CARILEC

Position Paper on Energy Policy

January 2008

Prepared for Carilec by

EXECUTIVE SUMMARY

The electric utility's major goal is to serve the community and as such also the economy of the country by providing electric power at the lowest cost and the highest reliability as possible with a fair return to shareholders, taking into account environmental rules and regulations.

Member utilities of the Caribbean Association of Electric Utilities (Carilec) are of the opinion that initiatives for establishing an Energy Policy require the input from the electric utilities. This will assure an overall and appropriate coverage of all relevant fields of the prevailing energy realities.

In order to increase the involvement of electric utilities in the Caribbean energy policy process, Carilec has prepared this Position Paper on Energy Policy. Through this paper, Carilec utilities express their views on the important issue of an Energy Policy for their countries and/or the Caribbean region.

Energy policies that have been developed so far or that are currently being developed at different platforms have no or little involvement of the electric utilities, which are at the same time to be considered as the key players in the energy sector. Furthermore observations of energy policies as developed so far tend to be very general, sometimes vague and sometimes not even realistic. An optimal match between a sound utility business and a visionary governmental vision on energy policy cannot really be identified in many of the policies that have been issued.

The Carilec utilities have identified that policy issues in energy policy documents cannot always be linked with the technical/economical feasibility of such issues or with a realistic implementation of such issues in the utilities' strategies. Utilities are currently operating with capital intensive assets pursuing a reliable and most cost effective power generation and delivery. Implementation of new technologies, which also need to be proven technologies, should be embedded in technical/economical feasible long term strategies, once those technologies have been identified as important to meet goals towards less dependency on fossil fuels and less burdening on the environment.

In this Position Paper the Carilec utilities are collectively expressing their need to be involved in the development of Energy Policies in the Caribbean, with a strong emphasis on the utilities' willingness to

contribute to governmental initiatives towards a sound energy policy. Furthermore the Carilec utilities have stated their opinions on energy policy issues and on the issue of how to move from policy to a realistic utility strategy.

In other words: with the electric utility also on the table of policy making, the policy makers will be assured that technical and economical impacts of energy options are properly weighted. Feasibility and non-feasibility of options can be worked out, technically and economically, which will lead to an energy policy document that can serve as a realistic roadmap towards the energy situation of the future.

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1. INTRODUCTION

Background

Over the past five years an increased need has arisen in many Caribbean States for establishing an Energy Policy. The major factors that have driven Caribbean Governments towards Energy Policy initiatives are:

- the increased oil prices;
- the dependency on oil;
- security of supply;
- environmental concerns;
- no economies of scale, particularly on the smaller islands.

While many of the island economies are threatened by these factors, many of these economies are at the same time in a transition period from former privileged situations towards more diversified economic developments with a strong emphasis on the further growth of tourism and the need for local manufacturers and producers to be competitive in the export market. This has brought the urgent need for power supply at lowest rates, highest reliability and at a lowest burden for the environment as possible.

Energy Policy Initiatives so far have led to the development of Energy Policies in different individual States, while Task Forces and other platforms were installed within the Caricom and the OECS. At the same time, initiatives have also been identified at platforms like the OAS and OLADE.

Electric utilities are key energy players within the Caribbean as they provide a significant portion of the region's overall energy needs. Electric utilities are also the experts in the fields of power supply, fuel issues, renewables, energy efficiency, etc. Their contribution in establishing an Energy Policy is therefore of eminent importance. Still, so far, in most cases electric utilities are not part of the platforms where Energy Issues are discussed and Energy Policies are developed. The contributions of

the electric utilities in terms of input and expertise have unfortunately largely been neglected or at a minimal token level by policy makers at Governments, Caricom, the OECS, etc.

Paper Objectives

The electric utility's major goal is to serve the community and as such also the economy of the country by providing electric power at the lowest cost and the highest reliability as possible with a fair return to shareholders, taking into account environmental rules and regulations.

Member utilities of the Caribbean Association of Electric Utilities (Carilec) are of the opinion that initiatives for establishing an Energy Policy require the input from the electric utilities. This will assure an overall and appropriate coverage of all relevant fields of the prevailing energy realities.

In order to increase the involvement of electric utilities in the Caribbean energy policy process, Carilec has set up this Position Paper on Energy Policy. Through this paper, Carilec utilities collectively express their views on the important issue of an Energy Policy for their countries and/or the Caribbean region.

Caribbean Island Systems: Similarities and Diversity

There is a wide diversity in the characteristics of the various islands in the Caribbean. These differences relate to the size of each individual Island as measured in the area size, peak load, energy consumption, etc. as well as in the economic characteristics such as GDP per capita and economic growth. Furthermore, there are geographical differences which result in differences in power system configuration (e.g. voltage level choice) as well as possibilities for installing renewable generation. Finally, there are institutional differences such as type of utility ownership and presence of regulatory bodies.

At the same time, island systems have a number of energy issues in common. They are isolated systems with no or very limited possibilities for

interconnection. This requires high reserve capacity margins in order to dispose of sufficient generation availability for maintaining sufficient reliability of supply. This implies that running an island system is relatively more capital intensive. Due to the small size of island systems, there are no economies of scale to be exploited while dependency on oil supply is high. Being small also leads to higher prices for inputs as bulk purchase is limited. Such factors tend to lead to higher costs and consequently, higher electricity prices.

These issues can be identified as general similarities of island systems, even when including the larger island systems. The notable exception is Trinidad & Tobago whose dependency on oil is not really the case due to their abundant reserves of Natural Gas. In Annex A, a "problem tree" has been worked out for island electric utilities, addressing the basic similarities, starting points and challenges for island utilities and showing the output that can be reached, although under certain preconditions and at higher costs.

In summary, there are both differences and similarities between the different Caribbean Islands and their power systems. This will have impact on the development of a suitable Energy Policy. The general energy issues will be similar whilst at the same time, there will be a need to consider differences and consequential variations in preferred policy.

2. ENERGY CHALLENGES FOR THE CARIBBEAN

Energy and the Economy

The current economic situation of the Caribbean can be characterized as a transitional period towards further diversification and strengthening of economic activities such as tourism. Economic growth in the Caribbean was relatively well in 2006. GDP growth in 2006 was only negative in one country, remained between 0% and 3% in 10 countries and ranked from 3% up to 12.6% in the other Caribbean countries.

An important condition for further sustainable growth of the economies is the supply of electric power at lowest cost and highest reliability.

But as it comes to *Energy and the Economy* the major developments in the past five years have been the strong price increase of oil (from USD 20 to currently higher than USD 90 per barrel). These developments have led to severe concerns about the impact of increased energy prices on the Caribbean economies. Additionally, there are concerns about security of supply in the light of continuing growth in global demand which is anticipated at 50% for the coming 20 to 25 years.

Competitiveness, growth, and development

Since the times of privileged economies on the islands are gone, the competitiveness of Caribbean islands is a major concern. There is an urge for diversification of economic activities as well as for further growth and development. An important factor for the islands' competitiveness is the price of electric power. While oil prices are going up, implying an increase in electricity rates, there is a need for cheaper power to enhance the attractiveness for investors and the growth of economic activities. Oil dependence has become a heavy burden for the Caribbean energy situation.

Demand

There is a strong relationship between economic growth and energy usage. Growing energy demand per capita is a strong indicator of economic growth. In countries with a large GDP growth, one can witness a corresponding increase in electricity demand. It is the electric utility's duty to facilitate future growth by assuring a reliable and secured supply of electric power. There is also a number of Caribbean countries with only slow or hardly any growth in the past 5 years.

Apart from anticipating on growth, the electric utilities are at the same time aware of the community's need for energy conservation and environmental protection. Some Demand Side Management initiatives have been identified, as well as Energy Conservation Programs, but at most utilities the efforts are restricted to customer education programs on energy conservation.

In general – particularly since it is expected that economic developments will persist – electric utilities in the Caribbean need to anticipate further growth in electricity demand in the coming years. As a result of proper load forecasting generation expansion needs to be planned several years ahead, given the long times needed for acquiring loans, procurement periods and long delivery times of generation units. Similar long lead times exist for expansion and strengthening of T&D grids.

Supply

Security of supply has already become an issue as of the first Oil Crisis in the 1970s. Since then, conditions of stagnating oil supplies have occurred as well as situations when there was the threat of stagnations. Reasons for these stagnations were mainly related to political issues. Next to the political issues we have seen some years ago – in the Caribbean region – the phenomenon of a strike at PdVSA which urged some Caribbean governments to look for contingency planning. For this reason as well as for the reason of getting a better price for deliveries of bulk oil it would be recommendable to explore the feasibility of building a regional storage for Caribbean islands.

Oil dependence and price volatility

Since some 85% of all electric power in the Caribbean is still generated with fuel oil, the oil dependence of the Caribbean energy sector is quite obvious. At the same time costs for goods and transportation have increased, due to the increased oil prices. The different Caribbean utilities have their contracts for oil deliveries with different suppliers. A number of Caribbean islands have also embraced the Venezuelan PetroCaribe initiative for the supply of oil by PdVSA. According to the PetroCaribe terms the delivery of oil is partially paid directly and partially covered by a long term loan at a favorable interest rate. There are clear advantages, but also obvious long term disadvantages of such an oil delivery arrangement.

Still – as mentioned before – the use of oil for power generation is economically considered the best possible option, also taking into account the utilities' installed base and capital costs involved. But undoubtedly the oil dependence is a major concern for almost all Caribbean States in terms of:

- the uncertainty whether oil prices will increase even more due to increasing global demand and increasing production costs of new oil discoveries;
- the lack of large economies of scale which implies that no price benefits exist for large scale oil purchases;
- the threat of oil shortages because of political reasons, terrorism, natural disasters;
- the threat of price volatility because of political reasons;
- the burden of oil purchases for the foreign currency reserves;
- the need for continuously adjusting the fuel surcharges on kWh prices which is negatively impacting the consumers as well as the image of the electric utilities.

Fuel diversification

Most Caribbean Countries are fully or more than 90% dependent on oil. Diversification of the fuel mix is more and more becoming an urgent need, since the economic factor of oil dependence is becoming an increasing burden. Therefore it is of great importance to look at diversification of fuels in such a way that the electricity rates can be lowered. However, diversification of fuels cannot be realized on short notice and it will take time to find economically feasible options.

When it comes to other fuels, supply looks costly in the case of CNG or LNG and only feasible at larger scales. With ongoing oil price increases CNG might become a serious alternative for fuel oil, even for the smaller islands. Supply of coal has environmental constraints and would only be a feasible option for large scale power plants on larger islands. Renewable sources will be discussed in the paragraph on Renewable Energy.

Environment

Environmental concerns already arose in the first half of the past century. The industrial emissions, the air pollution by for example coal fired power plants, the famous London fog, a terminology that later on changed into "smog", particularly caused by the emission of vehicles in big cities like Los Angeles, CFC's and other ozone-depleting substances, PCB's, oil spills of ships, etc, became major concerns, all together resulting in worldwide concerns of air pollution and the pollution of land and sea. Although improvements have been made, such as the development of much cleaner engines, the ban on PCB's and CFC's, etc, the world is now facing the enormous challenge of global warming and as a result of that, the climate change. Substantial reduction of CO_2 emissions is needed, but up to date the emissions are still increasing, especially because of the huge economic developments in Asian countries like China and India.

On a global scale the Caribbean islands are only contributing a fraction to the global warming. Still the global warming will become a major threat for the Caribbean islands because of the expected sea level rise. Caribbean Governments have indeed taken their responsibility to also initiate measures for reduction of CO_2 emissions and a number of Caribbean countries have also signed the Kyoto protocol. Ministers of Environment of Latin America and the Caribbean agreed in Johannesburg upon a target of 10% of Renewable Energy by the end of 2010.

Renewable Energy

At this time there are still no viable alternatives that could compete on price with oil for power generation (or coal or natural gas in the countries where the use of coal and natural gas is a very feasible option). Most Caribbean islands are too small for present nuclear power technology whilst commercial power generation based on hydrogen technology is only expected to become available in the distant future. This all is pointing into the direction of exploring the best possible and economically most feasible options in the field of renewables. In the Caribbean the obvious options are: wind power, biomass, geothermal, ocean thermal, hydropower and bio-options like ethanol, landfill gas, palm oil/jatropha plant oil. Indirectly, solar power could also reduce the power demand when solar water heating is used instead of electric water heating.

3. PRINCIPLES FOR AN ENERGY POLICY

Carilec has identified the following principles that should be considered as the basis for developing an Energy Policy for the Caribbean Electricity Industry:

1. Ensuring a reliable power supply at highest quality to all sectors of the society against lowest costs as possible and at the lowest burden as possible for the environment;

2. Maximizing the efficiency of energy use in production, distribution and end-use;

3. Reduced dependence on oil if feasible by fuel diversification and with special emphasis on renewable energy sources that can contribute to a lower environmental burden in an economically feasible manner;

4. Establishing Regional Initiatives for:

    a. regional purchase and/or storage of fuels;

    b. centralized studies on fuel diversification, renewable energy technologies, energy efficiency, system loss reduction, generation efficiency, energy conservation programs, customer education programs;

    c. public relations campaigns on Energy Policy issues and initiatives like energy efficiency and energy conservation programs.

5. Establishment of independent energy regulators, appropriate for the size of the country;

6. Introduction of competition only in cases where generation expansion is needed, while the utility should be enabled to compete with IPP's and while a Single Buyer model should be applicable. At the same time, recognizing the role of the utility in the planning of new or replacement of capacity;

7. Application of price controls which are based on realistic assumptions regarding efficiency and improvement whilst allowing for adequate levels of investment and returns to shareholders.

8. Assuring access to affordable energy by the poor and vulnerable customers in line with government policy but at all times, accompanied by corresponding direct or indirect subsidies in order to maintain financial health of the utility.

9. Enhancement of regional and local human and institutional capacities in the face of increasing regional and international scarcity of technical resources in the electric utility sector;

10. Performance of Impact Studies of technologies that may become adequate and affordable in the future (10, 20 years from now).

4. THE CARILEC ENERGY POLICY

Existing Initiatives on Energy Policy

In the Energy Policies that have appeared in the Caribbean so far in individual countries as well as by initiatives of Regional Organizations like Caricom, CREDP, OECS, and others, one can identify a similarity of major and dominating issues that need to be addressed with priority to safeguard the future energy situation in the Caribbean.

In the Annex of the Caricom Draft Energy Policy, dated January 2007, called "Way Forward", a number of action items and initiatives are listed per category related to this Caricom Draft Energy Policy.

In Appendix B to this Carilec Position Paper on Energy Policy the contents of the "Way Forward" are reproduced with per issue Carilec's view on how Carilec and the electric utilities of the Caricom Member States should be involved in the action items and initiatives, while reflecting Carilec's vision on these action items and initiatives based on the Carilec Position Paper on Energy Policy.

As a general remark it should be mentioned that the list of issues in the Caricom "Way Forward" is very comprehensive and it is recommended that a prioritization of most important issues should be made as well as a timeline for the execution of the action items. . Carilec suggests to being involved in the prioritization of issues and the timelines, particularly on the issues that are related to the electric utilities.

It is also suggested by Caricom to appoint an Energy Committee. This Committee could get the action items initiated and could as well monitor progress and evaluate the results of the action items, before reporting back to the Caricom Task Force on Energy Policy. Carilec also suggests appointing a member of Carilec to the Energy Committee. Individual utilities should also be represented in local energy committees. It must be noticed that participation by Carilec for all regional issues as well as participation by the member utilities for all initiatives in the different member states, will be quite time consuming and costly. So also for this reason there is a need for prioritization and scheduling of the Way Forward action items.

Generally speaking there is quite some consensus on the challenges that the energy sector is facing in the Caribbean Energy Policy Documents such as 1) dependency on fossil fuels; 2)Volatile fuel prices, etc.

Policy objectives that have priority in the Caribbean Energy Policy Documents so far are:

- Ensuring security and stability of supply;
- Setting and meeting renewable energy targets in order to ensure reduced dependency on fossil fuels;
- Diversification of the fuel mix;
- Maximizing Energy Efficiency;
- Introduction of competition.

In the Caribbean Energy Policy documents issued so far, many initiatives and measures are listed to address the challenges and to reach the goals as set by the policy makers. Many of those initiatives will require roadmaps towards realization. Some – like promoting high-efficiency generators – are already part of electric utilities' focus for a long time.

What is missing is a real focus on key issues that need action plans with timelines for addressing these key issues.

Carilec's Proposed Key Issues for an Energy Policy

Carilec's member utilities would endorse major Policy Issues as set forth hereafter based on their corporate goals and objectives for serving the community and the local economy with the supply of electric power at lowest costs as possible with at the same time a highest reliability as possible and with respecting of the environmental measures and policies as set by the Government.

Carilec is of the opinion that:

The complexity of the different issues involved, when looking at the business objectives of an electric utility and the governmental energy policy objectives, need close cooperation between the utility and the

government in order to arrive at an optimal match of a sound utility business and a visionary governmental policy on energy.

Carilec's **Key Issues** are the following:

1. **Ensuring security and stability of supply**

The security, stability and reliability of supply is viewed as the most important characteristic of all Caribbean Electric Utilities because they are mostly island systems that are not interconnected and therefore in failure due to shortage in fuel supply, generation or transmission capacity will result in the inability to meet the power demand of the Island and will result in blackouts which could lead to dire consequences.

There must therefore be adequate spare dependable capacity to meet the country's peak load even in worse case scenario which invariable result in higher levels of reserve margins than interconnected systems. Most island utilities are using the n-2 criterion as a minimum requirement for the installed capacity which stipulates that the total installed capacity should be at least at the level such that the peak demand can be met without load shedding with the two largest units being out of service. In setting this level of capacity it must be recognized that generation units like wind turbines are not considered dependable capacity which implies that these units are not contributing to the security of supply.

The objective to interconnect various Islands is a long term objective which should always be explored and implemented if economically feasible.

The dynamic impact on the distribution grids of such generation units needs to be addressed for the sake of stability of supply. The isolated island grids already tend to be weaker than the interconnected mainland grids and already need special care to keep up with the standards for reliability and power quality.

In respect of Fuel Supply the source of supply must be secure and reliable and adequate levels of inventory must be stored on Island so that there is no less than two months level of inventory on Island during

the hurricane season and no less than one month reserve is in place outside the hurricane season.

Another area which is key to security and stability is the adequacy of Transmission and Distribution capacity which must be reviewed on an ongoing basis and plans developed and implemented to ensure that there is adequate capacity to transfer power from the Generating Plants to the Load Centers.

An important issue here is that reliability of power supply but also of power quality must not be compromised by introducing other technologies for power generation.

The danger of compromising reliability and power quality through excessive price regulation should also be addressed (also see under Carilec's key issue: Regulation and Pricing).

2. **Fuel diversification:**

With all Caribbean Countries almost solely dependent on oil there is a dire need for every effort to be made by the respective Islands to diversify their fuel mix. For the economic factor of oil dependence it is of great importance to look at diversification of fuels in such a way that the electricity rates can be lowered. However, diversification of fuels cannot be realized on short notice and a substantial change will take some decades, once economically feasible options have been found.

A long term view will point at Trinidad & Tobago with its abundant natural gas reserves. Some islands may be able to take advantage of the gas pipeline up to Guadeloupe in the coming decade. With rising oil prices, CNG and LNG will also become an alternative in some islands, maybe even coal fired plants, with also coal gasification to be considered.

Other options for fuel diversification and/or less dependency on oil are looming at the horizon, like submarine cables interconnecting the islands while supplying the island utilities with hydropower from Guyana or geothermal power from a number of Eastern Caribbean islands.

From an economic point of view these alternatives may possibly compete better with renewable alternatives. Still wind power is likely to contribute to a certain extent and the islands with geothermal potential

may enter deeper into the possibilities of developing geothermal energy in an economically feasible way, since there is principally a huge "reservoir" of geothermal energy available.

Exploration of feasible possibilities for fuel diversification should be pursued in the case of plant expansions and replacement of retired generators. The feasibility of shifting to CNG or LNG should be a topic to be studied by the individual islands. From an economical point of view coal could be a feasible option for larger islands, although the environmental impact would be a barrier.

Less dependency on fossil fuels with use of other economical feasible, but proven technologies should be investigated as well.

Here it must be remarked that electric utilities do not have the resources to fund projects involving unproven technologies and do not have the resources either to produce electric power at higher cost for the sake of an increased use of renewables at the same level of tariffs.

Utilizing economies of scale should also be pursued by negotiating as a "block" for all island utilities, and by monitoring price developments of other fuels like CNG or LNG against the oil price. Some islands may also benefit from the coming of the gas pipeline from Trinidad or from the envisaged submarine cable bringing hydro power from Guyana. When initiating co-operation of fuel purchase an assessment of markups and taxes that utilities currently need to pay should be undertaken in order to also identify these areas where cost reductions could be achieved.

3. Renewable Energy

The major measure to reduce the environmental burden and to contribute to a reduction of CO_2 emissions is reduction of the use of fossil fuels. Particular focus is on reducing oil and coal as fuel sources. Since nuclear energy is currently no option for Caribbean islands, cleaner energy should be pursued by changing to natural gas and – at best – to clean renewables. Clean renewables are wind power, solar energy, hydro power, geothermal and ocean thermal energy. Furthermore, there are renewables which are not really clean, such as biomass and waste-to-energy,

Pursuing an increased use of renewables has at the same time the advantage of achieving a situation of less dependency on oil and as such a lesser burden on foreign currencies reserves.

For renewable power, security of supply is also an important issue. The supply of wind is quite volatile, supply of water for hydro plants needs to be secure, and supply of bio-products needs to be planned appropriately. Only with resources like geothermal and ocean thermal one can count on abundant and uninterrupted supply.

When the governments are aiming at a higher contribution to the reduction of emissions by enforcing the implementation of more renewable energy sources, which objective is endorsed by Carilec and its member utilities, the electric utility can contribute to this process of policy making by working out costs and benefits as well as technical possibilities and impossibilities of different scenarios to be considered. Economically most feasible options with fossil fuels will sincerely be competing with renewable options. Economical and environmental interests need to be balanced and it should have priority to focus on such renewable sources with which indeed the target can be met in an economically attractive way. Governments should consider tax incentives in favor for renewable developments.

When it comes to exploring the renewable sources the situation is different for each island. Some islands have geothermal potential, some have potential for substantial availability of bio-mass, some have wind potential but availability of land or distance to the grid could be a major problem. Each Island should seek to identify available renewable energy sources and technologies that are practical commercially viable and suited for their respective island and seek to maximize the utilization of such renewable sources.

Each Island utility should assess their renewable potential and based on this assessment set specific targets for the use of renewable and to work to achieve such targets without comprising pricing and quality of supply. Where utilities are unable to develop and exploit Renewable potential IPP's should be invited to do so.

4 **Energy efficiency/ energy conservation**

First of all improvement of the utilities' efficiency through the continuation of activities has an ongoing priority like reduction of losses and improvement of generation efficiency, using benchmarking studies and efficiency improvement programs.

Promoting Energy Efficiency as well as Energy Conservation should be a national effort, with close involvement of all stakeholders. Public Education and Outreach should be an integrated part of such effort.

Incentives should be given on Energy Efficiency and Energy Conservation programs and electric utilities could consider working out pricing measures for different customer categories with which higher usage will be charged at higher rates. Demand Side Management programs could also be considered and developed if appropriate for the sake of Energy Efficiency and Energy Conservation.

Funding of incentives, pricing measures, outreach programs should be negotiated between governments and electric utilities, so that in the end this may not affect the reasonable return of the electric utilities.

5. Environmental protection

As a special topic Carilec wants to emphasize the concern of the member utilities when it comes to environmental protection. When purchasing new fossil fuel fired generation units the World Bank standards for emission levels are taken into account, also when for economic reasons HFO units are purchased instead of LFO units these standards are taken into consideration. Member companies consider environmental protection as an important issue in all processes and procedures. This includes preventing oil spillages, responsible handling of SF6 as an insulation and arc extinguishing gas, collection of hazardous waste, removal of PCB contaminated equipment if still present according to the Basel Convention rules and collection of solid waste. In some utilities standards such as ISO 14001 are applied.

6.0 Regulation & Pricing

Carilec is of the opinion that pro-active cooperation of the electric utilities with establishing an independent and capable energy regulator is a prerequisite for achieving an appropriate regulatory framework and regulatory practices. The Regulation model should be a model tailored to the situation of the Caribbean island states, since isolated island power systems have their specific characteristics that need to be taken into account. Tailoring the regulation model to the situation of small Island States should also include tailoring of the cost of Regulation.

In particular in times of continuing increase in fuel and other input prices, the presence of independent regulatory institutions is of utmost importance. An effective pricing policy should ideally be disconnected

from the political process, at least in the short run. This can only be achieved through the establishment of independent energy regulators. Regulators have already been set up in some Caribbean States. True regulatory independence – albeit in parallel with accountability - remains an important precondition for an effective electricity pricing policy.

The presence of a stable regulatory framework is important to assure a proper balance between consumer demand for low prices and investors' need for a reasonable return. Rate setting should rather be implemented by incentive-based regulation using the so-called price cap methodology than by applying the methodology of rate of return regulation which may lead to weak efficiency incentives and over-capitalization (the "Averch-Johnson" effect).

Electricity needs to be appropriately priced in order to allow the electric utility a fair rate of return on its investment. Balancing the interests of consumers' demands for low prices and investors/shareholders needs for a reasonable return is a challenging task for Caribbean electric utilities. In particular, recent increase in oil prices have led to a significant increase in the fuel costs of utilities. This has been and needs to be reflected in upward adjustment (via fuel surcharges) of prices which, for obvious reasons, is not welcomed by both the general public and the political establishment. It must be kept in mind that a financially weak utility cannot attract capital needed for investments and thus for maintaining reliability of power supply.

Price stability and social policy objectives should also be pursued, however without jeopardizing the utility's financial sustainability. At the same time, it is also recognized that further improvement in operational efficiency can help to dampen the increase in electricity prices. Such initiatives are currently being undertaken and can for example be witnessed by means of the on-going benchmarking project within Carilec.

7.0 Sector Restructuring & Competition

In a number of countries that have restructured the power sector, the prescription for addressing this presumed lack of competitiveness has been to split up the utility into its component parts. Given the small size of Caribbean utilities which are all vertically integrated utilities this approach is not considered feasible and should not be taken into consideration. Given the small scale of power generation and distribution the overall

costs will be burdened with more overhead costs and interactions and interrelated activities will take more time and efforts if not combined within one company.

Competition could only be introduced in the field of Generation in cases where the need for generation expansion occurs. If IPP's are invited to bid and to present a Power Purchase Agreement (PPA), the local electric utility must be enabled to offer a competitive bid. In the evaluation of a PPA with an IPP also the effect of the financial burden for the electric utility for keeping up the reserves margin, which is not the IPP's concern, should be taken into account.

As said the only model that can apply when competition by an IPP is accepted is the Single Buyer Model. The electric utility will remain responsible for load forecasting and planning.

Cross border trade is a related issue and some Carilec member utilities already identified the feasibility of cross border trade. Cross border trade is currently being initiated for the islands St. Maarten, St. Barth and Anguilla. Cross border trade does not look feasible yet for most islands. However, the possibilities will be monitored as fuel prices keep on increasing.

If future developments such as the submarine interconnections with hydro-power supply from Guyana are realized studies could be initiated on further interconnection between islands to reduce reserve margins per island and increase the secure and stable supply of electricity. Carilec is considering this as a long term option.

8.0 Human Resource Development

In the opinion of Carilec, Human Resource Development must also be considered as a key issue of Energy Policy in the Caribbean, since there are increasing concerns about the availability of educated and skilled engineers and technicians in the Caribbean. So here Carilec endorses the Caricom initiatives for Human Resource Development in order to provide the requisite professional expertise and skills needed in the Caribbean energy sector.

Next to the key issues as listed above, Carilec has also identified the following ***related and/or secondary issues***:

- **Research & Development**

Research and Development initiatives as set forth in the Caricom Draft Energy Policy are encouraged by Carilec. Cooperation of Carilec in R&D programs would be options to be considered, though funding of such activities should be a joint venture between utilities and governments.

- **Energy and Poverty alleviation**

It is Carilec's point of view that governments should subsidize affordable energy to the poor, in case political decisions have been made to alleviate poverty this way.

By all means the electricity rates should be according to the Cost of Service principles. Poverty alleviation restricted to the absolute needs can be considered by the utilities, while the basic needs can be determined together with the governments and relevant governmental agencies. All other forms of poverty alleviation has to be subsidized by the governments.

- **Production of electricity from municipal solid waste**

Studies have shown that production of electricity from municipal solid waste is not feasible for small islands. Larger islands like Jamaica, Trinidad, Puerto Rico and the Dominican Republic may have the potential for Waste to Energy at feasible kWh rates. It is up to the individual large islands to investigate whether there is enough supply of solid waste, whether this can be collected appropriately and whether a favorable fee for solid waste can be negotiated which would make a Waste to Energy plant feasible.

5. MOVING FROM POLICY TO STRATEGY

As said earlier, it is important to guarantee both the technical and economic feasibility of the formulated energy policy. The best possible and most realistic frontiers must be explored between most desirable but too utopian objectives, and what can still be achieved within acceptable technical and economical preconditions with innovative and advanced solutions.

One can observe in practice that unrealistic and vague Energy Policies are formulated, and subsequent implementations are left to the utilities. Three examples of policy statements:

- within 4 years from now 20% of all electric power must be generated by renewables;
- within 2 years 50% of all electric power must be generated by wind power and in the longer term 100% must be generated by renewables, like bio-diesel, solar power, etc.
- minimize end user energy demand.

The above policy statements fail to take into account many different barriers and constraints, such as unavailability of land for erecting a wind farm or the simple fact that one cannot run an electric utility with a high reliability when 50% of all power must come from wind turbines. The "security of supply" in the case of wind can also be quite volatile and brings too much difficulty if at least 50% of the electric power is expected to come from wind turbines.

Furthermore: minimizing the end user's energy demand is appropriate if this has to do with energy efficiency. An increase in energy demand resulting from economic activity is however favorable for the island economy and should be welcomed.

It is important that an Energy Policy is developed in a manner such that it is feasible for the electric utility to incorporate and implement this Policy within its overall strategy. Feasibility implies:

- The community and the economy can be served with reliable power at lowest costs as possible.

- Financial requirements of the utility are taken into account both on the short-term as on the long-term. This implies that all costs can be recouped including all capital costs, fuel costs and O&M costs as well as the rate of return for the utilities' shareholders.

- A suitable view on how cost factors can be recovered if environmental objectives prevail over operating at lowest costs, for example by providing subsidies or by paving the path towards funding or favorable financing by – for example – Development Banks or by exploring the possibilities of the carbon credits market, etc. Subsequently a Portfolio Planning on Renewables could be prepared by each individual island utility, taken the local renewable sources into account.

An electric utility will be optimally prepared for implementing Energy Policy objectives into its Strategy, if it has been involved in the Policy Making process from the beginning and if the Policy Objectives have clearly been identified as feasible objectives.

Targets should not be set without the involvement of electric utilities in the process.

Once these preconditions have been met, the electric utility can start implementing the Policy Objectives in its Strategy. Strategic actions should technically and financially be planned, engineered and executed, organizational measures must be implemented, training programs must be planned, operational procedures and processes must be implemented, etc. The strategic actions may be the result of a fuel diversification program, renewable energy implementation, implementation of more effective and efficient processes and procedures, energy efficiency programs, etc.

In parallel to the implementation of these strategic actions it is the utilities' objective to initiate a public relations campaign with which the utilities explain the justification for these actions as part of a realistic Energy Policy directly to the public.

In conclusion, an Energy Policy will only be successful if it is feasible and can be effectively implemented in practice. Close involvement of the electric utilities during the policy development process is an important prerequisite to assure success.

Carilec's Priorities

The feasibility and implementation of Energy Policy objectives should be considered in the light of the utilities' long-term strategic planning, taking the utilities' corporate objectives into account i.e. reliable supply at lowest cost as possible, with lowest environmental burden as possible, and ensuring a reasonable rate of return.

With this precondition in mind Carilec would set the following key issues as listed in Chapter 4 as priorities to be initiated.

1. **Seek affiliation with Policy Makers** at Governments, Caricom and other relevant institutions (CREDP. OECS, for example) in order to bring about the involvement of Carilec in Energy Policy making and in the work-out of Energy Policy initiatives.

2. **Energy Efficiency and Energy Conservation.**

   Carilec and the member utilities are of the opinion that measures on Energy Efficiency and Energy Conservation could be worked out further on short notice, particularly focusing on following activities:
   - "internal efficiency" like generation efficiency, reduction of losses
   - education and outreach on energy efficiency and energy conservation measures. Electric utilities will apply for government co-funding

3. **Ensuring security and stability of supply**

   Carilec member utilities will re-address the requirements for security and stability of supply by reviewing the standards for SAIDI, SAIFI and CAIDI and the power quality standards that need to be maintained in the entire grid. Benchmark information will be reviewed and weak points will be considered for improvement plans. This way the electric utilities will also be prepared for studying the impact on these standards when introducing new technologies.

4. **Fuel diversification**

   The different member utilities of Carilec all have at present their own fuel mix and their own generation expansion or replacement plans. When considering fuel diversification for expansion and

replacement plans as set forth in their current strategic plans, such as considering the options for CNG, LNG, moving from LFO to HFO, renewables, Carilec will facilitate such studies as a knowledge center in order to prevent all the member utilities from individually gathering the same information and finding out the same wheel,

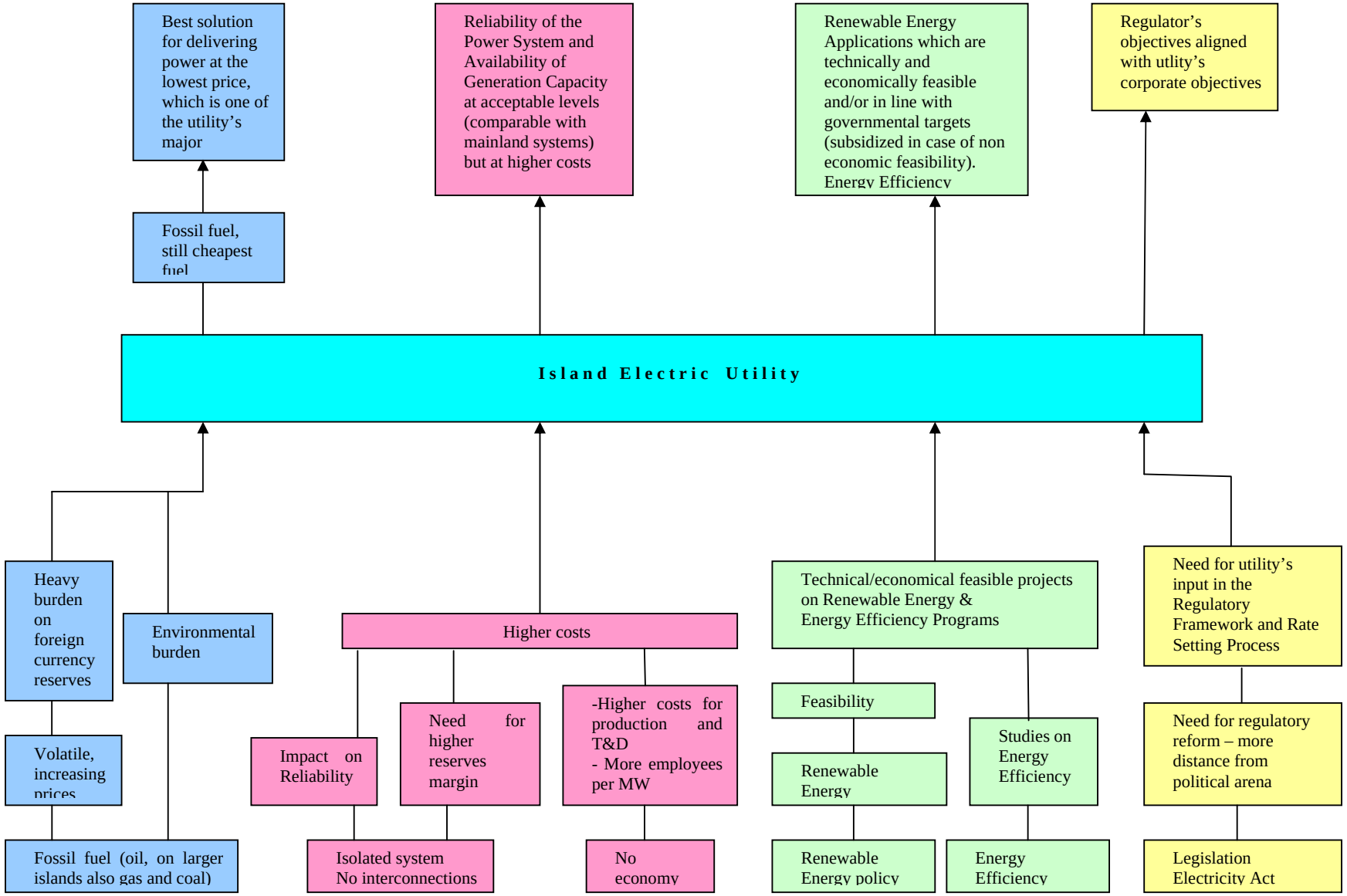
5. Renewable Energy

Each island has it own options and opportunities for applying renewable sources for production of electricity and as such feasibility studies on the technical and economical feasibility of renewable energy are to be worked out per island. Again Carilec could be the facilitator for providing knowledge and data on issues that will be relevant for all individual member utilities.

6. Environmental protection

Member utilities will review their individual measures on environmental protection as described in Chapter 4 and within Carilec guidelines for such measures, also related to legislation on the islands, could be shared and coordinated.

Appendix A: The Island Electric Utility's Problem Tree



Appendix B

CARILEC's RESPONSE TO THE CARICOM "WAY FORWARD", THE ANNEX OF THE CARICOM DRAFT ENERGY POLICY DATED JANUARY 2007

In the Annex of the Caricom Draft Energy Policy, dated January 2007, called "Way Forward", a number of action items and initiatives are listed per category related to the Caricom Draft Energy Policy.

In this Appendix B to the Carilec Position Paper on Energy Policy the contents of the "Way Forward" are reproduced with per issue Carilec's view on how Carilec and the electric utilities of the Caricom Member States should be involved in the action items and initiatives, while reflecting Carilec's vision on these action items and initiatives based on the Carilec Position Paper on Energy Policy.

As a general remark it should be mentioned that the list of issues in the "Way Forward" is very comprehensive and it is recommended that a prioritization of most important issues should be made as well as a timeline for the execution of the action items. It is also suggested by Caricom to appoint an Energy Committee. This Committee could get the action items initiated and could as well monitor progress and evaluate the results of the action items, before reporting back to the Caricom Task Force on Energy Policy. Carilec suggests to also appointing a member of Carilec to the Energy Committee.

Many of the issues in the "Way Forward" are related to electric utilities business, technologies and operations. In the following Carilec will state per issue how Carilec and the utilities could be involved. Carilec suggests to also being involved in the prioritization of issues and the timelines, particularly on the issues that are related to the electric utilities.

It must be noticed that participation by Carilec for all regional issues as well as participation by the member utilities for all initiatives in the different member states, will be quite time consuming and costly. So also for this reason there is a need for prioritization and scheduling of the Way Forward action items.

In the following Carilec's view on the involvement of electric utilities is represented in *Italic* and in blue per action item.

ANNEX to the Caricom Draft Energy Policy dated January 2007:

WAY FORWARD

The following action items are recommended for consideration by the Conference:

SECURITY OF SUPPLY

Although this section is not only covering the electricity sector but also the transportation sector and other fuel users, the security of fuel supply for electric utilities is a very important part of it. Per Member State the electric utilities should work together with the Government once these action items are initiated. Carilec would be the party to be involved in the regionally focused action items.

In order to ensure timely access to adequate supplies of energy, Member States will:

a) Determine local and regional capacity to supply oil and gas products;
Involvement of local utilities is needed in each Member State and Carilec should represent the utilities for the aspect of the regional capacity.

b) Determine local and regional capacity to supply renewable energy;
Renewable energy possibilities are quite different in the Member States, so a local involvement of utilities per Member State is needed, but Carilec can provide support for issues that have similarities in the different States, particularly advising on the issue whether suggestions on renewable energy are based on viable and proven technologies.

c) Diversify the energy supply mix;
For electric utilities the supply mix cannot just be changed without major investments. Long term planning, feasibility studies and alignment with the utilities' business plans are of great importance for the electric utilities. Again Carilec can be of help in coordinating efforts of island utilities that have similar issues to be investigated.

d) Determine optimal supply strategy for the Community (Petroleum Supply Optimization Study and Database);
For this issue Carilec could represent the electric utilities.

e) Assure access to regional resources to other Member States;
This looks like an issue to be picked up by Caricom itself and Carilec should be involved.

f) Devise and institute a CARICOM Charter to develop and maintain strategic regional reserves of crude oil and energy products to be accessed in time of emergency or crisis;
This is clearly an issue where Carilec needs to be on the table to represent the member utilities and coordinate policy initiatives with the member utilities.

g) Devise a community strategy for solidifying internal energy markets of Member States;
Electric utilities should be involved in these efforts.

h) Collaborate in pooling individual efforts to exert leverage on pricing and marketing arrangements in the region;
Carilec should represent the member utilities and coordinate possible initiatives with the member utilities.

i) Promote structured cooperation and collaboration among energy firms and agencies through Associations of CARICOM National Hydrocarbon Companies, electric utilities and renewable energy agencies;
Carilec should represent the member utilities.

j) Develop and implement shipping arrangements for petroleum products in the region that take account of the special need of the region.
Carilec should represent the member utilities.

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PETROLEUM

Member States will:

a) Encourage dialogue among national oil companies, with the aim of increasing supplies of and access supplies of energy resources among CARICOM Member States;
b) Encourage private and public entities within the region to seek opportunities to explore and develop potential crude oil and natural gas reserves within the wider Caribbean; and
c) Enhance participation by Community Enterprises in exploration, production, refining and shipping of petroleum and petroleum products.

These action items should be initiated by the Member States while the electric utilities should be consulted on their current and future needs.

Specifications for Petroleum Products
Member States will, in association with CROSQ:

a) Identify those specifications that can be standardized; and
b) Adopt such standards;

Electric utilities should be consulted on their usage and views on such standards.

Transportation of Petroleum and Petroleum Related Products
Member States will:

a) Improve and optimize the efficiency of the transportation network for petroleum and related products;
b) Reduce transportation costs for petroleum and related products;
c) Develop centralized storage systems for petroleum and related products;
d) Develop transshipment hubs;
e) Create strategic reserves where feasible;
f) Establish mechanisms for protecting consumers and assuring affordable petroleum products to consumers; and
g) Establish regional control of appropriate shipping services.

For these governmental and regional initiatives the electric utilities must be involved, possibly coordinated via Carilec, because the utilities need to state their current and future needs and indicate how these issues relate to individual transportation contracts.

Optimize Use of Natural Gas

In order to realize the potential for natural gas usage in the Community, Member States will:

a) Develop and implement programs and projects which aim to incorporate, expand and optimize the use of natural gas in the energy mix;
b) Establish natural gas as a key energy source for the region; and
c) Encourage research into natural gas utilization and transportation through the Natural Gas Institute of the Americas.

For the issue of investigation optimized use of natural gas the involvement of the electric utilities is very important, whether this will concern gas supply via the pipeline or by means of LNG or CNG. In the islands that don't have natural gas reserves LNG showed only to be a feasible option - up to now - in larger islands like Puerto Rico, Jamaica and the Dominican Republic. For economic reasons these islands have also set their focus on the usage of coal. It should be identified whether the outlook on the development of future oil and natural gas prices will show a trend that will drive the utilities for new feasibility studies on the usage of LNG or CNG when it comes to generation expansion and or replacement of aged generation units. Electric utilities, coordinated by Carilec, are positive to initiate such studies and will seek for further encouragement if favorable long term contracts for the delivery of natural gas could be achieved.

Renewable Energy Sources

In order to reduce the dependence on fossil fuels, Member States will:

a) Develop comprehensive national energy policies that seek to increase the use of commercially viable renewable energy sources to 10% of primary energy by the year 2010;

In general a target like this cannot just be set for every island. The availability of renewable sources is different on the islands and in the electric utilities business plans up to the year 2010 there may not be adequate financial resources or no technical/economical feasibility for reaching such a target without endangering the tariffs and the quality of supply. Nevertheless each island utility is positive in looking for application of renewable energy as much as possible, but without compromising pricing and quality of supply. This also means that only proven technologies can be considered.
Still initiatives per island to perform feasibility studies towards highest possible usage of renewables should be undertaken and also here Carilec can assist, particularly in preventing that different islands are inventing similar wheels.

b) Draft and implement legislation and regulations to promote the use and development of renewable energy sources;

Further to what has been stated under a) the electric utilities should be involved to get the objectives of the individual governments and electric utilities aligned.

c) Draft and implement regulatory and legislative enactments to require utilities to use or increase the utilization of renewable energy sources in the electricity sector;

Such requirements can only work out successfully if the electric utilities are involved as already stated under a) and b).

d) Ensure that the synergies between agricultural production and the renewable energy sector are optimized (e.g. for bio- energy sources such as bio-ethanol, bio-diesel and biomass);

Where applicable the electric utilities can assist in this matter. Feasibility of these bio-products can be studied with special attention for a steady and secure supply of the envisaged agricultural products.

e) Identify available renewable energy sources and technologies that are practical, commercially viable and suited to particular Member States;

We refer to the comments under a)

f) Encourage the substitution of renewable energy technologies that may be damaging to human health (e.g. charcoal and wood stoves) with more benign commercially viable renewable energy technologies;

In cases where this is applicable and under the electric utility's responsibility the electric utility will cooperate.

g) Encourage short and long term programs for active research, development and training in renewable energy technologies and designs;

Carilec suggests identifying if such programs exist elsewhere and if benefits can be derived out of such already existing programs. The electric utilities are monitoring research, development and training possibilities and try to identify proven technologies which could be considered on technical/economical viability. The electric utilities nor Carilec would nevertheless welcome regional initiatives but may not be able to participate actively with funding.

h) Establish South-South cooperation programs as a means to harness existing expertise from outside the region;

See our comment under g). Furthermore the expertise from outside the region should be aligned with our local needs. Carilec should be involved in this initiative.

i) Encourage the use of carbon trading opportunities as a means of enhancing the financial returns of renewable energy projects;

Carilec suggests to work together with Caricom in identifying opportunities for the member utilities.

j) Strengthen the Energy Desk of the Caricom Secretariat, inter alia, to:

(i) Research, advice on, recommend, co-ordinate and conduct educational programs on renewable energy;
(ii) Promote commercially viable renewable technologies;
(iii) Develop model laws and fiscal policies to support renewable energy;
(iv) Update Caricom renewable energy targets, identify sources of grant financing and establish links between regional renewable initiatives (e.g.: the Caribbean Renewable Energy Program, the Wigton Wind Farm Centre of Excellence,

Barbados Renewable Energy Centre and other national agencies of excellence).

Carilec would like to cooperate in strengthening the Energy Desk in order to come to fruitful initiatives that will lead to a match between the Caricom Energy Policy objectives and the business goals of electric utilities.

Development of Hydro Power

Member States will:

a) Explore and utilize viable technologies for long distance transportation of hydro electric energy; and
b) Encourage private and/or public entities within and outside the region, to seek opportunities to establish energy intensive operations near to hydropower sources within the region.

Carilec is aware of the ongoing studies for hydro power development in Guyana and long distance transportation throughout the Caribbean. Electric utilities in the Member States must be involved in evaluating the options once these options have been developed to a realistic level. Electric utilities should undertake a study whether the options are attractive, will fit in their strategy and their business plans, and should at the same time perform a risk analysis on this option.

Power Generation

Member States will:

a) Identify, develop and promote alternative or renewable energy sources, technologies and systems for electricity generation;

We refer to our statements under b) and c) in the category "Security of Supply". In general electric utilities and Carilec have always been monitoring possible alternative and renewable sources, technologies and systems for electricity generation.

b) Promote advanced high-efficiency power generation technologies such as combined cycle, cogeneration, and hydro-power;

This is also an area that always had great attention of the electric utilities and Carilec. Combined cycle, cogeneration and hydro power are very well known technologies and are applied where appropriate.

c) Promote competition in power generation to encourage non-utility or independent power produces (IPPs);

Carilec is of the opinion that competition by allowing IPPs can be considered in case of a need for generation expansion or replacement of aged generators and that for the relatively small island communities only a Single Buyer Model would work. Furthermore it is of importance to take into account that the electric utility has the responsibility for the overall reserves margin, with all costs involved. This aspect should also be part of evaluations of the attractiveness of a PPA offered by an IPP.

d) Cooperate in the observance of best practice industry standards and employment of mechanisms, which reduce system losses in the electricity sector;

This aspect has full attention already of the electric utilities. Carilec Member States already exchange information on reduction of losses and also monitor their performance in this field by means of the Carilec Benchmark Study.

e) Encourage utilities to participate in collective purchasing programs with other utilities through regional networks such as CARILEC;

The issue has been discussed within Carilec before. Carilec would certainly like to revitalize this and discuss barriers that can be identified with Member States.

f) Encourage institutional collaboration aimed at the production of electricity from municipal solid waste.

Production of electricity from municipal solid waste has no economical feasibility in smaller islands, while transportation of waste between islands is not really preferred and makes costs higher. In bigger islands feasibility could be studied and this should be done in cooperation with the electric utility.

Transmission and Distribution of Electricity

Member States will:

a) Explore the opportunities for import, export and cross-border trade in electricity;

Carilec suggests appointing a Committee for identifying such opportunities and for looking at the feasibility in certain geographical situations of islands, and in particular in case of areas with high potential (geothermal, hydro). Transportation over longer distances will become viable when high production capacities can be achieved.

b) Encourage the deployment of new technologies that promote higher energy efficiencies in electric power generation, reduce transmission and distribution losses, and reduce commercial losses.

Carilec and its member utilities are aware of such technologies and can make an overview of such technologies available.

Electricity Regulation

Member states Will:

a) Establish appropriate regulatory agencies;
b) Promote regulation of the electricity sector and introduction of relevant regulatory and legislative enactments.

Carilec is envisioning pro-active cooperation with establishing an independent and capable energy regulator. The Regulation model should be an appropriate model tailored to the situation of the Caribbean island states, since isolated island power systems have their specific characteristics that need to be taken into account.

Energy Conservation and Efficiency

Member states will:

a) Promote energy conservation, energy efficiency, reductions in energy intensity and establish appropriate measurement and monitoring standards and guidelines;

The electric utilities as well as Carilec are willing to take the lead here and work out further initiatives to enhance the energy conservation and efficiency efforts.

b) Promote energy saving measures through introduction of fiscal incentives and other incentives;

The initiative should be taken by governments, electric utilities could assist in advising on energy saving measures.

c) Implement intensive energy saving and energy efficiency programs, which include energy audits of residential and commercial properties;

The electric utilities and Carilec can play a role in the implementation and the audits, supposed funding will be available.

d) Promote the use and installation of renewable technology in the construction, refurbishment and upgrade of public, commercial and residential buildings;

When it comes to the power systems in the buildings Carilec and electric utilities can be involved, supposed funding will be available.

e) Establish regional energy efficiency institutional networks and energy efficiency testing facilities;

Electric utilities and Carilec can assist, supposed funding will be available.

f) Establish electric utility and other Demand Side Management programs;

Not quite clear what is meant with "establish electric utility". Regarding Demand Side Management programs the electric utilities can further develop such programs if budgets allow for it.

g) Develop regional public sector energy efficiency programs;

Could be initiated in cooperation with Carilec.

h) Establish training capacity in national and regional agencies;

Carilec can cooperate in establishing training capacity.

i) Develop a CARICOM Charter on Energy Efficiency.

It is suggested that Caricom seeks for the input of Carilec.

Energy Investment

Member States will:

a) Provide the requisite policy, legislative and regulatory frameworks, including fiscal and economic incentives, to encourage and increase private and public sector investment in the development and commercialization of related projects in, inter alia:
   (i) Petroleum resources
   (ii) Natural gas resources
   (iii) Renewable energy resources
   (iv) Energy efficiency

It should be explored how electric utilities could advise on the issues of Renewable Energy resources and energy efficiency.

b) Establish energy investment promotion units to:
   (i) record and monitor public and private investments in energy and renewable energy related projects;

   Would be a task for the governments.

   (ii) identify local, regional or international agencies which provide funds for energy or renewable energy projects and assist prospective investors in satisfying the application criteria

   Electric utilities should be involved in this effort of identification of agencies.

c) Encourage membership in relevant regional and international organizations, in order to maximize access to resources, assistance and support.

   Carilec can play an advisory role in identifying such organizations.

Natural Gas

Member States will:

a) Identify and implement alternative methods and measures aimed at:
   (i) creating more efficient means to transport natural gas; and
   (ii) expanding the transportation and trade network for natural gas within the CARICOM region;

b) Co-ordinate shipping arrangements to minimize transportation costs.

To be initiated by gas, transportation and shipping companies and should be monitored by Carilec on behalf of its member utilities.

Pricing

Member States will:

a) Increase energy efficiency, enhance energy conservation and reduce the demand for petroleum per unit of output;

Carilec commented already on similar issues in the previous sections.

b) Increase energy supplies from all viable sources of energy;

Possibilities for diversification of fuels should be studied per island by the electric utilities.

c) Establish regional control over access to appropriate shipping on a long-term basis;

Initiative for Caricom.

d) Create strategic stockpiles of petroleum and petroleum products;

Carilec and electric utilities should cooperate since this is of great interest for the electric utilities.

e) Encourage and increase collaboration and coordination among national petroleum companies, so as to maximize their leverage in the market;

To be initiated by governments.

f) Identify mechanisms which mitigate the adverse effects of escalating prices for crude, petroleum products and natural gas; and

Should be worked out by governments / Caricom

g) Utilize developments in technology, which allow for the commercial distribution of energy among Member States in an efficient manner.

Identification of such developments in technology should be undertaken together with Carilec on behalf of the electric utilities.

Energy and Environment

Member states will:

a) Evaluate and disseminate information on the environmental impacts of various energy options;

Member States should seek for cooperation with electric utilities

b) Develop and implement information and educational programs for end users;

Could be done in cooperation with Carilec, but needs to be funded.

c) Ensure the exchange of information, the dissemination of best practices and shared analyses to facilitate cooperation among Member States;

Could be done in cooperation with Carilec, but needs to be funded.

d) Adhere to existing national, regional and international environmental legislation and Standards;

Carilec should participate on behalf of the member utilities.

e) Introduce economic and fiscal incentives and measures, which promote good environmental practices in the energy sector;

To be initiated by governments.

f) Introduce programs for self-regulation of energy producers and suppliers;

For the electricity sector such programs should be worked out in good coordination with the electric utilities.

g) Develop appropriate plans for liability and compensation regimes for cases of environmental acts and omissions negatively affecting the environment.

To be initiated by governments.

Human Resource Development

Member States will:

a) Identify and promote mechanisms to develop a regional pool of human resources to provide the requisite professional expertise and skills needed in the energy sector;

Carilec could assist in the assessment of needs in the electricity sector.

b) Establish regional mechanisms to provide for training and technical assistance in the energy field;

Carilec can assist in setting up training programs.

c) Encourage public and private schools, technical colleges and universities, to conduct programs and courses and offer overseas student or job trainee/internship exchange energy programs in subjects including, inter alia: petroleum value chain; renewable energy; energy efficiency; energy policy, programming and research and development;
d) Offer scholarships and funding for the training of skilled personnel in energy and energy related fields.

c) and d) to be initiated by governments / Caricom and Carilec can assist where appropriate.

Institutional Strengthening
Member States will:

a) Explore, create, develop and promote institutional capabilities in the energy and electricity sectors, including:
   (i) Energy Policy formulation
   (ii) Management, assessment and audit of energy systems
   (iii) Resource monitoring
   (iv) Design of legislative and regulatory frameworks pertaining to the energy and electricity sectors;

The Carilec Position Paper on Energy Policy already shows the importance of the involvement in policy making by Carilec and the electric utilities. In relation to this the involvement of Carilec and the electric utilities is also of importance when it comes to "Management, assessment and audit of energy systems" which is quite broadly formulated. The same applies for "resource monitoring". On Regulatory Frameworks Carilec already stressed that the Regulation model should be an appropriate model tailored to the situation of the Caribbean island states, since isolated island power systems have their specific characteristics that need to be taken into account.

b) Strengthen the capacity of CEIS to provide harmonized data on the energy sector and establish a central Regional Energy Database, which serves as depository for regional energy or energy related information, for use by Member States;

This initiative will be welcomed by the electric utilities and the electric utilities can give support via Carilec.

c) Provide the requisite information that the central depository requires to fulfill its function, on a timely basis;

Electric utilities and Carilec would cooperate.

d) Develop a mechanism for facilitating intra-Community technical cooperation;

In the electricity sector Carilec is already such a mechanism.

e) Encourage all electricity generating utilities and other associated public and private sector entities in CARICOM to participate in CARILEC;

Carilec welcomes this encouragement.

f) Convene regular meetings of the Ministers with responsibility for energy matters to oversee the implementation of the CARICOM Energy Policy;

Reporting to the Ministers could be done by the Energy Committee, and Carilec already stated that its participation in the Committee would be fruitful and beneficial.

g) Encourage dialogue among national oil companies with the aim of enhancing access to energy resources within the Community and to establish a CARICOM Energy Committee to coordinate inter-governmental energy dialogue and planning;

Carilec already stated the importance of its participation to this Committee.

h) Support the establishment of CARICOM energy desk.

For this, cooperation with Carilec regarding the electricity sector is recommended.

Research and Development

Member States will:

a) Encourage research and development primarily in natural gas, solar fuels and other renewable resources by public and private sector agencies, research establishments and tertiary institutions and assist in identifying sources of funding for such activities;
b) Establish guidelines for the adaptation, diffusion and transfer of appropriate technologies in the fields of priority interest for research and development;
c) Promote research and development of appropriate energy related technology programs;
d) Promote cooperation in research and technological development among Member States; and
e) Facilitate cooperation:

(i) in training;
(ii) in the exchange of scientific and technical information among competent institutions; and
(iii) among private sector enterprises to integrate the results of research and development.

Where appropriate and related to electrical energy Carilec can cooperate and can also cooperate in facilitating training programs. For this funding will be needed.

Public Education and Outreach

Member States will undertake to create and implement programs and course curriculum which ensure the availability and public dissemination of adequate information on the benefits of energy conservation and efficiency.

The electric utilities can play a role in public education and outreach in these fields of, energy conservation and energy efficiency which are key issues of the Carilec Energy Policy, although funding for these activities will be required.

Energy and Poverty Alleviation

Member States will:

a) Increase access to electricity in remote areas and where applicable, deploy alternative technologies (photovoltaic technology, micro-hydro and biogas) in rural farming communities;

In cases where remote areas could better be supplied with electricity by means of for example diesel generators, from an economical point of view, alternative technologies can still be considered but need additional funding.

b) Establish and expand programs to provide affordable energy to the poor and vulnerable in the Community.

Carilec's point of view is that governments should subsidize affordable energy to the poor.