

Statement before the Broward County Commission

Tuesday, June 12, 2001

by Robert Farmer

5200 N Federal Hwy, Suite 2 • Fort Lauderdale, 33308 • (954) 493-8127
www.conceptcommuniques.com

Representing: Concept Communiqués, Inc.

As a matter for Florida energy policy: Are peaker plants right? Or are they wrong?

Good afternoon, my name is Robert Farmer. I'm an energy planner and power engineer educated at Rolls-Royce Gas Turbines in the U.K., with 30 years experience in North American engine sales and applications engineering. In Florida I served on the Energy Advisory Committee of Governor Chiles' Commission for a Sustainable South Florida five years ago, I'm a member of the board of the SE Florida Association of Energy Engineers, the Gold Coast Clean Cities Coalition at the Regional Planning Council, the NGO Third Planet and the Legal Environmental Assistance Foundation based in Tallahassee.

I'm an independent energy consultant working on energy policy, climate change and sustainable development issues and this is my statement concerning Broward County's proposed moratorium on the power plants proposed for the northwestern section of the county:

I commend the County Commission for taking this bold, leadership position on our energy future. On behalf of the people of south Florida and in this endeavor you have my full support.

Your action is farsighted and the road ahead difficult, given the inadequate energy and environmental regulatory framework we have in Florida today. It is against this regulatory backdrop, which I will come back again to later, that I would like to outline the extremely difficult energy and environmental issues that we face, not only in Florida and the nation but in the world at large.

This hearing is concerned primarily with air permits, but end-of-pipe emissions and other direct environmental concerns notwithstanding, there are two other, some might say more pressing, issues which are directly related to your hearing today.

The first is our nation's energy policy, and by inference Florida's energy policy. The second issue, one that defies our attempts at dismissal and which grows in importance with each passing day, is that of greenhouse gas emissions and global warming.

So, how do these plants relate to Florida energy policy and greenhouse gas emissions? As a matter for Florida energy policy: Are peaker plants right? Or are they wrong?

To answer this we need an understanding of Florida's energy resources, the nation's resources and the choice of technologies.

Florida's Resources:

Florida has no fossil fuel resources, unless you count what might be found by drilling off our beaches. The only native energy resource we have in any quantity is the sun. There is not even enough wind to generate electricity in Florida. And we have some potential for bioenergy.

Right now all of the oil for our cars and the coal and natural gas for our electricity come from places other than Florida. Enron proposes to import natural gas from Trinidad and Venezuela by way of a pipeline from the Bahamas. At the national level, Vice President Cheney has said that 35,000 miles of new gas pipelines, the distance from New York to San Francisco 10 times over, needs to be laid throughout the United States in the next 20 years. And that we must build one new power plant every week for the next 20 years to meet the electricity demand.

If the people accept the Administration's proposal for this expanded fossil fuel diet Florida's prospects become more dire.

With the Vice President's forecast level of demand, expectations that natural gas will be abundant for longer than just a few years are misplaced.

And given this increased demand and the need for investment in pipelines, expectations that natural gas will be a cheap form of power are even more misplaced.

It would appear that the diesel fuel backup systems proposed for these plants is a clear indication that Enron is also uncertain about the natural gas supply or its economics.

As the demand for gas increases and supply becomes more constrained, only those able to pay the increasing prices will be able to buy the energy it produces. This is the nature of free market systems.

Now even if we don't buy the Administration's plan, we know that fundamental changes in the way we produce and consume energy must take place before we can wean ourselves of our fossil fuel diet.

And this is the most difficult task we face: How do we reinvent our energy habits?

Therefore, in Florida, because our energy security depends upon making the most of what we've got and because we haven't even begun to think about how to become sustainable—this means we **MUST** burn our precious natural gas imports in the most efficient applications. There are no other options.

Which brings me to peaker power plants.

Peaker plants

Peaker plants are the *most inefficient* form of gas turbine application.

As we've already noted Florida must insist on efficient power plants that consume the least amount of fuel, not the most amount of fuel, so that we can stretch our tenuous resources further.

But maximum turbine efficiencies are crucial for another important reason—emissions. Engines emit carbon dioxide and other gases implicated in global warming in direct proportion to the amount of fuel they burn, so power plants with more efficient engines emit less of these greenhouse gases.

In other words the more fuel an engine consumes, the less secure our energy supply, and the more pollution it emits.

On both issues, energy policy and global warming, I have serious reservations about the appropriateness of the technology selected for the power plants in question in terms of serving south Florida's long term power needs in a reliable, cost efficient, sustainable and carbon mitigating fashion.

The GE Frame 7 'A' turbines proposed for these "peaker" applications have a maximum efficiency of 35% at maximum load, but as the Congressional Reporting Office has noted, peak demand facilities typically run at less than 20% capacity. Gas turbines perform best and have maximum efficiency at maximum capacity; efficiency suffers at part load. And efficiency improves if the turbine's exhaust heat is recovered to generate additional steam power. For example, a combined-cycle steam plant using GE Frame 7 'H' turbines would operate at 60% efficiency. And if a total commitment were made to shifting peak loads to off-peak periods there would be less need for peaker plants and more need for combined-cycle steam plants. Is shifting peak load a tall order? Yes, but this is the kind of strategy we will need if we are to reduce dependence on non-renewable resources such as natural gas, and combat global warming.

Do fuel efficiency and emissions really matter if peaker plants only operate for a few hours a day? Using 35% and 60% for the relative efficiencies, one-hour peak load shifted to one hour off peak will reduce the fuel consumed by 42% per peak load shifted and the savings are accumulative. But equally important, all loads shifted will reduce all emissions, including carbon dioxide, by 42%—a total win-win situation.

Energy Planning:

Without better planning, sooner or later our total dependence on fossil fuels will bring our lives and our economy down on two fronts—the unreliability of the energy supply, and global warming. And I'm suggesting that Florida is more vulnerable than most, which might also explain why diesel fuel backup really is an insurance policy for the merchant power plant operators.

The best energy policy and global warming strategy is based on energy efficiency, and the key components are super-efficient energy technologies combined with dedicated efforts to manage our energy use more efficiently, beginning with peak demand reduction strategies for electricity. Installing peaker plants simply sends the wrong signal by feeding our energy habits, obscuring the real need for each and every one of us to participate in solving the problems.

But who has the responsibility for ensuring that Florida has a sound energy policy? Our economy and our standard of living depends on a reliable, clean and cost-effective supply of energy, and sound energy planning is a key activity in the determination of whether we can

sustain our economy, our environment and our society—or not. Who has responsibility for this task? What is the regulatory framework in Florida for performing this task?

Loopholes in State Regulation:

Let us suppose that I'm right, that a technical analysis reveals that peaker applications are wrong as a matter of energy policy. Or, in a more conciliatory way, that we need some peaker plants but not all, and that our needs can better be served by a mix of peaker and combined-cycle and other emerging power technologies. And then let's take it to another level of analysis, where peaker plants are not wanted in a neighborhood because of their environmental impact. But what if a future regulatory regime determines that peaker plants must be upgraded to combined-cycle application operating 24/7? Where will the needs of the region and the rights of neighborhood communities lie in that kind of scenario?

These questions would normally lie with the Governor, the Power Plant Siting Board and the Florida Public Service Commission. But merchant power plant operators have recognized that current Florida law offers them unique opportunities to build power plants that do not fall under the purview of the Governor, the Siting Board or the Public Service Commission. While peaker plants must meet environmental regulations under the separate purview of the Department of Environmental Protection, they do not have to pass the state's Power Plant Siting Act or the PSC's test for need determination because they do not currently produce power from steam.

These simple-cycle power plants are therefore being built on a speculative basis and city commissions throughout Florida are finding themselves acting as the *de facto* Governor, Power Plant Siting Board and Public Service Commission. These communities have, in fact, assumed the role of state energy planning agencies at the behest of merchant plant operators.

So the question I have, is "at what point in time did merchant plant operators assume the role of energy planners for this state?"

I have said that the County Commission is farsighted and the road ahead difficult. This is because we're in uncharted waters on these issues. The Commission has acknowledged this loophole in our state energy planning process which places us at so much risk and is attempting to resolve the "*de facto* governor, power plant siting board and PSC" dilemma on behalf of our common future. It's apparent that energy planning issues are much too serious to dismiss lightly and a moratorium on the issuance of air permits is a necessary first step until the Florida Legislature acts upon the report of the Governor's Energy 2020 Study Commission, which is due in December of this year. Until then many more questions must be asked about the role of market power and whether it can deliver a sustainable energy future for Florida.

Crisis as Catalyst—A Vision of Alternatives:

On the positive side, these merchant power plants have opened the door for a new concept that offers the promise of sustainability—local need determination. To be sure, "a region that expects to add 2.3 million people during the next 20 years should be preparing now for the

additional energy needs such growth will create.” But these merchant power plants are being foisted on us by business enterprises whose motives are not always for the betterment of the community. It is they who have determined what our “needs” are. Perhaps we do indeed need more generating capacity, but prudence and good planning should take place first with a need determination assessment by the communities of our region, not our suppliers alone.

We, the communities, should be deciding what it is we need, and then determining who, what, and how our energy future should unfold. And we have plenty of expertise right here in South Florida to do this assessment. Enron could well be just the supplier we want and need, but let us determine that first. We aren’t ready to give the go ahead yet, and there’s no need to panic although we should certainly move ahead smartly with our planning.

Such an assessment should take into consideration our ability to integrate new alternative fuel technologies into our supply-side mix, with demand-side efficiency programs and education a primary goal, so that we can plan and build a truly sustainable energy future. This is too important a decision to accept a 30-year sunk investment in out-of-date infrastructure at this time. This infrastructure will make new energy systems such as distributed fuel cells difficult to implement, and will require expensive decommissioning and cleanup when the plants are no longer required.

Such a poorly planned move as giving carte blanche to our suppliers without determining what it is we really want our energy future to look like will seriously affect our ability to transition to a sustainable energy future.

I began by asking “As a matter for Florida energy policy: Are peaker plants right? Or are they wrong?” Maybe we will put the process in motion today to seriously consider this question, but I want to leave you with one last thought about our future as we consider the importance of your proposed moratorium.

Do not think about future generations. The time is past for thinking about future generations because we are the future generations. What will be *our* quality of life as we age in the next 20-30 years? Do we continue with the commitment to exhaust all fossil fuel resources and pollute the atmosphere in order to preserve our current life styles, tomorrow be damned? Or do we try to do something about what our tomorrow will be?

Thank you.