

# Green Paper on Climate Change and Energy Options For the State of Florida

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By Green Party of Florida and Palm Beach County Environmental Coalition

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[Now that our green paper is a public document, we consider it a work in progress, an opening to the deeper public conversation about what we must do to recreate a truly sustainable energy regime, in the short amount of time we have to do it. Wider input is invited to develop it into a rich public resource document, in the spirit of democratic community enterprise.]

*"...With such enlarging crises of energy and growth, we must accomplish a vital feat in record time. That feat is to determine the acceptable limits of development within regions of the State—both those limits which are inherent in its natural resources, and those more elevated limits which we are able to attain through inputs of energy and tax dollars...The survival of Florida's unique natural resources, the conditions of life for its people, the viability of its cities...depend on it."*

Arthur R. Marshall, Director, Division of Applied Ecology, University of Miami, 1973, speech on 'Energy and Growth'

*"We have at most ten years—not ten years to decide upon action, but ten years to fundamentally alter the trajectory of global greenhouse emissions."*

James Hansen, NASA climatologist, 2006

## **Introduction**

Floridians have long been aware of a growing environmental crisis in our state. Arthur Marshall's speech could be delivered today and it would ring truer than he might have ever imagined. Florida's citizens are now coming to accept that life as they know it may soon change in the densely populated areas of this peninsula. According to NASA climatologist Hansen, within the next decade our current direction will result in irreversible climate change across the planet, including specific consequences in Florida: rising sea levels, the end of the Gulf Stream, increased storm ferocity, droughts, flooding and uncontrollable wildfires. These changes are already underway.

The global scientific community has reached consensus that the rapid pace of climate change is the result of human activity. Industrialized society has extracted millions of years of stored energy from the earth in a single century, releasing globally harmful emissions into the atmosphere. For the public, the real and relevant debate is what we will do with this information.

## **Purpose**

The primary intent of this Green Paper is to outline the mounting global crisis of human-created climate change from the unique geographical and political perspective that exists in Florida. Scientists, scholars and activists have shown us that several significant areas of endeavor are driving climate change including transportation, manufacturing, agriculture and the energy industry. This paper will

focus on the last factor: the generation and consumption of electrical power.

We choose to focus on electricity because (1) fossil fuel power plants represent the largest source of greenhouse gas (GHG) pollution and (2) power generation is the engine that allows us to drive industrial and residential development along an unsustainable path. Energy companies are among the largest, most powerful economic and political forces in Florida (as they are nationally and internationally.) We live in an energy empire, where the leverage of industry interests has far exceeded that of public interest. Recent changes in energy-related policy are being supported by Governor Crist and by emboldened grassroots groups. These changes present opportunities to alter the very foundations of our society. We are enthusiastically committed to being a part of that change—for the survival and betterment of our peninsula and our planet.

During the past year, Florida has made great strides toward addressing issues related to climate and energy with a refreshingly broad approach that encompasses international policy. In July 2007, at the Serve to Preserve Global Summit on Climate Change, Gov Crist committed to partnering with foreign countries to discuss and promote initiatives that broaden the Kyoto Protocol and reduce the emission of greenhouse gases beyond 2012. This is especially appropriate considering that the 2007 Florida Energy Commission's Report to the Legislature acknowledged that Florida, as an individual entity, ranks as the world's 26th worst GHG source.

This Green Paper will explore the following questions utilizing current data and documents:

**I. What needs to be done?**

**II. What is now being done at the policy level in Florida?**

**III. What is possible?**

**IV. How can we achieve our goals?**

**V. What are some obstacles?**

**VI. How can we prepare for what's coming?**

**VII. What do we have to gain?**

We will provide examples of communities in Florida that are addressing these questions on a local level. We hope to offer guidance and encouragement to grassroots political activists, public employees and elected officials across Florida so they may guide industry leaders along our path to a sustainable future.

**I. What needs to be done?**

At the United Nations Climate Change Conference 2007, in Bali, Indonesia, Global Greens presented a declaration entitled "Time for Commitments". Global Greens is an international network of over 70 Green Parties and political movements in Asia, Africa, Europe and the Americas. "Time for Commitments" highlighted the alarming acceleration of climate change and the lagging insufficiency in action, particularly by those countries, which bear the greatest responsibility for emitting GHGs. The United

States, for example, is home to 4% of the world's population, yet consumes 26% of the world's energy. The Global Greens declaration called for the Bali mandate to "require the reduction of global GHG emissions by at least 60% by 2050 compared to 1990 levels, with binding targets for industrialized countries." Similar goals have been widely recognized by the international climate science community and the United Nations Intergovernmental Panel on Climate Change (IPCC), which have urged that developed countries commit to domestic reductions of at least 30% by 2020 and 80% by 2050 compared with 1990 levels. Some state and municipal governments have already adopted similar commitments. Florida is one of those states. Several municipalities and various agencies within Florida have also adopted resolutions reflecting the IPCC reduction targets.

One challenge in achieving these reductions is that scientific data and catastrophic predictions are rapidly being updated. We need to avoid becoming locked into the above estimates, as there is a high probability that these target percentages will need to be revised upwards.

Data used by the IPCC shows that circumstances are dire and urgent action is needed. The past hundred years of industrialization have contributed to climate changes which are rapidly pushing our planet towards an irreversible tipping point. Unfortunately, industry is not leading the way toward a truly sustainable energy future. Pro-active leadership will have to come from the grassroots, community level. As Albert Einstein said, "We cannot solve problems by using the same kind of thinking we used when we created them." We must mobilize a swift and strong response to climate crisis which prioritizes success over accommodation of consumer comforts and energy industry interests.

## **II. What is being done at a policy level in Florida?**

The State legislature's Florida Energy Commission, specifically the Climate Change Advisory Group, and the Governor's Climate Action Team are two recently-formed government bodies with a mandate to provide recommendations to the State on energy and climate. On December 31, 2007 the Florida Energy Commission (FEC) issued its first full report, including recommendations on climate change, renewable energy, efficiency & conservation and energy supply & delivery, which are being used by Florida legislators.

On November 2, 2007 the Governor's Climate Action Team issued its Phase One report, which identified 35 initial findings and 30 initial recommendations to better track and reduce greenhouse gas emissions, including energy efficiency and conservation targets. The team's final report, Phase Two, is due October 1, 2008. Phase Two will focus on mitigating impacts to society, public health, the economy and the environment created by greenhouse gas emissions with carbon capture and storage technologies. The team will also consider long-term public policy for reducing greenhouse gases in areas of economic development, university research and technology development, energy, environmental protection, natural resources, growth management and transportation.

We will be reviewing these documents for highlights and shortcomings, preparing to use their assessments in grassroots campaigns around Florida in the coming year. While we welcome and applaud much of what is being presented at the state level, we have serious concerns, especially the level of energy industry input into the

recommendations. This is made evident by the emphasis on nuclear power as the energy sector's primary solution. Also problematic, our state has committed to GHG reductions without clear, tangible benchmarks time-lining the success.

The FEC recommendations fail to acknowledge the energy industry's quiet push to sidestep and bypass the recommendations' intent to reduce GHG emissions. A draft bill written by a Florida Power & Light (FPL) lobbyist, dated December 5, 2007, would give utility companies easier access to state lands for utility easements, remove local government's ability to oppose new power plants and allow utilities to charge customers for the cost of expanding nuclear facilities. Within weeks, FPL also contributed \$500,000 to Governor Crist's "Yes on 1" campaign to cut property taxes. Bills reflecting this energy influence, such as Senate Bill 1544 and House Bill PCB ENRC08-01, are now making their way through the 2008 Legislative Session. When he was state attorney general, our current governor challenged FPL but it appears he is now being coaxed into serving the interests of this utility.

Two other areas of immediate concern are: (1) an effort to load the power grid with new fossil fuel energy before GHG-related regulations are in place (e.g. FPL's 3800 megawatt gas-fired West County Energy Center proposal in Palm Beach County) and (2) the increase in nuclear power reactors on a fast-tracked timeline to avoid public scrutiny of health and economic risks (e.g. Progress Energy's Crystal River proposal and FPL's proposals at Hutchinson Island and Turkey Point).

Other concerns involve advocacy of large-scale biofuel operations and unreliable methods of carbon capture, storage, offsetting or trading. These so-called "solutions" are already having dangerous impacts as they are delaying urgently needed immediate reductions with the promise of quick fix technological solutions that have unknown success or effectiveness. This subject will be further elaborated on in Section V.

At the local, national and global levels, climate change will require serious shifts in lifestyle for us all. Resisting this reality will make the transition more difficult and dangerous. The refusal of industry and state to recognize the need to change growth and consumption patterns is apparent in the state's two climate documents. In order to move ahead honestly and cautiously, we must be alert to misleading, greenwashing efforts and be sure that those in the position of protecting public interest know how to recognize them.

### **III. What is possible?**

We recognize that many politicians on the municipal, county and state levels may be beholden to energy industry interests, due to campaign contributions and dependency on the tax base created by this industry. We also recognize that public officials and public employees are responsible for upholding state and federal laws that require them to act in the public interest. Clean, renewable, and sustainable energy options are available now. State officials and agencies are therefore legally obligated to close existing, dangerous or polluting energy facilities and to deny permits for construction of new facilities. State statute obligates public entities to abate risks, not enable them. There has never been a higher risk or a greater danger than the coming anthropogenic climate change.

The following section will highlight possible avenues for change based on existing

state statutes and government resources.

### **Energy Option Profiles, Program Implementation Strategy & Environmental Hierarchy of Energy Production Methods**

On July 8, 2007 the Florida Alliance for a Clean Environment (FACE) presented an open letter to Governor Crist. We endorse FACE's practical 5-step process, particularly the creation of Energy Option Profiles and the Program Implementation Strategy. Energy Option Profiles would include a complete profile available to the people of Florida, using a full cradle-to-grave analysis. The Program Implementation Strategy begins with a hierarchical listing of energy options. It then requires that the most efficient, least polluting, renewable options be fully implemented before other technologies are granted permission to operate. The proposal boldly calls for a moratorium on the construction or expansion of new pollution generating facilities while the profiling and the implementation plan are under way.

The Energy Justice Network (EJN) has produced a similarly themed document, Environmental Hierarchy of Energy Production Methods, which offers a simplified visual example of the Option Profiles idea on a broad scale. EJN offers an excellent example of how we can responsibly plan our energy future. And includes important Florida-specific options, such as ocean generation.

State officials are already incorporating comparable tools. One example is the state's rejection of multiple coal proposals due to their failing profile. However a full cradle-to-grave analysis of all energy options is lacking. We are concerned that this may reflect corporate energy interest's influence upon state priorities, despite the detriment to public health.

### **Conservation is key**

Any energy policy and implementation plan that is sincere (and arguably, lawful) must prioritize conservation and efficiency to the maximum level possible. In February 2007, the American for an Energy-Efficient Economy (ACEEE) produced a report for Florida, which underwent peer review and energy industry scrutiny. In June it was released with updates and modifications, and in July co-authors of the report were invited to speak at the Governor's Climate Summit in Miami. If the policies recommended in the report were implemented, the state could reduce its projected future use of electricity from conventional carbon-heavy sources by about 29% in the next 15 years, with energy efficiency and demand response accounting for two-thirds of the 2023 total and renewable energy provisions accounting for the balance.

The report takes into account currently existing technology, with conventional growth projections and consumption levels comparable to current standards. With effective growth management, significantly reduced consumption levels and new or improved renewable energy generation methods on the horizon, there is a chance to increase that 29% substantially.

### **Honoring the Gulf Stream, before it's too late**

Florida Atlantic University's (FAU) Ocean Energy Technology Center of Excellence has been researching the ability to generate power from the Gulf Stream current off the southeast coast of the state where the current flows closest to the shores of the United States. FAU is also exploring other coastal power generation options such as thermal energy from temperature contrasts between surface and deep water and the possibility of using the same cool ocean water as an alternative to conventional air

conditioning in developments along the shore. The expectation of researchers at FAU is that the potential generation will be measured in gigawatts—larger than any other hydroelectric operations to date.

Concerns regarding impact to ocean habitat and marine life are being studied, but this method of generation appears to offer the most promising potential for a base-load quantity of renewable power. With prime locations in Lake Worth (Palm Beach County) and Lauderdale-by-the-Sea (Broward County), due to proximity of the strongest currents and the continental shelf, ocean energy could provide a potential source for powering this tri-county area, allowing an opportunity to close the polluting coastal power plants.

A serious issue at hand is the potential threat to the thermohaline circulation of the Gulf Stream from climate change impacts. If we lose the Gulf Stream's current power, as occurred during the climate changes of the Middle Ages, this source of power may no longer be available.

### **Harnessing Comprehensive Everglades Restoration for sustainable energy**

The future of power generation can and should be looking first to local and regional sources for renewables. Where possible it also makes sense to combine energy generation sites with compatible restoration related efforts. In particular, a concept has been proposed by FAU Associate Scientist, Dr. J. William Louda, that combines solar array power plant facilities with periphyton-based filtering marshes. This would allow water to be cleaned below thin film solar panels (an existing technology known as CIGS-copper indium gallium selenide), leading to evaporation/condensation cycling and lower water loss into the atmosphere. Cleaner water would enter the current effective headwaters to both southern and northeastern Everglades systems (the STAs at WCA I and the Loxahatchee/L-8 basin), generating a substantial source of energy for rural communities in the Everglades bioregion and aiding in the inter-agency goals of the Comprehensive Everglades Restoration Plan (CERP), which is the largest restoration-oriented engineering effort in the world.

Dr. Louda's proposal, which has been presented to the Florida Power & Light, State of Florida and Palm Beach County officials, the Army Corps of Engineers and the South Florida Water Management District, with academic support from the state university system, is a prime example of an innovative, collaborative, localized response to the global climate/energy crisis.

### **Berkeley, California's municipal solar financing plan**

Berkeley is set to become the first city in the nation to help thousands of residents generate solar power with no advance financial investment. Initial investment costs have been the biggest hurdle for solar power across the country. The Berkeley City Council voted on November 6, 2007 to finance the cost of solar panels for property owners who agree to pay it back with a 20-year assessment on their property. Officials say that over two decades, the taxes would be the same as or less than what property owners would save on their electric bills.

The Berkeley's program would work as follows: The property owner would hire a city-approved solar installer, who would determine the best solar system for the property, depending on energy use. Most residential solar panel systems in the city cost between \$15,000 and \$20,000. The city would pay the contractor for the system and its installation, minus any applicable state and federal rebates, and would add an assessment to the property owner's tax bill. The tax would include administrative

fees and interest. Interest would be lower than property owners could obtain on their own because the city would secure low-interest bonds and loans. The tax and solar panels would stay with the property in the event of sale.

The City of Berkeley modeled their solar financing plan after underground utility districts. Underground installation of utility wires can cost millions but creating a special assessment district allows neighborhoods to reimburse the costs over 20 or 30 years after the city pays for the service up front. Berkeley is also considering using special assessment district financing plans for other energy-saving projects such as insulation or heating. The U.S. Environmental Protection Agency announced it intends to grant Berkeley \$160,000 to offset some of the city's legal, accounting and staff costs associated with starting the plan.

### **A Carbon-Free and Nuclear-Free Roadmap**

The Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) states that the entire U.S. electricity demand could technically be met by renewable energy resources by 2020 and longer term, the potential of domestic renewable resources is huge--more than 85 times current U.S. energy use. According to Mike Ewall of Energy Justice Network, as of August 2006, solar alone could provide 55 times our current energy use; wind could provide about six times our current energy use.

In October of 2007, The Institute for Energy and Environmental Research (IEER) published its full report entitled 'Carbon-Free and Nuclear-Free: A Roadmap for U.S. Energy Policy', by Arjun Makhijani, Ph.D. The document is a groundbreaking scientific study providing clear direction for achieving CO2 reductions—eventually down to zero—while phasing out nuclear power completely, as early as 2040, and without acquiring credits from other countries. The study includes considerations for transitioning to a zero-CO2 energy system in a manner that is compatible with local economic development in areas that now produce fossil fuels.

Dr. Makhijani's study relies heavily on various forms of biofuels, including the example of water hyacinths, which are currently used to clean wastewater and can yield up to 250 metric tons per hectare in warm climates. This fuel source is being studied through the Institute of Food and Agriculture Sciences at the University of Florida. Dr. Makhijani suggests that projects like this can supply fuel for efficient Biomass IGCC plants (Integrated Gasification Combined Cycle technology). The study promotes the exploration of sequestration, CO2 recycling and hydrogen production.

This is a groundbreaking study, and while we feel more research may be needed in the area of biofuels, it presents elements that could be used in the creation of State Energy Option Profiles. The study does not take into consideration innovations specific to Florida, such as ocean energy. We also suggest further exploration of options in wind generation technology as a component of our localized 'roadmap.'

## **IV. How can we achieve our goals?**

There are many paths we can take to get where we are going. We suggest the following to get us started:

### **Raise public awareness to fight dirty energy proposals**

The goal of GHG reduction will not come without a struggle. And that struggle

manifests most dramatically, and often most clearly, not in legislative sessions on energy policy, but in city halls, county chambers, and even on the streets, where residents challenge new power projects. Community activists know from experience that the more they stand up to the energy industry and exercise their right to public input over polluting projects, the more interest in conservation and renewable energy is stimulated in the general public.

Several notable examples from recent local battles with power plants are instructive. In Alachua County, where Gainesville Regional Utility (GRU) proposed expanding a coal facility, the community became mobilized and educated, and decided it did not want to pay \$500 million for expansion of a coal power plant. This coal proposal had been presented as a way to improve efficiency of the existing facility, ostensibly providing more energy without an overall increase in pollution. Residents rejected the fossil fuel proposal in favor of improving the existing facility without expanding it, suggesting a decrease in pollution and an increase in funding from their public utility for conservation and renewables. The City of Gainesville, the area's predominant energy consumer, is now taking on the challenge of meeting its needs without the additional coal generation.

A similar case arose in the City of Lake Worth in Palm Beach County, where the City's municipal utility was being pressured by Florida Municipal Power Agency (FMPA), an industry-driven 'cooperative' of public utilities, to add new gas-fired power generation. When a suggestion to improve the existing oil-burning facility with cleaner gas turbines was rejected by the public, opponents expressed interest in breaking from fossil fuel dependency and backing out of FMPA altogether. Successful battles have been fought and won recently in St. Lucie, Taylor, and Glades Counties, where communities became informed, got organized, opposed undesirable projects and won.

### **Promote and defend publicly owned utilities.**

We see a need to defend and re-establish publicly-owned, localized utilities in contrast to profit-driven investor-owned transnational utility companies. We feel the future of our power grid will be in 'distributed' generation (we prefer the more accurate label decentralization). With this shift come greater opportunities and quicker implementation for options such as net-metering, (where individuals or even whole cities can sell power back to the grid); financing options such as the Berkeley model; and more effective oversight of accountability. Locally owned public utilities can contribute towards the pursuit of local resource utilization to achieve lower-impact renewable generation such as ocean energy and sustainable or transitional biomass as mentioned in Section III.

In the cases of community input referenced above, the difference between public utilities and private utilities was also notable in the scale of public relations campaigns that opposed local environmental groups. Private utilities are far better equipped to greenwash their way out of public scrutiny and accountability is minimal in contrast to what is expected of municipal utilities. In the Lake Worth, an elected official—who is held to ethics standards—abstained from the FMPA vote due to financial conflicts of interest. In the private sector, financial interest often overrides important environmental concerns.

### **Stand firm on growth management and carrying capacity; stress public input**

As Art Marshall suggests in the paper's opening quote, growth and energy are

inextricably, and undeniably linked. The corporate real estate industry is aligned with the energy sector in its political influence.

Along with uncontrolled growth come greenhouse gases. According to FPL, "Florida has some of the fastest-growing communities in the nation...[with] an average increase of approximately 85,000 new customer accounts annually for the next 15 years." Additionally, FPL reports average residential customers use 30 percent more electricity than they did 20 years ago. This confirms the need to stress growth management as a central component of energy conservation and GHG reduction. Maximizing public input is a vital and essential aspect of this effort.

Assessing the carbon footprint of new development is essential. We have been witnessing an unprecedented backlash from both the current and previous administrations against grassroots efforts such as Hometown Democracy, which could increase citizen input into zoning and land use changes, potentially slowing the carbon imprint increase of our cities and rural communities. Real-estate developers should be held accountable and required to address climate change, just as they are required to address other environmental aspects of building code. While improved standards such as LEAD certifications for new and retrofitted buildings, are important, their positive impacts are negligible when communities do not address issues of density and carrying capacity.

## **V. What are some obstacles?**

Many of the obstacles to reaching carbon reduction goals quickly are coming from industry influence. Many are disguised by greenwash or obfuscated by corporate scientists. (Florida writer Carl Hiaasen calls these scientists Bio-stitutes.)

### **The Nuclear revival**

Nuclear energy is a primary concern. At the behest of energy industry giants, nuclear power is being promoted in both the legislative and the executive branches as the only viable climate solution. The nuclear rush poses a serious threat to the development of renewable, clean energy as it draws funds and attention away from better options.

With minimal review, the Public Service Commission has approved "uprates" for nuclear facilities (where plants are pushed to run harder and hotter). Energy companies such as Progress and FPL have successfully achieved "construction work in progress" status, allowing them to bill consumers for the costs of unbuilt nuclear facilities. They have also lobbied the U.S. Congress for a 100% guarantee on commercial loans for new facilities, further pushing the financial burden onto the taxpayer.

At this very moment, utility ratepayers are being locked into non-renewable, unsafe energy. Turkey Point, Crystal River and Port St. Lucie nuclear facilities are all now undergoing permitting for either construction of new units, uprating of old ones or both. Florida is undergoing one of the largest and fastest pushes to re-embrace nuclear power after 30 years of standstill in permitting that followed the 1979 Three-Mile Island disaster in Pennsylvania.

Nuclear power is still not clean, safe or economically viable. There is no safe method to dispose of or store the radioactive waste produced. From constant unregulated

radioactive releases of strontium-90 (which has shown up in our children's teeth) and irradiated tritium leaks to massive subsidies through insurance exemptions to the multiple documented cases of sleeping security guards, nuclear power appears to fail off the options profile discussed in Section III. The past 30 years of successful opposition to nuclear power based on financial precariousness and safety risks should speak for themselves. Nuclear power must be taken off the table immediately.

### **Sweeping carbon under the carpet**

The proposed schemes of carbon offsetting, cap and trade programs (what the Kyoto Protocol refers to as Clean Development Mechanisms or CDM) and underground injection of GHGs called sequestration can easily become invitations to pollute and/or delay strong reduction demands. There is little to no effective oversight or regulation of these programs. While we are not opposed to exploration of these options as possibilities to complement drastic reduction, we are completely appalled by the arrogance and greed of those proposing them as alternatives to reduction.

We are supporters of the indigenous sovereignty of native populations and seek the guidance and wisdom of native activists. According to a recent report by the Indigenous Environmental Network, carbon trading conflicts with indigenous knowledge and is referred to as a new form of colonialism, which the report coins as CO2lonialism. The Indigenous Declaration, UNFCCC, COP11/MOP1, from Montreal Canada, 2005 stated, "the modalities and procedures for activities under the Clean Development Mechanism (CDM) do not respect and guarantee our right to lands, territories, and self-determination."

We believe that there is great danger in the commodification of CO2 and that an overemphasis on CO2 is causing the regulation of other important GHGs to go under-acknowledged based upon their lack of commercial potential. While we believe that the question remains as to whether CO2 can be responsibly and effectively capped, trapped and/or sold, we maintain opposition to all attempts to globalize a commercial market of CO2 emission.

### **Biofuels need thorough review**

New biofuel and biomass sources are being presented at a rapid pace, and some may be worth pursuing, even if only on a transitional basis. But there is an urgent need to make distinctions amongst the proposals before us and not to offer blanket support for all bio-fuels. For instance, consumable food crops, genetically altered material, and potentially invasive plants have high economic and environmental risks that must be considered, whereas the development of sources such as algae do not appear to have such risk or require as much land. There is also the potential for large quantities of cellulosic material produced by invasive plant removal to actually create momentum for native habitat restoration across our states natural areas.

### **Natural Gas can never be a solution**

In the past decade, the fossil fuel industry has relentlessly marketed gas as the cleanest and most viable fuel option, yet it has a massive GHG emission in relation to all non-fossil fuel energy sources. The public relations around natural gas have resulted in the "dash for gas", which is quickly outpacing peak oil. Industry has drilled over 50,000 new gas wells across the country in less than a decade with no stabilization in price. The response from industry has been an influx of Liquefied Natural Gas (LNG) proposals across the nation, focused on coastal areas. Communities across the country, including Florida, have deflected multiple proposals based on risk levels and undesirability of living in close proximity to massive,

dangerous terminals (with specific thanks to opposition from our Bahamian neighbors).

Natural gas consists primarily of the potent GHG, methane (a currently unregulated emission), and has a frequent record of leaks and even explosions [see US Office of Pipeline Safety for records]. From the point of extraction, gas, which is no more natural than coal or oil, has many health, safety and environmental concerns and poses a massive threat to public lands across the country. For example, 88% of federal natural gas resources on public land in the Rocky Mountains are available for leasing to energy companies.

## **VI. How can we prepare for what's coming?**

[This section remains under development, as it is a relatively new area of study and public discourse.]

We can address our 1,350 miles of coastline with an emphasis on 'managed retreat' regarding existing structures. We can require a complete moratorium on construction in high-risk areas, beginning with barrier islands, which are already witnessing changes on their shores. Florida has spent billions on failing beach re-nourishment dredge-and-fill projects to the detriment of sea turtles, reef habitat and the coastal tourist economy. It is time to end development of these environmentally susceptible areas.

In Lake Worth, Palm Beach County, we have worked to reject coastal development plans on the public beach, in part based on the financial imprudence of building beyond the coastal construction line. (The coastal construction line has already been ignored all along the urbanized coast). The economic impacts of managed retreat policies are substantial and deserve thorough review.

## **VII. What do we have to gain?**

While the risks are enormous in facing climate change, the opportunities for improving quality of life in the communities of Florida are tangible. Two huge, immediate benefits associated with eliminating carbon emissions include: (1) cleaning local air pollution, such as high ozone, particulate levels and mercury due to fossil fuel combustion and (2) water conservation amounting to hundreds-of-billions of gallons as a result of cutting combustion-based generation from our grid. (The energy sector is an enormous water consumer, second in quantity only to agriculture.)

There are also many secondary and cumulative impacts of dealing with the climate/energy crisis which are not as easily quantified, but present none-the-less: heightened sense of community that comes with weathering difficult transitions; better mental and physical health associated with low-impact ecological lifestyles and neighborhoods; alleviation of private control over public policy associated with the energy industry. In the bigger picture, we advocate working broadly towards localized economies, and the development of skilled communities founded upon the wisdom of ecological sustainability.

In closing, with the realities of human-created climate change, we have not afforded

ourselves much space to stumble or falter, if any at all. The paths before us today are both scary and invigorating. The seven questions we have offered above are simple introductions to the work before us all. Community activists and public policymakers must reflect deeply on the century of industrialization behind us, and the millennia of colonization and slavery that led to this brief period in history where humanity began altering the entire atmosphere in our pursuit of unprecedented amounts of money, power, convenience and comfort. In this context, we consider climate change to be a collective responsibility that most of our ancestors have participated in creating.

Today, those of us with a conscience need to step forward and do what we feel to be right in our hearts; the 'practical issues' of economy and politics can be set to the side. If we lead with compassion and humility and an apologetic sincerity for the damage we have done—to the earth, to our own communities and to ourselves—the people who attempt to hold us back will be compelled to follow our lead into the future. We are all the ones that we've been waiting for.

*"The task is no placid one. Philosophically it involves recognition of the wrenching fact that many of the deep troubles of today result from the successes of yesterday—the momentum which established a great region can as well destroy it. If we elect to stay reasonably within the bounds of our life support system...we shall have to discard as a working philosophy our habitual drive to provide endlessly for the needs of projected 'growth.' The essential question now is whether we shall have the wisdom and courage to do it, or shall simply pass the issue to a subsequent generation."*

Arthur R. Marshall, 'Energy and Growth', 1973

[An extensive collection of footnotes and sources are available upon request, and will be included in future editions of the paper. Please contact panagioti tsolkas of the Palm Beach County Environmental Coalition, PBCEnviroCoalition@gmail.com, 561-588-9666]