



CAPE SYSTEMS LTD.

Energizing Island Life



Freedom 2030: Sustainable Eleuthera

A model for the Caribbean and beyond

August 4, 2007

Freedom 2030: Sustainable Eleuthera – The Model for the Caribbean

Vision

Eleuthera as the island of Freedom, where 100% of the energy is generated locally from clean renewable sources, operated by highly trained local technicians; where quality local food production is back in style and flourishing due to a new marriage with current technology in solar pumping and aquaponics systems; where materials formerly considered ‘wastes’ are effectively reused in industrious ways, rather than disposed of to damage both economic and ecological health. The engine driving this transition will be market forces and bottom line results.

Rational

Sustainability is “the production of goods and services in fundamental alignment with natural systems.” There are many ways to think about this critical idea, but on an island like Eleuthera, there are immediate and practical considerations which must govern any attempt to make it a reality.

The easiest way to set specific sustainability goals and measure progress towards them is to think about materials, energy, toxics, and land. These are the categories under which all the other environmental issues can be placed.

Not only does Eleuthera stand to benefit from efficiency, renewable energy, recycling, sustainable food production and other pragmatic technologies, but the use of these technologies in an organized fashion can provide a ‘brand’ for eco-tourism that fundamentally distinguishes first Eleuthera, and then the Bahamas, as a different kind of destination -- a more responsible, more ethical, and more interesting vacation experience.

A combination of public and private investment will be needed to implement each of the sets of actions that comprise a real solution for Eleuthera. The critical ingredient for progress is to provide incentive for private investment that *rewards each incremental unit of improvement*, whether in water or electricity efficiency, increased renewable energy generation, or local food production. The good news is that given the high cost of importing food, fuel and other products, there is an easier hurdle for new investment alternatives. The critical government role is to invest in creating an Eleuthera ‘brand’ that is synonymous with environmental and social solutions, which in turn will drive its desirability as a vacation destination and livability as a tranquil, prosperous Family Island.

Implementation of these ideas does not have to, and in reality can not, be based on spending more per unit of production. An incremental process, using demonstration projects and bringing them to scale, can govern policy and development on the island. However, a bold vision and clear articulation of that vision will need to drive the kind of

investment and the kind of tourist trade that will be needed to fund the specific programs that can move Eleuthera towards sustainability.

Materials Policy

Things that are brought on to the island must be recyclable or compostable. Small scale local businesses need to be catalyzed that make secondary materials for manufacture, energy, or soil amendment out of these materials. Simple tasks such as remaking old steel scrap into shovels, farm tools and art, or crushing glass for use as a concrete additive can reduce waste, build local economic capacity and contribute to a sustainable Eleuthera – economically, socially and environmentally.

The current practice of dumping trash in unlined pits and burning it, in conjunction with the amount of litter visible everywhere on the island, is simply incompatible with a robust tourist economy or the health of ecosystems on which it depends. An investment in responsible materials management is an absolute precursor for advancing development, and can begin to provide manufacturing jobs now lacking on the island.

Energy Policy

The existing diesel generators providing electricity consume approximately 10,000 gallons of fuel each day. At an estimated cost of \$2.50 per gallon, this means that approximately \$9,000,000 is spent each year to purchase fuel. All of that ~ \$9,000,000 leaves the country permanently, draining the economy of much needed foreign reserves. In addition, approximately \$1,000,000 is spent each year on maintenance of the diesel generators. As energy demand on Eleuthera continues to soar with growing development and local wealth, and energy price escalation continues at the current 10 year trend of 10% annual escalation, these numbers will grow substantially making it more and more difficult to provide this critical resource.

Both wind and sun are abundant on Eleuthera. An investment in wind and solar electricity generation of just one half the *annual* cost of diesel fuel (\$4,500,000) would be able to provide something on the order of 10-20% of electric generation, and would be a fundamental aspect of branding Eleuthera as an ‘eco-destination’. Interestingly, it is very likely that such renewable energy capacity could be added through private investment at *no cost* to the utility. Contrary to popular opinion, allowing such customer generated power to come online (in conjunction with some utility run projects) will be more profitable for the utility. If five developers decide to each invest \$2,000,000 in solar and wind technologies (which many on Eleuthera are willing to do) the utility would have essentially obtained 5 megawatts of renewably generated power for no cost to them. This can be done very profitably for the utility while also reducing customer prices, and increasing stability and power quality.

Water and Soil Policy

Existing limestone derived soils are extremely poor on Eleuthera, and will require systematic addition of organic materials over the long-term for substantial improvement. An essential part of a sustainability strategy calls for municipal scale composting of all waste organics, with the resulting compost being applied to improve the potential for local crop production.

Water recovery and recycling, along with investigation of reverse osmosis water production utilizing new renewable energy resources on the island will need to be a part of the solution set.

In addition, integrated aquaculture and hydroponics systems (aquaponics) which recycle water in a closed-loop can be part of an improved system of local food production, reducing both cost and fuel use needed to provide for the island residents and visitors.

Summary and Action

Cape Systems and Cape Eleuthera Institute are committed to this vision – we *exist* in order to help make this vision a reality. We propose to assemble a team of 5-6 experts (that will include 2-3 members of the Cape Systems/Cape Eleuthera Institute team, one utility energy specialist, one materials and waste specialist, and one resource economist) to perform an island-wide study to focus on delivering a report with clear action plans and measurable benchmarks for creating a totally unique self-sufficient island in The Bahamas. This is not a small task and we propose to execute it in stages, with the first phase covering all subjects in an initial survey and going into comprehensive depth in the energy sector, which we feel is most pressing on Eleuthera at present.

With government support we feel confident that the bulk of the funding for a study can be raised through international agencies, private philanthropy and on-island developers. We anticipate it will take approximately 9 months to complete this study at a cost of ~ \$300,000. Cape Systems has already discussed the project with the Inter-American Development Bank and they support the project.

Cape Systems would also require the cooperation of various government agencies. We see this as a collaborative process with full participation and full disclosure. There are previous studies that have been done (EDAW) and operational numbers that will need to be accessed to execute the study in a meaningful and efficient manner.

We are ready to meet to discuss this project in further detail at any time. There is a tremendous opportunity here for Eleuthera and The Bahamas to do something never done before. The Bahamas can and should be a model for the world proving that a small island nation can be self sufficient. This is both an economic and national security issue that will set Eleuthera and The Bahamas as a leader in the inevitable shift away from dependence on fossil fuels.