

**DRAFT**

---

# THE ANGUILLA NATIONAL ENERGY POLICY: 2008-2020



**The Government of Anguilla**

Office of the Chief Minister: **July 2008**

---



---

# TABLE OF CONTENTS

---

## **SECTION 1: UNDERSTANDING THE POTENTIAL CRISIS**

1.1 Historic Background: Anguilla and Energy Independence	3
1.2 Anguilla and Climate Change	5
1.3 Mandate for a Sustainable Energy Supply	7
1.4 Key Energy Policy Goals	8
1.5 Energy Independence and Tourism	8

## **SECTION 2: STRATEGIES FOR CHANGE**

2.1 Fostering Renewable Energy	10
2.2 Rethinking Transportation	12
2.3 Enhancing Electricity Sector Performance	14
2.4 Generating Power Efficiently	16
2.5 Promoting Energy Efficiency and Conservation	18
2.6 Financing Renewable Energy	20
2.7 Building a Broad Community Movement	21

## **SECTION 3: APPENDICES**

Appendix A: Glossary of Terms	23
Appendix B: Resource List	26
Appendix C: Members of the National Energy Policy Committee	27

---

# UNDERSTANDING THE POTENTIAL CRISIS

## - SECTION I -

---

### 1.1 HISTORICAL BACKGROUND: ANGUILLA AND ENERGY INDEPENDENCE

It is historically accurate to conclude, that energy, or more exactly the absence of it, was one of the prime causes of the Anguilla Revolution of 1967. The cauldron of discontent with the Colonial arrangement of St. Kitts, Nevis and Anguilla which manifested itself as early as 1825, boiled over into a crescendo of rebellion one hundred and forty-two years later largely as a result of the glaring absence of what was then popularly considered to be four commonplace markers of modernity. Those four markers in the eyes of rebels were, (1) Political autonomy, (2) Decent roads, (3) Basic health and educational services and (4) Electricity.

It is also historically accurate to note that following the British invasion of 1969 one of the key areas of friction between U.K. officials and the former leaders of the revolution was the issue of island-wide electrification.

The insistence on the part of those Leaders for that “marker” to be obtained, continued unabated until a nascent Power Plant and Ice Plant was erected in The Valley and gradually grew in generation to expand its reach outwards from The Valley towards the east and the west, until all major villages were electrified by 1984.

In 1991 the Anguilla Electricity Company, Ltd. (ANGLEC) emerged as an efficient and well-run state-owned company. The Utility’s demonstrable efficiency diminished political controversy, and a further entrenchment of the Utility’s centrality to the island’s political and economic life was achieved in 2003 when 60% of Anglec’s shares were marketed and sold to Anguillians.

It is now evident that Anguilla has been transformed into a thoroughly energy-dependent economy. The markers of modernity have been achieved. But that achievement has been coupled to the reality of looming threats to the local environment and the economic threat of the island’s total dependence on fossil fuels, a finite commodity under increasing worldwide demand.

The successful growth of a new tourist industry, boosted in 2002 by new and relatively large tourism projects have exponentially increased the demand for power as all sectors of the economy have surged with the building boom. But the demands of growing competition in the tourist sector from other facilities in the region and the world, coupled with the high and increasing price of fossil fuels, and the Island’s present complete and total

dependence on fossil fuels for electricity generation, has placed Anguilla's competitiveness in doubt. As of July 2008, the cost of oil has topped the US\$130 per barrel mark, with constant volatility in prices, and it is forecasted that such prices will continue to rise. This high cost and its effect on electricity retail prices are further exacerbated by the island's small size and relative inability to achieve meaningful economies of scale.



In addition, the reliability of the supply of oil to Anguilla indefinitely is now in real doubt. The geopolitical risk of a conflict or terrorist attack half the world away could result in an interruption of shipments of oil to Anguilla. The interruption would only have to be for a few weeks to create enormous damage to Anguilla's economy.

With this local reality confronting Anguilla, along with the global realities of climate change, the Government and the

people of Anguilla must now revisit the policies that have guided a very successful energy transformation on the island thus far, and initiate and develop a new, creative, progressive and practical paradigm shift in the development of this critical sector.

That shift must analyze with urgency the use of the only two sources of renewable energy which the island possesses in large measure---wind and solar power, and find ways to implement their utilization in order to reduce the island's dependence on fossil fuels in the short-term, and in the long term, to achieve energy independence.

### **Energy Independence: A Vision for Anguilla's Future**

We define energy independence as the ability for the island to meet its vital energy needs with reliable, affordable and renewable energy resources. This requires the pursuit of a balanced and advantageous transition toward control of our energy future, built upon a solid and ever growing foundation of our own free, abundant, clean, and renewable energy resources---the wind and the sun.

## 1.2 ANGUILLA AND CLIMATE CHANGE

The environmental slogan “think globally, act locally”, is an apt and appropriate rallying cry for the need to develop and implement a new energy dispensation for Anguilla.

On the global level, the continued use of fossil fuels and the increasing levels of green house gases in the atmosphere threaten the world with the alarming possibility of sea level rise. Of all the dangerous consequences that climate change poses to the planet, including a greater frequency and strengthening of hurricanes, a rise in vector borne diseases, species loss, mass migrations, loss of productive agricultural lands etc, a minimal rise in sea level of one metre and a slight warming of ocean temperature could have devastating social and economic consequences for Anguilla.

The engines of Anguilla’s tourism-based economy, led by Cap Juluca, Altamer, Cove Castles and other hotels located on relatively low lying sand bars could face increasing erosion from higher and stronger wave action and even inundation in some places. For example, the village of Sandy Ground could conceivably become untenable, as well as areas in parts of Island Harbour, The Forest and Corito.

A warming of the ocean could result in massive coral bleaching and coral die-off which would severely impact the fishing industry with the loss of marine habitat, and the tourist industry with the degradation of snorkeling, dive sites and the general beauty of the marine environment. Coral die-off would also eliminate much of the protective and mitigating effects from ground sea erosion along the north coast provided by the Prickly Pear, Shoal Bay and other inshore reefs.

Anguilla, like most other small island developing states (SIDS) has an enormous vested interest in climate change and its potential impacts. It will no doubt be argued that Anguilla’s contribution to green house gases world-wide is so miniscule as not to warrant any serious local remedial action. This overlooks the moral question which each and every self-respecting people should face if they consider themselves responsible citizens of the planet. Carbon emissions and atmospheric pollution have no national affiliation or border controls and all nations will be negatively affected in some form or another if this trend is not arrested or reversed. Sea level rise aside, the continued and growing demand for fossil fuels increase the likelihood of marine and terrestrial spillage and pollution.

The growing prosperity of the island brings with it more vehicles and consumer goods, which will place greater stress on the island’s environment and demand increasing levels of management. Focusing on these issues is essential to ensuring orderly and controlled growth without exceeding the island’s carrying capacity.

Energy and its costs are also critical to the production of water. Advances in reverse osmosis technologies have freed Anguilla from its historic constraint upon economic growth due to the scarcity of water and the island’s semi-arid climate. This technology has revolutionized the public supply of water, enabled the establishment of a golf course,

giving the tourist industry a major boost, and has the potential to further enable agriculture and other water-dependant industries. It has also guaranteed that the basic right to water, and therefore to life, is ensured. However, it is also a fact that the process of reverse osmosis demands large amounts of electricity. If future costs of water produced by this method continue to be directly linked to energy generated by fossil fuels, it would mean that the cost of water, which is already quite expensive, could become prohibitive in the future, retard economic growth and severely disadvantage the poor and underprivileged. However, if Anguilla could supplement and eventually replace energy generated from fossil fuels with energy created from renewable resources, a double-win for the environment would be achieved. More water could be had for industry, agriculture, horticulture and basic needs at sustainable prices and a reduction in carbon emissions, the chief agent of climate change, would also occur.

Acting locally therefore, takes the following key environmental points into account:

- (a) the island's opportunity to successfully exploit its abundance of wind and sunshine
- (b) the fragility of the island's environment and the need to more fully appreciate the value of conservation
- (c) the absolute importance of the healthy maintenance of the marine environment on which most of the successful tourist industry depends
- (d) the need to integrate issues of energy with those of long-term social and economic sustainability
- (e) the promotion of Anguilla worldwide as a leader in environmental responsibility, to the benefit of local pride and competitiveness in the tourist industry, and as a model of these values among other island communities and beyond.



### 1.3 MANDATE FOR A SUSTAINABLE ENERGY SUPPLY

The Government of Anguilla proposes a new mandate for assuring the sustainability of Anguilla's culture, prosperity and environmental integrity through the following goals:

1. Ensure universal access to an affordable electricity supply for all Anguillans, particularly those below the poverty line for whom basic access is still in doubt.
2. Reduce dependence on fossil fuels for power generation and transportation.
3. Use locally available renewable resources such as wind and solar power to the greatest extent possible to meet both existing and increasing demand for power generation.
4. Promote the development of technological education and expertise in the renewable power generation sectors in Anguilla for the support and advancement of a local skill base.
5. Promote aggressive energy efficiency measures and an ethic of conservation amongst the Government, Civil Society and the private sector.
6. Support ANGLEC's prudent and viable transition from primarily diesel-based to primarily renewably-based power generation.
7. Create a legislative framework for customer-generated renewable power.
8. Reduce negative environmental impact of all power generation methodologies
9. Promote through fiscal incentives a transition in the transport sector from fossil fuel powered vehicles to those that are powered by the use of hybrid, electric and hydrogen technologies.



## 1.4

### **KEY ENERGY POLICY GOALS**

The sustainable energy policy goals for Anguilla represent the necessary outcomes to be achieved by the implementation of the National Energy Policy. They represent medium- and long-term outcomes and the strategy and programmes necessary to achieve them.

The key goals of the energy policy are:

1. Policies, legislation, regulations, standards and incentives that promote energy efficiency, foster the use of renewable energy resources, and facilitate the transition to and adoption of renewable energy technologies.
2. Integration of sustainable energy strategies into national sustainable development planning and programming.
3. National awareness and consensus on sustainable energy policy, and the active participation of all stakeholders in advancing the Energy Independence agenda.
4. Research and development facilities, projects and initiatives in renewable energy, making Anguilla a centre of excellence on sustainable energy self-reliance and independence among very small island state communities.
5. Development of a framework for direct and competitive participation in the emerging global carbon credit market by all stakeholders in Anguilla.

## 1.5

### **ENERGY INDEPENDENCE AND TOURISM**

As Anguilla's tourism industry continues to develop, its image and brand in the world travel market place will become even more critical. The island is now facing stiff competition from other regional and global destinations eager to attract the luxury market and duplicate or outpace Anguilla's success in this area. Whatever promotional advantage Anguilla can harness in this increasingly competitive market must therefore be seized and exploited if the island is to remain as a special, unique, and sought after destination. Although the solutions to this promotional challenge are multifaceted, there should be no illusions that a very crucial facet in this construct will be the perception of Anguilla as an environmentally progressive and sustainable destination.

The global economy and global consciousness generally is rapidly approaching a tipping point in which a paradigm shift in the way we "do business" is inevitable. That shift will be grounded in a deeper understanding of what sustainability really means in terms of

changing economics and the people best placed to appreciate and encourage this shift are the wealthy and educated, precisely the travel market that Anguilla has focused on since 1980. Anguilla must do everything it can to retain this market segment.

Apart from all the sound economic, social, cultural and environmental reasons stated within this document, as to why Anguilla needs to revise its energy practices and steer a new policy aggressively towards a far greater reliance on renewable energy, there needs to be a conscious realization that such a policy will help the island considerably in the battles for promotional advantage. A calculated effort to turn Anguilla “green” in fundamental and meaningful ways will be an enormous boon to the promotional efforts of public institutions and private entities that are so reliant on the tourist trade. An Anguilla that can someday boast that its source of energy is sunshine and cool breezes and its mode of transport is essentially oil free will remain an island of choice for the conscious and discerning visitor, and an island remaining true to its natural heritage.



---

# STRATEGIES FOR CHANGE

## - SECTION 2 -

---

### 2.1 FOSTERING RENEWABLE ENERGY

Renewable Energy refers to energy obtained from sources of which there is an infinite supply. It includes amongst others solar, wind, hydropower, geothermal, biomass, and ocean energy. There are currently two main commercially viable renewable energy sources available within Anguilla, these are solar and wind.

Anguilla currently depends on imported fossil fuels for electricity generation and the transportation sector. A significant aspect of fossil fuel use is price volatility, which makes economic planning difficult. The ramifications for small island nations such as Anguilla are serious. In the face of escalating oil prices and increasing competition to access a limited supply in the region, Anguilla has little bargaining power relative to larger island nations. A near-future scenario could see Anguilla unable to access sufficient fuel oil to meet its increasing demand.

The use of renewable resources will reduce the volatility of the cost of energy, in particular because renewable energy resources are indigenous rather than imported. In order to develop truly sustainable energy practices it is essential to exploit indigenous resources and support local capacity building. Foreign exchange savings and stabilization of the local energy market are important benefits to the use of renewable energy.

By initiating a transition from the exclusive use of fossil fuels for electricity generation and transportation to a greater dependence on indigenous renewable resources, Anguilla will benefit by reducing its carbon emissions, providing economic and educational opportunities for its residents and enhancing its global reputation as a leader in environmentally sound and sustainable development.

To minimize its dependence on fossil fuels and move toward energy independence, Anguilla will undertake the following steps:

#### **POLICY RECOMMENDATIONS:**

1. Identify available renewable energy sources and technologies that are practical, commercially viable and suited to the culture and economy of Anguilla

2. Draft and implement legislation and regulations to promote energy efficiency measures
3. Update current legislation to enable regulatory and legislative enactments to encourage the utilization of renewable energy sources in the energy sector
4. Environmental Impact Assessments of new energy-related projects to be mandatory
5. Encourage short and long-term programs for active research, development and training in renewable energy technologies and designs
6. Establish bilateral and multilateral cooperation programs as a means of harnessing existing expertise from within and outside of Anguilla
7. Implement appropriate pricing policies to ensure that adequate energy supplies are delivered to all economic sectors efficiently
8. Facilitate an improved and sustainable energy supply network with sufficient incentives to encourage private sector investments.

### **Further strategies to promote the use of renewable energy:**

1. Increase public awareness of the benefits of renewable energy
2. Provide tax incentives for the use of renewable energy technologies
3. Ensure that renewable energy resources are used in an economically, environmentally and culturally sustainable manner
4. Build the local capacity to install, manage and maintain the standardized equipment necessary for sustainable energy production
5. Establish a long-term task force to stay abreast of innovations in renewable energy technologies
6. Encourage partnership in development with the private sector
7. Promote renewable energy throughout all levels of the educational system.

## 2.2

## RETHINKING TRANSPORTATION ON ANGUILLA

Efficient transportation is essential to maintain both a growing economy and high quality of life on Anguilla. As Anguilla continues to develop at a rapid rate, the impact of vehicle transportation plays a larger and larger role in managing both of these desirable goals. In particular, the 11% annual growth of vehicle fuel consumption on Anguilla over the last eight years underscores the need for national energy and transportation policies to provide a secure, efficient, affordable, and environmentally responsible supply of energy for the transportation sector. Responsibility for implementation of these policies will, as always, be shared between several sectors of Anguillian society, including the choices made by individual businesses and residents to promote and effect these goals. But there are a number of important policy steps that must be established by Government in order to redirect from what is currently an unsustainable and destructive pattern of growing dependence on the inefficient use of expensive and polluting fossil fuels.

These goals will primarily be achieved by focusing on the many ways available to Anguilla to reduce demand for fossil fuel consumption in vehicles. These ways range from promoting public transport to increasing the use of efficient vehicles and engines. In addition, the possibility that current and emerging technologies of renewable energy production and vehicle battery storage will converge in the near future to solve several problems at once for Anguilla should be closely watched and all efforts made to take advantage of this possibility. Some expansion of these points follows, along with specific policy recommendations to pursue:

For the future, Anguilla's policy should be to adopt a demand-side approach. The vehicle and fuel tax structure should be overhauled to discriminate in favour of small engine sizes, diesel and other fuel-efficient units, such as electric hybrids and electric vehicles. Tighter controls are to be maintained when granting special concessions for heavy construction related vehicles.



With the rapid growth of the economy Government's policies must call for a comprehensive review of transport taxes and road user pricing to reflect best international practices.

Public transport needs to increase its share of the transport market, thus it must implement a high quality of service in terms of frequency, reliability and an acceptable travel time.

Constraints to the use of electric vehicles have been overcome through the use of hybrid vehicles. A hybrid vehicle integrates a gas engine and an electric motor to provide the power. Flexi vehicles use gasoline and biofuels, such as ethanol, in various proportions.

The miles per gallon performance of hybrid vehicles is better than twice that of comparable conventional vehicles, especially when driven on flat terrain at low speeds of up to 40 m.p.h. As such, Anguilla offers an ideal environment for hybrid and flexi vehicles because of its flat terrain and relatively low road speed. Hybrid vehicles are currently more expensive initially than conventional vehicles, but because of their lower operating cost, over their useful economic life the cost per mile will be much lower, particularly here in Anguilla.

Plug-in and electric powered vehicles represent a potential 'double' advantage in helping Anguilla to reach its energy independence goals. When powered from the electricity grid, they will both reduce fuel usage dramatically for average Anguillians; and once the island has reached substantial levels of renewably based energy generation, the batteries in all plug-in hybrids may also be able to serve as critically useful power storage units for supplying energy back to the electrical grid when the wind or sun is not producing.

#### **POLICY RECOMMENDATIONS:**

- 1 . Maintain a lower level of import duty on vehicles with smaller engines than on vehicles with larger engine sizes.
- 2 . Maintain taxation policies that provide strong incentives for the importation and use of more fuel-efficient and diesel-powered vehicles.
- 3 . Establish fuel-efficient vehicle import standards.
- 4 . Institute a data collection mechanism to track imports of vehicles according to fuel type.
- 5 . Reduce import tax on hybrid, flexi (biofuel-based) and electric vehicles through a discriminatory tax regime that favours fuel diversification and fuel-efficient vehicles.
- 6 . Introduce rigorous enforcement of vehicle emission standards, along with tax incentives for energy efficient, low-emission vehicles.
- 7 . Pursue a reliable, frequent, high-quality mass transport system on Anguilla using a high efficiency fleet.

### **2.3 ENHANCING ELECTRICITY SECTOR PERFORMANCE**

The primary focus of the National Energy Policy is to provide a reliable and quality supply of electricity to all sectors of society at an equitable price.

The Policy acknowledges the fact that a transition period measured in years will be necessary to switch from full dependence on non-renewable fossil fuels to a mix of renewable and non-renewable energy resources, with greater emphasis being put on renewable energy technologies as these technologies develop over time. This change must be achieved however, without compromising the reliability and quality of electricity supplies to customers of the Utility by over-accelerating the process of change.

During this transition period, there will need to be a strong emphasis on promoting greater conservation of energy through customer energy awareness programmes and demand side management strategies. Appliances for reducing the overall system energy demand on the Utility, such as solar hot water systems, energy efficient light fittings and high efficiency appliances will need to be actively promoted.

With the aim of lowering the daily peak demand, customer-driven energy conservation strategies centred around the Utility's tariff structure will be examined for possible implementation. The introduction of 'time-of-use' and 'demand' tariffs will provide either cost benefits or cost penalties to customers based on individual electricity usage patterns. For the Utility, any significant reduction in peak demand will have a retarding effect on the timing of the next generation expansion.

The National Energy Policy actively encourages plans for interconnecting neighbouring island countries, such as the planned submarine cable linking Anguilla to St Martin, St Maarten and St Barths; and to monitor the progress of the proposed natural gas pipeline from Trinidad. By doing so, neighbouring utilities will achieve economies of scale with collective purchasing and possible shared fuel storage facilities, resulting in reduced operational costs to the Utility.

The NEP (National Energy Policy) likewise encourages discussions with West Indies Power (Nevis) Ltd. and the Nevis Island Administration with regard to accessing geothermal generated electricity from that island. It has been proven that vast amounts of geothermal energy exist in many of the volcanic islands of the Eastern Caribbean. Some of these islands, including Nevis, are actively pursuing the development of this natural and clean source of energy as a means to generate a reliable electricity supply. West Indies Power Holdings B.V. is attempting to harness this energy on the islands of Nevis and Saba, generate electricity, and export it to neighbouring islands via submarine cable. This is an exciting development that should be carefully monitored and explored. However, as there will be little or no control by Anguilla over the cost and reliability of supply, or any direct interest in the infrastructure of the generation of this supply, caution will be necessary in deciding on the use of this energy as a sole or even dominant alternative to fossil fuel based electricity.

By regular benchmarking with other Caribbean utilities through the auspices of CARILEC, the Utility will continue to improve its operational efficiency. However, greater emphasis should now be put on renewable energy benchmarking in order to maintain the impetus for the change from electricity production using fossil fuels to renewable energy technologies.

The electricity tariff needs to be carefully and appropriately set in order to maintain a careful balance between fair prices for customers on the one hand, and shareholders' expectations for a reasonable return on their investment on the other.

To facilitate the policy recommendations of the National Energy Committee as it applies to the electricity sector, a thorough review and subsequent amendment of the Electricity Act and its associated Regulations will need to be carried out, in order to bring the document into line with the latest ideas and technologies pertaining to renewable energy.

## **POLICY RECOMMENDATIONS**

- 1 . Encourage the deployment of latest proven technologies in equipment and materials that will promote higher energy efficiencies by reducing transmission and distribution energy losses in the Utility networks.
- 2 . Encourage neighbouring utilities in Dutch St Maarten, French St. Martin, and St Barth's to participate in collective purchasing and fuel storage programmes by interconnecting island networks.
- 3 . Based on current studies showing technical feasibility, utilize expertise in tertiary institutions in the region to advise on engineering issues such as renewable energy technologies which may be unique to small island Utilities.
- 4 . Implement feasible time-of-use tariffs and demand tariffs, as a means of reducing customer electricity usage.
- 5 . Actively promote customer educational programmes pertaining to energy conservation and encourage demand side management strategies.
- 6 . Promote energy efficient equipment technologies such as solar hot-water heaters and energy efficient light fittings.
- 7 . Continually monitor the Utility's increasing operational efficiency with comparative benchmarking with other Caribbean electricity utilities carried out on a regular basis.
- 8 . Review and amend as necessary, the Electricity Act and associated Regulations in order to facilitate the policy recommendations of the National Energy Committee.

## 2.4 GENERATING POWER EFFICIENTLY

The primary focus of the National Energy Policy in respect to power generation is to provide reliable and quality electricity to Anguilla, produced with maximum efficiency and in an environmentally responsible manner.

With the rapid growth currently being experienced in Anguilla, fuel consumption levels have increased at an average of 10% annually, reflecting an unusually high rate of electricity demand in Anguilla over recent years, which has averaged 9.7 % annual load-growth since 2003 . With Anguilla going through a period of rapid development, this high annual load-growth is likely to continue at its present rate or even higher for the foreseeable future; which will require new generating plant of around 5 Megawatts to be installed every two to three years if the present load-growth continues at its present rate.

ANGLEC must therefore be prepared to have sufficient generating plant installed in time to cater for these inevitable load-increases. An obligation, however, exists on the part of the Utility to implement proven high-efficiency, low-pollutant power generation technologies, whether using renewable or non-renewable energy resources. Impact studies of technologies that may become workable and affordable in a decade or more, must be carried out and their development closely monitored. Similarly, Utility transmission and distribution energy losses must be minimized by utilizing the latest technologies available in equipment and materials.

Agreements need to be negotiated with customers having large standby generator facilities, as a viable alternative to the Utility continuously financing and installing sufficient generating capacity to meet the system energy and peak demands as well as maintaining adequate reserve margins.

Smaller independent power producer's utilizing solar panels or small wind-power generators will also be considered for 'feed-in' agreements, should the technology be capable of being safely and efficiently integrated into the Utility's electrical network. Equally important is promoting strategies for extending the life of fossil fuel reserves. Should it prove economically viable, a reduction in the dependence on fossil fuel can be achieved by fuel diversification; namely the blending of fossil fuels for electricity generation with renewable bio-fuels.

The Anguilla Electricity Company Ltd is committed to actively pursuing over the coming years the aims and aspirations of an Energy Policy explicitly designed for Anguilla's unique situation, that will provide electricity efficiently and in an environmentally sensitive and responsible manner to all Anguillians. The following Policy Recommendations provide the blueprint to achieve this goal.

## POLICY RECOMMENDATIONS

1. Identify, develop and promote alternative or renewable energy resources, technologies and systems for supplementing current diesel power generation using renewable energy resources.
2. Promote the deployment of advanced high-efficiency, low-pollutant power generation technologies such as low-emission diesel generation, and monitor developing technologies for possible future implementation.
3. Investigate, and if found economically viable, reduce the amount of non-renewable fossil fuels needed for electricity generation by blending with renewable bio-fuels.
4. Encourage agreements with customers having large standby generator facilities, whereby additional generating plant can be called upon, if or when required.
5. Investigate feed-in agreements between the Utility and small IPP's using renewable energy resources such as solar panels or small wind-generators, and implement provided that all safety and integration issues have been adequately addressed.
6. Monitor closely new and emerging technologies to supplement renewable energy technologies as a long-term strategy.



## **2.5 PROMOTING ENERGY EFFICIENCY AND CONSERVATION**

The significance of reducing energy usage through increased efficiencies cannot be overstated when talking responsibly about renewable energy investments. The one must equal the other in order for the strategy to be viable. As the formula goes: “Renewable energy plus energy efficiency equals energy independence: or  $RE+EE=EI$ .” To the consumer, it holds the greatest power to actually reduce current monthly electricity costs. And to the investor, whether ANGLEC, individuals or businesses who may participate in generating renewable power in the future, it holds the promise of maximizing returns while meeting goals of providing least cost electricity to the customer.

The goal of energy efficiency is to use less energy for the same services, both at the point of supply and at the end use. Improvements in energy efficiency can reduce energy costs by up to 30%. Globally only 37% of energy consumption is converted to useful energy, thus there is great potential for improvements in energy efficiency, measured in what are known as “negawatts” --- electricity saved rather than generated.

Strategies to encourage energy efficiency will help to moderate environmental problems as well as save energy in spite of the expected growth of Anguilla’s demand for energy. Energy intensity – the amount of energy used per unit of activity - is the inverse of energy efficiency. The energy intensity of our activities depends on how equipment is designed, operated and maintained, how well capacity is utilized, and also on the type of energy used. In Anguilla today, energy intensity is high and must be reduced.

To optimize the use of energy it is important to implement measures to minimize its consumption and intensity, and increase the efficiency of its use. Often these measures are at low or no cost, and therefore should be implemented immediately. In addition, this is an area in which widespread public education to promote literacy about personal energy usage can yield great savings, personal motivation and long-term influence over helping to create a nation of energy conscious and energy independent users.

### **POLICY RECOMMENDATIONS**

1. A National Energy Code for buildings, which will address building for energy efficiency in a comprehensive fashion, is required. The code should demand that all new buildings meet or exceed minimum standards that will provide a cost effective degree of energy efficiency. The code should cover, among other aspects, lighting, ventilating, air-conditioning systems, water heating systems, and electrical power requirements.
2. The energy efficiency of consumer products should be identified wherever possible by product labeling and by verification through a local and regional Standards agency.

3. Government should emphasize fuel efficiency in vehicles, imposing progressively higher taxation on vehicles with larger and less efficient engines.
4. Government should provide incentives for the use of energy efficient lighting and new high-efficiency appliances through tax measures, including lesser import duties and loan programs through local lenders. At the same time, Government should provide disincentives for the use of incandescent bulbs, inefficient refrigerators, air conditioners, etc.
5. The Utility should institute Demand Side Management (DSM) as an important element of long-term resource planning. The objective of DSM actions is to develop programs that modify consumer loads with resulting benefits to the consumer, the utility and society.
6. On the supply side, as part of least-cost or integrated-resource planning, the utility should approach future planning by evaluating all options, emphasizing flexibility and low-risk, improving customer relations, reducing pollution and implementing least-cost growth.
7. In order to change the national perception of energy efficiency, efforts should concentrate on public awareness and 'energy literacy', and on promoting a sound attitude toward efficiency among school children through school curricula.
8. Actively promote best practice energy efficient building designs that utilize natural ventilation, day-lighting, extensive natural shading and other sustainable design techniques.
9. Introduce energy audits as regular and standard practice in all commercial and industrial and residential structures.
10. Institute regulatory policies that assure that Anglec receives an equal or greater return on investments in Energy Efficiency compared to traditional investments in Energy Supply.
11. Accessing international financing resources through the carbon credit market and other identified sources.

RE	+	EE	=	EI
Renewable Energy	+	Energy Efficiency	=	Energy Independence

## 2.6

## **FINANCING RENEWABLE ENERGY**

Financing a national energy policy founded on the development of renewable energy and the pursuit of energy independence requires using the emerging financing opportunities carefully. The national energy policy will promote and facilitate the reduction of dependence on oil for the generation of Anguilla's energy needs. It will promote and facilitate research, development, pilot testing and commercial roll out of alternative and especially renewable energy technologies and systems. It will also encourage the adoption and use of more fuel efficient methods in oil powered electricity generation, the switch to hybrid fuel vehicles and vehicles that use primarily bio-fuels as well as battery powered vehicles to reduce the level of automobile emissions. The policy will also promote education and cultural awareness that will change the patterns of consumption of energy to generate demand and preference for renewable sources of energy to create a sustainable level of energy independence.

Financing options required to deliver on the objectives in the National Energy Policy will need to be diverse and creative to respond to the dynamic and changing scenarios that will evolve as the national energy policy is implemented over the short, medium and long term. The options that Anguilla should consider and explore range from traditional financing methods currently employed by Anglec to sustain and expand its existing operations, to new approaches stimulated by the need of the international community to respond effectively to the environmental threat posed by the high and increasing levels of carbon emissions into the atmosphere from the burning of fossil fuels.

### **Renewable Energy Financing Options:**

1. Commercial bank financing of commercially proven and viable energy technologies.
2. Capital market debt financing of commercially viable and proven energy technologies.
3. Private and/or public equity financing of commercially proven and viable energy technologies.
4. Carbon trading under the Kyoto protocols for research and development and new energy technologies.
5. Venture capital financing of the research development and pilot testing of renewable and alternative energy technologies and systems.
6. Public grant financing for research, development and testing from governments, bilateral and international agencies.
7. Private foundations (and other entities) grant financing

8. Tax rebates and drawbacks by the Government for renewable energy ventures.
9. Commercial bank financing at special rates to consumers and businesses investing in energy saving and renewable energy solutions to their energy needs.
10. Tax concessions to consumers and businesses investing in energy saving and renewable energy solutions to their energy needs.



## **2.7 BUILDING A BROAD COMMUNITY MOVEMENT**

If Anguilla is to achieve its goal of energy independence, all stakeholders in society must be drawn into the effort. A broad social movement to attain ‘energy literacy’ and to actively share public awareness about energy usage on the island is critical among individual residents young and old, government officials, tourists, and all professional and business sectors.

This challenge is an opportunity to mount a broad-based effort that is not restricted to technical and policy expertise, but will also need to draw the participation and skills of Anguillians across society. Particular early emphasis must be placed upon planning a campaign that will result in a new and larger identity for Anguilla as a self-reliant and forward thinking society with regard to its fragile environment and its energy usage.

To succeed, this effort must also extend to the untapped large global market for ecotourism, and the strengthening of Anguilla’s identity abroad as a ‘green island’ destination among globally conscious tourists who will help Anguilla achieve its new energy and environmental goals.

An important marker of success in this effort will be the development of a local skill base in energy technology that would provide Anguillians with an exportable skill, and an international conferencing market that will bring not just tourists but international professionals to Anguilla in all seasons to focus on renewable energy training and transition.

## **POLICY RECOMMENDATIONS**

1. Establish a permanent Energy Committee for the overall supervision and coordination of the Energy Policy, with a professional PR/Marketing/Outreach position as a permanent member or consultant.
2. Develop an overall strategy and budget needed to educate all constituents and stakeholders as to the need for, and basic elements of, Energy Independence.
3. Conduct an analysis and collection of input from all stakeholder groups and their specific issues related to an awareness campaign.
4. Develop a 'brand' for the energy independence awareness campaign.
5. Create a working network among existing civic, church, educational, and community groups to gain input, support, and participation in the Energy Independence Plan and its implementation.
6. Coordinate efforts with the Anguilla Tourist Board and the Anguilla Hotel and Tourism Association toward marketing to and educating tourists about Anguilla's Energy Independence Plan.



---

# APPENDICES

## - SECTION 3 -

---

### APPENDIX A: GLOSSARY OF TERMS

**CARILEC:** The Caribbean Electric Utility Service Corporation is an association of electric Utilities, suppliers, manufactures and other stakeholders operating in the electricity industry in the Caribbean. CARILEC was established in 1989 with nine (9) members as part of an electric Utilities modernization project funded by USAID and implemented by NRECA under a five-year "Co-operative Agreement".

**Bio-Fuel:** fuel (diesel, alcohol or gas) produced from biomass (fresh organic materials – manure, domestic waste, plants/plant parts, etc) via processing or enhanced natural decomposition and subsequently referred to as biogas, bio-alcohol or biodiesel.

**Carbon Credit:** A permit that allows the holder to emit one ton of carbon dioxide. Credits are awarded to countries or groups that have reduced their greenhouse gases below their emission quota. Countries or groups which do not utilize their credits or emit less than they are allowed to emit can then transfer the credits through trading at market prices, resulting in a profit from investments on low carbon-producing technologies.

**Climate Change:** This is any long-term significant change of an area in the “average weather conditions” such as rainfall, temperature, sunlight, winds. Climate change is used to refer to changes in weather conditions brought on primarily as a result of human industrial and urban practices.

**Coral Bleaching:** the loss of color from corals when the attached single cell algae (which gives the coral the color) is released due to stress caused by changes in the water chemistry, sedimentation, sunlight, temperature, salinity or pathogens such as sewage release.

**Coral Die-Off:** the mass loss of coral reef primarily (in recent times) as a result of coral bleaching.

**Demand-Side Management:** DSM is also referred to as energy demand management and it entails actions that influence the quantity or patterns of use of energy being consumed by end users; such as actions targeting reduction of peak demands during periods when energy-supply systems are constrained. Peak demand management does not necessarily decrease total energy consumption but could be expected to reduce the need for investments in networks and/or power plants.

**Energy Efficiency:** the relative measure of energy lost from the production to consumption of energy. Increases in efficiency are equivalent to energy saved by the consumer and production not required by the supplier.

**Energy Intensity:** This is a measure of the energy efficiency of a nation's economy. It is calculated as units of energy per unit of GDP. High energy intensities indicate a high price or cost of converting energy into GDP. Low energy intensity indicates a lower price or cost of converting energy into GDP.

**Flex Vehicle:** A flexible-fuel vehicle (FFV) or dual-fuel vehicle (also sometimes called only flex-fuel) is a vehicle that can typically use different sources of fuel, either mixed in the same tank or with separate tanks and fuel systems for each fuel. A common example is a vehicle that can accept gasoline mixed with varying levels of bioethanol (gasohol) . Some cars (see bio-fuel) carry a natural gas tank making it possible to switch back and forth from gasoline to natural gas.

**Fossil Fuels:** fuel (gas, oil, gasoline, diesel) from natural gas reserves or petroleum base compounds stored in the earth's crust subsequent to millions of years of fossilization of organic matter. Therefore a non-renewable resource.

**Greenhouse Gases:** harmful gases which persist in the atmosphere and absorb or reduce the outward flow of short wave radiation emitted primarily from the earth's surface.

**Hybrid Vehicle:** a vehicle powered by two or more distinct sources of energy or fuel; electricity from a battery and biogas, etc.

**Kilowatt:** The kilowatt (kW) is the equivalent to one thousand watts. This is commonly used to state the power output of engines and the power consumption of tools and machines. A kilowatt is roughly equivalent to 1.34 horsepower.

**Megawatt:** The megawatt (MW) is the equivalent to one million watts or one thousand kilowatts.

**Negawatt:** the ability to reduce, on command, the electrical load on the power grid during a given time of need; when departments of companies turn off lights and cut back air conditioning in their offices the overall electricity in use is reduced, the amount of megawatts of "load" taken off the grid is referred to as "negawatts" – negative watts.

**Plug-In Vehicle:** a vehicle for which its fuel or energy source is entirely or in part supplied through the connection of a plug to an electrical power source for recharging.

**Renewable Energy:** energy produced by renewable resources such as wind and sun, or by fuel or fuel based products which can be replenished faster or at the rate at which it is being consumed.

**Reverse Osmosis:** is a separation process used for the desalinization of water that uses pressure to force a solution through a membrane that retains the solute on one side and allows the pure solvent to pass to the other side where it is in low concentration; this requires the input of energy since it is the reverse of naturally occurring osmosis.

**Sustainability:** the ability of a system or process to be maintained almost indefinitely or for extremely long periods at an optimal operating level.

## **APPENDIX B:                    RESOURCE LIST**

The following relevant documents are available for perusal at the Department of Environment:

**CARILEC Energy Policy**

**OECS Draft Energy Policy**

**St. Lucia Draft Energy Sector Policy and Strategy (A Green Paper for Discussion)**

**Barbados Draft Energy Policy**

**Solomon Islands Draft Energy Policy**

**World Bank Report on OECS Energy Options**

## **APPENDIX C: Members of the National Energy Policy Committee**

**David Carty - Chairman**

**Fabian M. Fahie – Steering Group Deputy Chairman**

**Karim Hodge – Steering Group Executive Director / Director, Environment**

**Beth Barry - Steering Group Secretary / Liaison to NGO/Private Sector**

**Rhon Connor - Steering Group Asst. Secretary**

**Keith David, - Co-ordinator Conservation Education, Department of Environment**

**Neil McConnie- General Manager, Anguilla Electrical Company [Anglec]**

**Thomas Hodge – General Manager Designate, Anguilla Electricity Company Ltd**

**Michael Nation – Anguilla Electricity Company Ltd**

**Crefton Niles – Director Public Utilities - MICUHAF**

**Trudy Nixon – Executive Director, Anguilla Hotel and Tourism Association**

**Aidan Harrigan PhD. – Permanent Secretary, EDICT**

**Larry Franklin – Permanent Secretary, MICUHAF**

**Peter Reynolds – Liaison to NGO/Private Sector Member**

**Peter Lillienthal PhD. - Energy Consultant**