some validity: if compared to the turtle-like growth of renewable energy in past decades, the fictional hare of nuclear must appear as the quick fix. But it is a profound, even silly, error. A brief look at the Seabrook nuclear power plant on the East Coast, and Diablo Canyon nuclear power plant in California, will prove that no resource will take longer to build than nuclear power plants, once the prospects of their being built becomes palpable to the American people. Nuclear power is the slowest solution to climate crisis, not the fastest. The anti-nuclear movement already put to rest the notion that nuclear power plants are anything but the slowest climate solution one could possibly build.

Lovelock's second essential error, embedded in the basic mistake about nuclear being fastest, is Lovelock's assumption that nuclear power may be government subsidized, but for some reason solar cannot be. It is the Zeitgeist of a growing panic: solar is too expensive, but nuclear is allowed to be too expensive, so therefore it is the only feasible option. For solar, the Market must deliver the needed change at some time in the future. Which is too late.

It is a kind of Wait for Godot that led the nation into the carbon red under the Bush/Cheney Administration (and indeed the Clinton/Gore Administration). Hostage to this embedded privateerism, moreover, is a political illiteracy among many environmentalists: specifically an inclination toward international agreements and national policies: an aversion to local government and local officials. Even in Europe the actual impetus and implementation of its program, now the world's largest solar industry and the fastest growing, was firmly local in origin. Significant federal solutions, such as the German solar tariff to stimulate the solar market, actually started in one municipality – the City of Aachen - then was copied by other municipalities in the same state of Schleswig-Holstein, then was adopted statewide, and only became considered and adopted as a nationwide after several years of leadership at the local level. The Aachan example is an object lesson in "federal" solutions that environmentalists should embrace – as indeed the American radical right that blocked the Kyoto Treaty embraced in its rise to national power in Washington.

Finally, while some point to the ex-socialist governments in Europe proving more able to create federal policies and sign onto national agreements, this has been partly the result of residual government ownership of their utility infrastructure – generally with local governments owning distribution systems, working in a cooperative relationship to state governments and federal government owning power plants and regional transmission systems (ownership that the European Union is now pressuring them to give up

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American Style). With U.S. cities now moving to implement green power regimes using new structures to undertake public works-scale green power projects, this may be changing.

The Overlooked Solution

"Think Globally, Act Locally." This wise statement has been universally observed in rhetorical forums, but rarely integrated into American environmental political theory and strategy, and policy itself. The solution to Global Warming, say many, is primarily local.[4] Where federal support comes, it inevitably comes from local pressures – local success stories that become irresistible and are copied. But intellectual, moral leadership must be found at the local level first. Among those few U.S. states that have actual political leadership regarding Climate, such as Oregon, can put in place meaningful minimum renewable requirements for - but these are minimum measures that mitigate pollution growth (U.S. greenhouse emissions have increased 20% since 1990 levels), not comprehensive measures, commensurate with the dramatic scale of greenhouse gas reductions required to avert Climate Crisis, say climate scientists.

U.S. Cities are already coming to the fore in an effort to get their hands dirty in solving Climate Crisis. In particular, a major U.S. City is now preparing the largest urban green power conversion in history - a $5 Billion project to replace about a half of its community's entire power supply with solar, wind, hydrogen, conservation, and efficiency technologies in just a few years. Now ground zero in the "Community Choice" movement, San Francisco political leaders are preparing a plan and a competitive bidding process for the largest green power public works project in world history: a "Hoover Dam of Solar." The new infrastructure will remove 360 Megawatts of electrical demand from an entire urban community that now consumes 650-850 MW on any given day – about a half of the aggregate peak demand will be physically replaced by hundreds of large-scale solar and other green power facilities – all in just three years. Under the plan, over half of all the power sold in San Francisco will be locally green powered within twelve years, resulting in a massive greenhouse gas reduction.

On May 3, San Francisco Mayor Gavin Newsom announced his "landmark program" to build the largest municipal alternative energy program in the United States. "Community Choice has the potential to provide clean, reliable and reasonably priced energy to local consumers. It's time that US cities step up to fill a leadership vacuum that exists in Washington DC and move aggressively toward expanding

[4] See Agenda 21 of the 1992 Rio Earth Summit, Cities for Climate Protection, International Council for Local Environmental Initiatives (ICLEI).

renewable energy." Supervisor Tom Ammiano, who has championed "Community Choice" and the City's Solar H Bond Authority approved by voters in 2001 to build the 360 Megawatt network, said the 360 program was "an ambitious effort to achieve no less than energy independence and renewable energy for the entire community." Later in the month, at a press conference on biodiesel, Mayor Newsom called the 360 program "a green model, for the nation."

Seattle mayor Greg Nickels declared in Time in March that global warming is a "local" issue; even in its impacts, says the mayor, it's about the Cascade Mountains, where the city gets its water and hydropower and where the snow pack has shrunk by half over the past 50 years. It's about the effect of Puget Sound's warmer waters on wild-salmon runs. It's about hotter summers cooking up more smog. It's about a rise in sea level that could flood Seattle's port. "The stakes are high--globally and locally," he says. "We need to act."

So in February 2005, when the Kyoto Protocol took effect in 141 countries but not the U.S., Nickels launched the U.S. Mayors' Climate Protection Agreement. So far, 218 mayors in 39 states, representing nearly 44 million Americans, have signed on to its 12-step program for their own cities to meet or beat Kyoto's original target for the U.S.--cutting greenhouse-gas emissions to 7% below 1990 levels over the next six years. Some cities got a head start. Portland, Ore., which zeroed in on global warming beginning in 1993, has already slashed emissions by 13% per capita, partly by building light rail and 730 miles of regional bikeways.

But to achieve the 50% across the board greenhouse gas reductions that scientists say are needed in coming decades, we cannot wait for incremental policies to stop the Climate Crisis. In municipalities that actually own their power system, changes can be delivered as quickly and efficiently as has been achieved in Germany's still largely government-owned power systems. In Austin, Texas, the city-owned utility was able to cancel construction of a 500-MW coal-fired power plant thanks to a city utility program that offers energy-efficiency audits to all residents and businesses, retrofits schools and installs insulation and shade screens to reduce sunlight in low-income housing. "We're frustrated by the lack of national leadership," says Austin Mayor Will Wynn, an early backer of the Nickels initiative. "This is about the future of the planet."

It is not easy to solve climate change, and requires a multi-year political commitment to implement major projects, say Community Choice activists. Cities with neither Community Choice aggregation powers like San Francisco nor municipally-owned utilities like Austin's must resort to smaller, more incremental measures that have no chance of reducing net greenhouse gas reductions. St. Paul, Minn., whose Winter Carnival ice sculptures and on-ice softball tournaments have ceased in recent years because of rising temperatures, is using a biomass-fired power plant for both heat and electricity. Keene, N.H., is capturing methane at its municipal landfill to run a generator that powers its city recycling center. Many U.S. cities,

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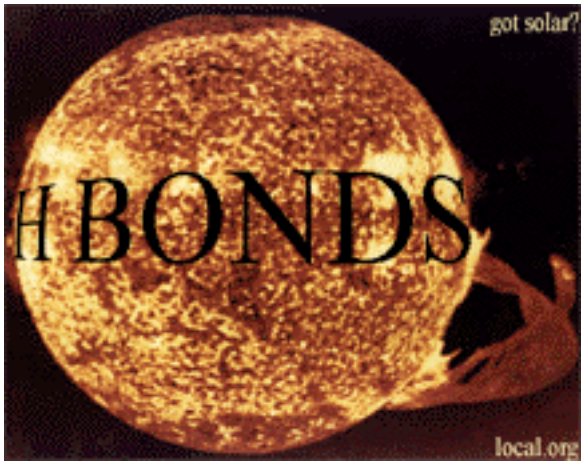
such as Salt Lake City, Utah, have converted traffic stops to energy-efficient light-emitting diode signals—1630 stoplight bulb retrofits will allegedly save over 500 tons of CO2 pollution per year and cost the city $53,000 less than conventional bulbs – sounds like a lot but it is pissing into the ocean of a coal plant, say Community Choice activists. Recognizing the need for public works to deliver results, some states like Maryland and Illinois consider adopting Community Choice laws to achieve scalability.

The key is that with the right political authorities in place, the Climate Crisis could be stopped in ten years and reversed in a few decades. In cities like San Francisco or Austin that do have either municipal ownership or Community Choice, solar and other green energy technologies may indeed be installed far more quickly than nuclear. No nuclear project could go on line this fast – irrespective of the size or technology. Nuclear revivalists like Lovelock are global thinkers, but make the mistake of seeking to act globally too. Nuclear appears as an obvious solution for those who are stuck in a Big Energy privateerist, national-international paradigm.

Call it NGO dandyism: by gravitating toward international and national solutions, environmentalists repeat the mantra of the same over-centralized Rockefeller philosophy that created the mess we are in: vertical integration, recurring revenues: corporate gigantism. Too many environmentalists prefer rubbing elbows with United Nation's and United States' bigwigs to sipping espressos with "Mayor Pothole": a fatal flaw indeed. Because Lovelock and many ecological thinkers have failed to recognize the importance and power of local government and local democracy to answer the Climate Crisis, they now fail to perceive the solar solution as even a possibility – and rush into the arms of Dr. Strangelove.



This failure within environmentalism – call it a form of elitism – is the core of Climate Panic. It bolsters Big Energy, limits government to underwriting privately owned nukes, and leaves a nineteenth century, one-way anachronism called the U.S. energy system, fully intact. It preserves the corporate status quo and militarizes. Thinking globally is not enough. Just as "all politics is local," so ultimately are its problems and solutions. What the Congress and President did not achieve for the Kyoto Treaty, San Francisco's mayor and city council just might. Combining renewable and fuel-free generation systems with power storage, heat recovery, cogeneration and hybrid applications, San Francisco's 360 MW Local Power Network will fundamentally change they way San Franciscans get their power- permanently. Phase I will encompass 31 Megawatts of solar photovoltaic cells installed throughout the City over three years—three times larger than the world's largest existing network. This is the equivalent of three hundred large grocery store-scale rooftops on city—and privately owned buildings. The solar facilities alone will provide enough power for 31,000 city apartments in the afternoon. The intensity of these crises has upped the ante of energy politics, leading many city governments to call for solar power projects on an unprecedented scale. In 1997 and 2002, Massachusetts and California passed Community Choice laws authorizing municipalities to take over power purchasing from utility corporations, and to develop green power facilities in the urban core. Local Power, the Oakland-based author of Community Choice and related financing mechanisms such as a voter-approved 2001 "H Bond Authority," has assisted San

Francisco in using Community Choice as a means of building the solar-hydrogen economy. Using Community Choice to select a new power provider and channel monthly electric bill revenues into a new solar infrastructure rather than nuclear and fossil fuel plants, San Francisco will employ its H Bond Authority to finance construction of the new infrastructure. There are currently over 40 cities in California now drafting plans to use Community Choice and H Bonds as a channel for developing solar technologies on a scale and speed heretofore only imagined. More importantly, they are doing it with very little support (or pressure) from major environmental organizations. If they had the support of mainstream leaders, we could deliver statewide Kyoto compliance in three years by this policy alone, and achieve a twelve to twenty percent across the board greenhouse gas reduction for the air shed by 2017 – heretofore unthinkable in a market-only paradigm. We are ready to do this if only the Cold War market-ism is given up.

Solar Public Works

Under the San Francisco model, solar power is reconceptualized as a new kind of municipal infrastructure project in which a third party contracts with the city, which issues revenue bonds to finance new local power facilities. Climate leaders should take a course in the history of public works. Municipal revenue bonds, not the private market, delivered the nation's water and sewer systems, its toll bridges, tunnels and dams. We need solutions that are commensurate with the scale of the problem. Indeed, the greatest crises in American History have found their solutions at least partly, and often entirely, at the local level.

People recognize public works projects for mobilizing public and private sector resources to achieve an accelerated goal in response to a crisis, but generally think of such projects as federal rather than local initiatives. A second look will correct this.

The most famous and most recent such project, President John F. Kennedy's Apollo Project, was not locally initiated or implemented, but was centralized under the President's mandate, and implemented by a central authority. Motivated by the cold war, President Kennedy challenged the nation in 1962 to put a man on the moon and return him safely home again within the decade. Eight years later, Neil Armstrong took his giant step onto the moon. Back on earth, the reward was more tangible: Apollo jump-started the most ambitious space exploration in history, accelerated technological innovation, and created satellite-based knowledge of the planet's weather and ecological systems: but it also fed the military industrial complex that runs amok today – the weapons manufacturers, the nuclear industry, et. al..

The next most recent famous example is War Production. Powered on New Deal Hydropower projects that created the greatest concentration of electrical capacity in history, the U.S. Government's commitment to purchase ships, and other weapons caused massive private sector construction and conversion of manufacturing plants, creating giants such as Kaiser Corporation, whose hospital in Oakland was my own birthplace. Whereas before the war it took the US 200 days to create a warship, within 10 months after U.S. declared war it took 24 days, and by 1944 it took just a week. After the war this industrial capacity was transferred back to civilian use, mass-producing automobiles, refrigerators, radios, and most of the accouterments of modern life.

America's war production caused the Allied Victory over Nazi Germany and Japan, but also created the atomic bomb, the Cold War and the military industrial complex about which General Eisenhower later

helplessly warned about in the last days of his subsequent presidency. War production won the cold war and - with help of the space industry - is now verging on imperial with massive military and civilian surveillance.

Apart from the few examples of federal leadership, public works are as a rule municipal. The New Deal provided federal funding for local public works projects. The Agricultural Adjustment Administration employed my father's father as an economist in the Dust Belt, the WPA employed my mother's father as a laborer in Wyoming. The New Deal created Social Security, Welfare and a degree of health security for American citizens. Much of that is gone since the Republicans got the idea of organizing locally at the grassroots, delivering the political capital to bring Welfare Reform, gas and electric deregulation, banking deregulation and other major structural changes in recent decades: thus, the modern suspension bridge.

For the same reason, private banks would not finance bridges either, in order to be able to build them, local toll bridge authorities were created to sell bonds and collect recurring revenues from motorists, ensuring multi-decade repayment of the bonds that bankers cannot tolerate with much shorter paybacks in most markets. Perhaps the next most famous public works projects were the great 20th century bridges such as the Golden Gate Bridge that connects San Francisco to Marin. What few know is that the legal mechanisms to make such bridges finance-able, build-able and thinkable were invented by a single city, Manhattan, and by a single man, Robert Moses. Moses drafted and won passage of bills in the New York State legislature to create the New York City Transit Authority and numerous bridge authorities, to build, finance and operate these bridges and worked with the City Council and Mayor of New York City to make it happen. Once successful, Moses' model was copied by every major city in the world within a decade.

Finally, the private sector never built water and sewer systems for the same reason - the payback is too great in markets that routinely secure quicker paybacks for capital investors. It would have been daft to wait for the market to deliver the solution to cholera. In the history of Public Works, perhaps the greatest chapter of all was caused by the great Cholera epidemics of 1839, 1849 and 1866, resulting in one of the earliest public works projects in U.S. History. Utterly local in origin with all decisions originating in a single place (again, Manhattan), the creation of the so-called Metropolitan Board of Health created sanitation codes, and ultimately built municipal water and sewer systems. They are the reason we in America do not have cholera, just so you know. Today Americans utterly take them for granted, because the creation of the Metropolitan Board of Health led to no more and no less than what is now referred to as the common toilet.

It's Nothing But a Toilet

Everyone has a toilet. What few know is how controversial an idea this was, even after the Cholera was proved incontrovertibly to be caused by sewage pollution so pervasive in U.S. Cities that it could only be solved by a ubiquitous systemic change. Again, the idea of everyone having toilets was an extreme idea. Not just for a few skeptics, but Manhattan's very business establishment was dead set against it, calling it a form of Socialism. There was a principled objection to the violation of property, which was required by pipes crossing under yards into homes and offices - the digging of trenches everywhere under eminent domain, the fear of public authority exercised to the potential disadvantage of private interests. We are a nation suspicious of government, and for good reason. Most of the good things we have done have also been terrible.

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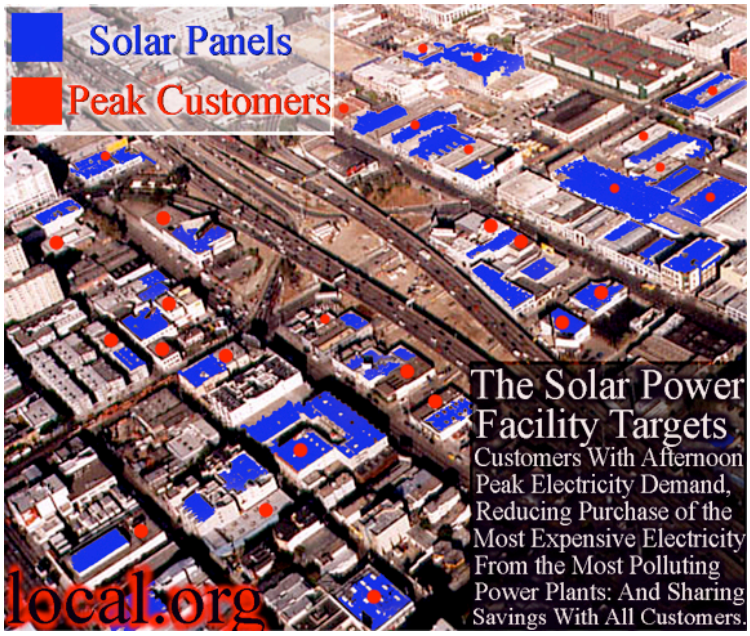
Do not despair. There are bad forms of public works, and there are good. Sometimes, as now, inaction is not an option. This suspicion of government resulted in the deaths of thousands of New Yorkers from the Cholera, and today has humbled the environmental movement with a pervasive willingness to compromise. This humility must end or we face quasi-solutions like nuclear that will only make matters worse. Faced with not only Climate Crisis but also Oil War, many environmentalists who should see the need for dramatic change continue to ask for incremental improvements that are clearly inadequate, when not compromise, but uncompromising leadership, is urgently needed: an unflinching commitment to a solution on a scale and schedule that are commensurate with the crisis we now face.

Initially, when the first toilet was invented by Thomas Crapper, it was purchased by England's Queen Victoria, who for a time owned the only Crapper in the world. It is amusing to think of her, but it may be compared to many of the current solar initiatives by politicians claiming to champion solar power who put solar panels on City Hall and call a press conference. In this crisis, as Lovelock embraces nuclear, too many politicians supply token gestures of leadership - rather than getting to work building solar power as a ubiquitous new urban infrastructure based on a clear mathematical recognition that only building it everywhere is a solution commensurate with the crisis. The Cholera would not have been stopped if only rich people got toilets.

The New New Deal



Municipal revenue bonds make large-scale projects possible by allowing capital investments to be paid back over decades – making it possible without increased power prices. In this framework, the solar hydrogen economy is not historically unique, but will be perhaps the most significant municipal public works project of the 21st century. Combining renewable and fuel-free generation systems with power storage, heat recovery, cogeneration and hybrid applications, San Francisco's "360" has two meanings – 360 MW will get built, but more profoundly, it will fundamentally change the way San Franciscans get their power. Phase I will result in 31 Megawatts of photovoltaics being installed throughout San Francisco over three years. This is the equivalent of 200 to 300 department store-scaled rooftops of solar panels. These solar facilities will daily provide enough energy to power 31,000 city apartments for the afternoon. Wind turbines, wave power, fuel cells, hydrogen, conservation and other technologies will provide enough power for another 330,000 apartments. Not to be limited to a remote wind farm, wind turbines designed for dense urban areas could provide the energy production for this component of the plan, as has already occurred in many parts of Europe. Hydrogen electrolysis facilities will generate green hydrogen from solar, wind, and other on site facilities. Indeed, the urban environment will witness a new kind of gas station – hydrogen storage

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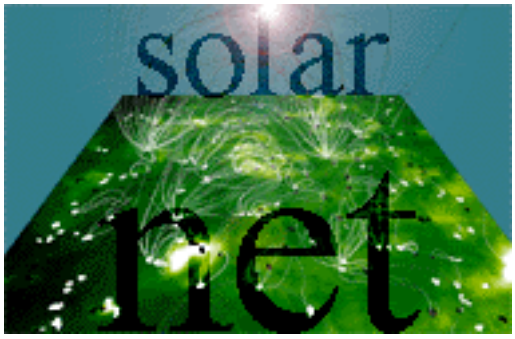
tanks and power generators that emit no smoke whatsoever – only steam. By 2009, San Francisco's new energy infrastructure will transform the urban environment in much the same way that the first municipal water and sewer systems transformed the modern city.

Solar experts describe the new infrastructure as new in both technology and its use. A new kind of ubiquitous enterprise will appear on the urban landscape, like some new cable TV product - but it will deliver energy products. Unlike the conventional power system, alternative energy installations follow natural patterns. Solar panels are positioned to maximize sun exposure and match the energy use of residents and businesses closest to them. The selection of locations will depend on algorithms as complex as sites chosen for antennas in PCS, WiFi or 3G Wireless Phone Networks. Sites will be identified, surveyed and acquired based on optimal criteria. Residents and businesses may choose which level on which to participate in San Francisco's program, ranging from just buying the power to actually hosting solar facilities on their rooftops - or purchasing a local power facility with no-money down, long-term municipal financing. Not merely investing in renewable resources, San Francisco will re-engineer power itself to reduce the need for centralized transmission systems, massive power plants and imported fuels, replacing the old distant black megaliths with visible, quiet, clean and green local power plants.



The key to this non-linear curve is a political commitment: empowering local governments to assert local control of power procurement decisions for their communities at the state level, and implementing solar public works at the local level. By putting in place statutory, local charter and local law to redefine the solar hydrogen economy as a public works project – rather than an incremental, wholly market-based phenomenon – San Francisco is dramatically accelerating the rate of solar rollout normally thought possible in the market economy. Rather than taking until 2017 to be only 20% green powered, as the state of California has required, San Francisco will be 51% green powered by that year, at comparable or lower rates than its residents and businesses pay for 42% fossil fuel-based power sold by incumbent utility monopoly Pacific Gas and Electric.

Speed is the issue. Lovelock was wrong. We can tackle Climate Crisis, but we must act now with $ Multi-Billion solar public works projects in every U.S. city, coordinated with and supported by state and federal governments. Climate and renewable energy leaders must fully embrace *localism as the key strategy to Global Warming* – perhaps the only one that can deliver such rapid, dramatic changes. Discover the power of the local. With San Francisco's example, environmentalists truly do have a palpable alternative to nuclear revival; there are already over forty-eight cities following suit already in California. We can physically replace America's electricity system in just a couple of decades, and by doing so remove the lowest hanging fruit, the largest single piece, of the climate crisis.

When the cholera epidemic led to the construction of municipal sewer systems in the nineteenth century, it was not the "market," but a massive municipal public works project, that provided the solution. This is also true for the building of bridges, parking garages, and city our county hospitals. When the Hoover Dam was bid out to California Construction companies in the early twentieth century, nothing of its scale had ever before been attempted. The Golden Gate and Bay Bridges are our local examples of monuments

to local power. Dr. Lovelock, Brand and Moore should take another look at their assumptions, and environments should prepare for a second great battle against nuclear in the coming years. When met by major crises, municipal public works are the fastest way to get things done: not federally subsidized nuclear power plants, but solar panels, wind turbines, flywheels, wave and tidal power, and yes, hydrogen.

This will require a change in assumptions about politics – a shift toward the local, and an embrace of this new brand of public works. Not tomorrow, but now; not a "goal" for solar such as in the City Chicago's program, but a single contract, a public works project that will be physically complete and online in just a few years. This is the kind of commitment the world needs. Watch San Francisco. The tremendous scale of this project makes it significant, because if every city in America follows suit, we will be well on our way to an actual, achievable solution to Climate Crisis in the next ten years, not some military nuclear nightmare that has already been tried resolutely, and resolutely failed. This is not a solution we can afford to fail. Let us leave intact our rational rejection of nuclear power, but fundamentally change our irrational aversion to municipal solar public works – so that we can get serious about getting the job done.

About the Author

Paul Fenn *is architect of the world's largest solar public works project – now being finalized in San Francisco – and author of several state and local laws that make this possible, including California's 2002 Community Choice law, San Francisco's 2001 solar "H Bond" authority, which amended the city charter by voter approval, and San Francisco's 2004 Energy Independence Ordinance, which combined the Community choice and H Bond authorities and ordered preparation of San Francisco's landmark program to build a $ billion solar power network. Fenn's Implementation Plan is now before the San Francisco Board of Supervisors for a vote in coming weeks. He has written similar laws in other states. Mr. Fenn has served as an expert witness at the Nuclear Regulatory Commission, and is an Intervenor at California Public Utilities Commission proceedings, and also writes published articles on energy, including "The New Nuclear Revival" (***The Workbook****, 1999) and most recently "San Francisco's Billion Dollar Solar Public Works Project," which appears in the May issue of* **Architecture Magazine***. Mr. Fenn is Executive Director of Local Power (local.org), Chair of San Francisco's CCA Task Force, Co-Chair of the California Sierra Club Energy and Climate Committee, a Board Member of the Gaia Amazon Foundation, and a member of the Renewable Energy and Energy Efficiency Partnership (REEEP). Mr. Fenn, a native of Oakland, is 40 years old.*