



What can you do?

Environmental Impact Assessment (EIA) is a very powerful tool which can be used to predict damaging events in the future, should a project be allowed to continue without any modifications.

Public participation in EIA is vital for the success of any project as communities have a wealth of **"local knowledge"**. This knowledge which comes about from years of daily observations is not always available to project scientists and engineers and so must be shared with them. This allows for the most suitable measures to be put in place to ensure that a project does not damage the environment in any way when it is implemented.

Each one of us has a duty to attend these meetings and to share our information with the project consultants. It could mean the world of difference to project personnel, to you, your children and your children's children.

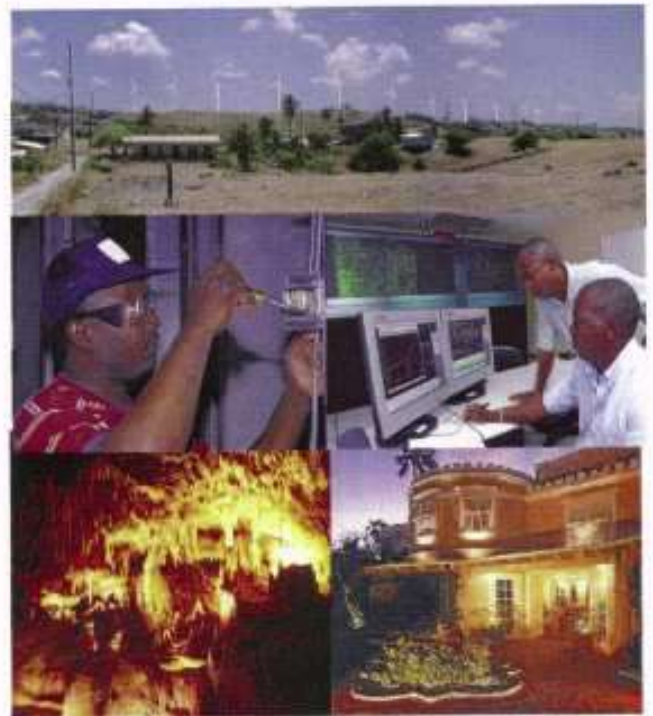
***Light & Power
wants you
to participate.***



THE BARBADOS
LIGHT & POWER
COMPANY LIMITED

We are there

*Electricity powers
our lifestyle!*



Preparing for the future ... NOW!

Proposed Wind Farm Lamberts East, St. Lucy

Why Build a Wind Farm?

The Barbados Light & Power Company (BLPC) is proposing to construct a 10 MW wind farm at Lambert's Plantation in the parish of St. Lucy to help meet the Nation's electricity needs. This new generation site will be a source of renewable energy reducing our dependence on imported fuel.

Why Lamberts?

The Lamberts site is one of four sites designated in the National Physical Development Plan as suitable for wind energy development. BLPC completed a feasibility study that considered environmental, technical, financial and wind information to rank the sites. The study determined that Lamberts, St. Lucy was the preferred site.

Environmental Concerns

To address environmental concerns relating to the project, BLPC is conducting an Environmental Impact Assessment (EIA) which will be used to identify the potential impact of the wind farm development and to determine what measures can be taken to mitigate against any negative impacts. This public consultation is part of that EIA and therefore your input is critical to our investigations.

Are Wind Turbines Noisy?

Modern wind turbines are quiet in operation. The two potential sources of noise are the gearbox and generator in the nacelle and the turbine blades passing through the air. The noise from the gearbox and generator is contained within the nacelle by sound insulation and isolation materials. Noise from the blades is minimised by careful attention to the design and manufacture of the blades. At low wind speeds the turbines do not operate. As the wind speed increases, so too does the background noise such that at high wind speeds the turbine noise is completely masked.

Land Usage

Land use is limited to the small area required for the wind turbine foundations and access tracks leading to them. Farming activities in the surrounding fields can continue undisturbed.



Are Wind Turbines Safe?

Wind energy is one of the safest energy technologies. It is a matter of record that no member of the public has ever been injured during the normal operation of a wind turbine, with over 25 years operating experience and with more than 70,000 machines installed around the world.



Do wind farms affect tourism?

There is no evidence to suggest this. Wind farm developments tend to attract visitors interested in the concept of renewable energy. Wind farm developers are often asked to provide a visitor centre, viewing platforms and rights of way to their sites.

For Further Information

For further information please contact:

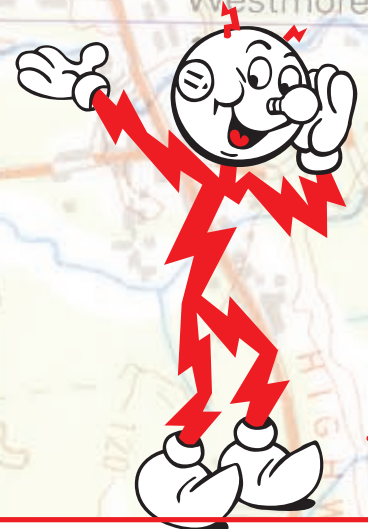
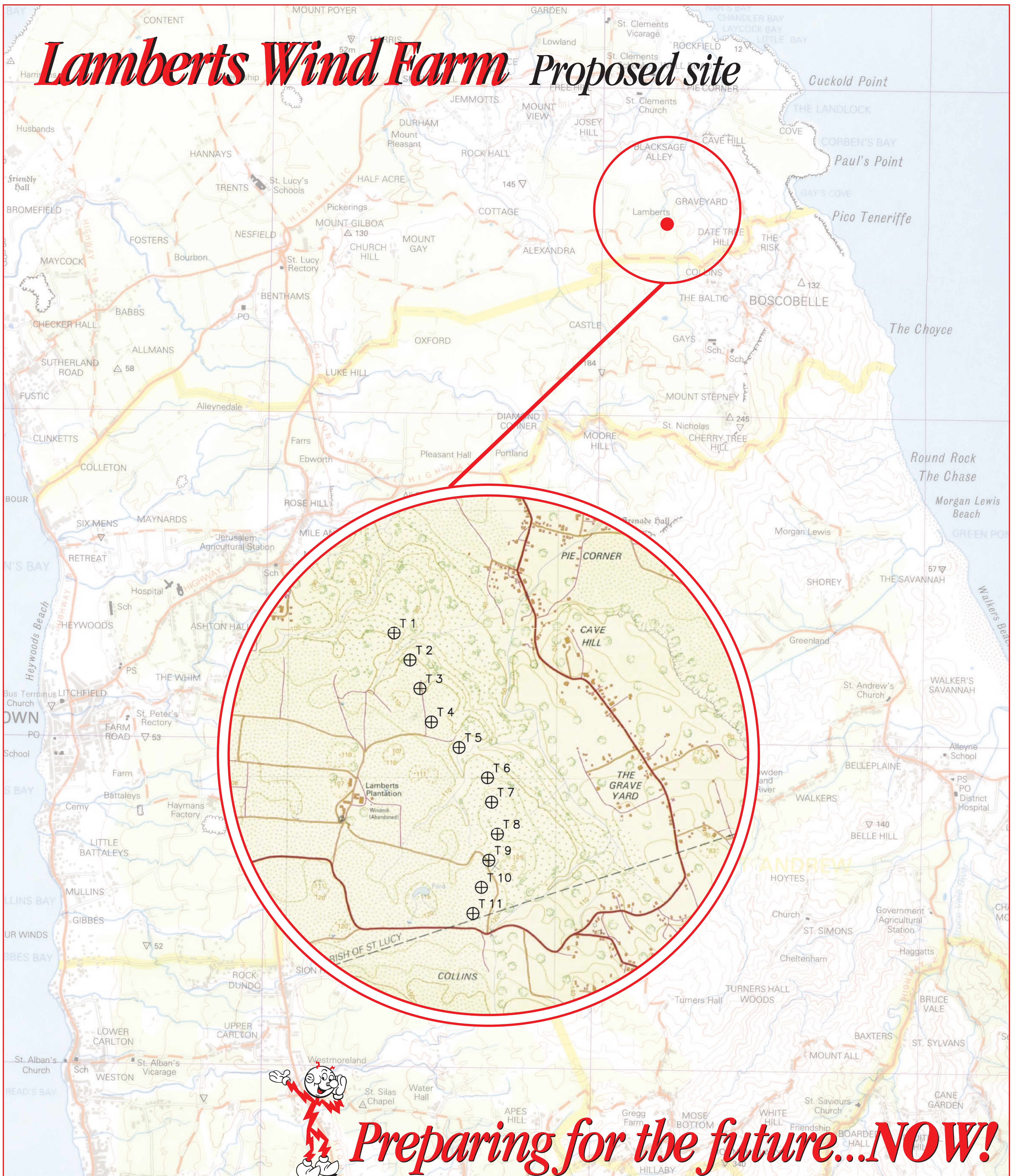
Mr. Hallam Edwards at 417-3201

Mr. Roger Blackman at 417-3279



THE BARBADOS
LIGHT & POWER
COMPANY LIMITED

Lamberts Wind Farm Proposed site



Preparing for the future...NOW!

Lamberts - safeguarding air quality



REDUCED AIR EMISSIONS

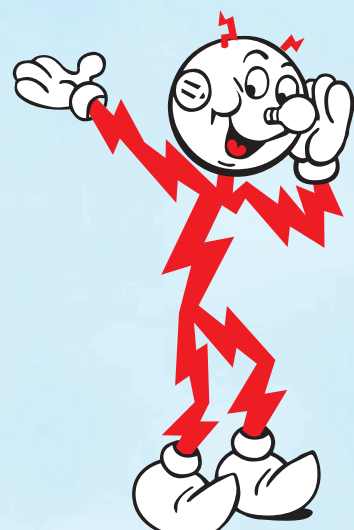
- Power provided by wind turbines does not produce any gaseous emissions.
- Wind power does not contribute to climate change or acid rain.
- Every kilowatt-hour (kWh) of electricity generated by wind will displace a kWh of conventionally generated electricity.

The following table shows the anticipated annual reduction in emissions from the displacement of fossil fuels.

Atmospheric pollutants avoided by displacing the different types of generation used by BL&P.

Engine type	Fuel	Units	Savings in Emissions		
			CO ₂	SO ₂	NO _x
Combustion Turbines	Distillate	g/kWh	736	1	3.9
		Tonnes/year	22,097	28	117
Low speed diesels	Heavy fuel oil	g/kWh	581	6.6	13.3
		Tonnes/year	17,455	198	398

The wind farm will displace some of the energy generated by conventional plants operating on distillate fuel.



Preparing for the future...NOW!

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

What does the EIA Report contain?

- Description of the project
- Description of the local environment
- Relevant legislation
- Assessment of the environmental effects
- Measures to avoid and minimize environmental effects
 - Environmental management plans
 - Implementation mechanisms
 - Continuous monitoring
- Significance of the environmental effects
- Consultation program

ENVIRONMENTAL STUDIES

What type of Environmental Studies were conducted?

- Site Conditions (*Soils, Topography*)
- Vegetation and Wildlife
- Environmentally Sensitive Areas
- Land Uses
- Social and Economic Conditions
- Noise

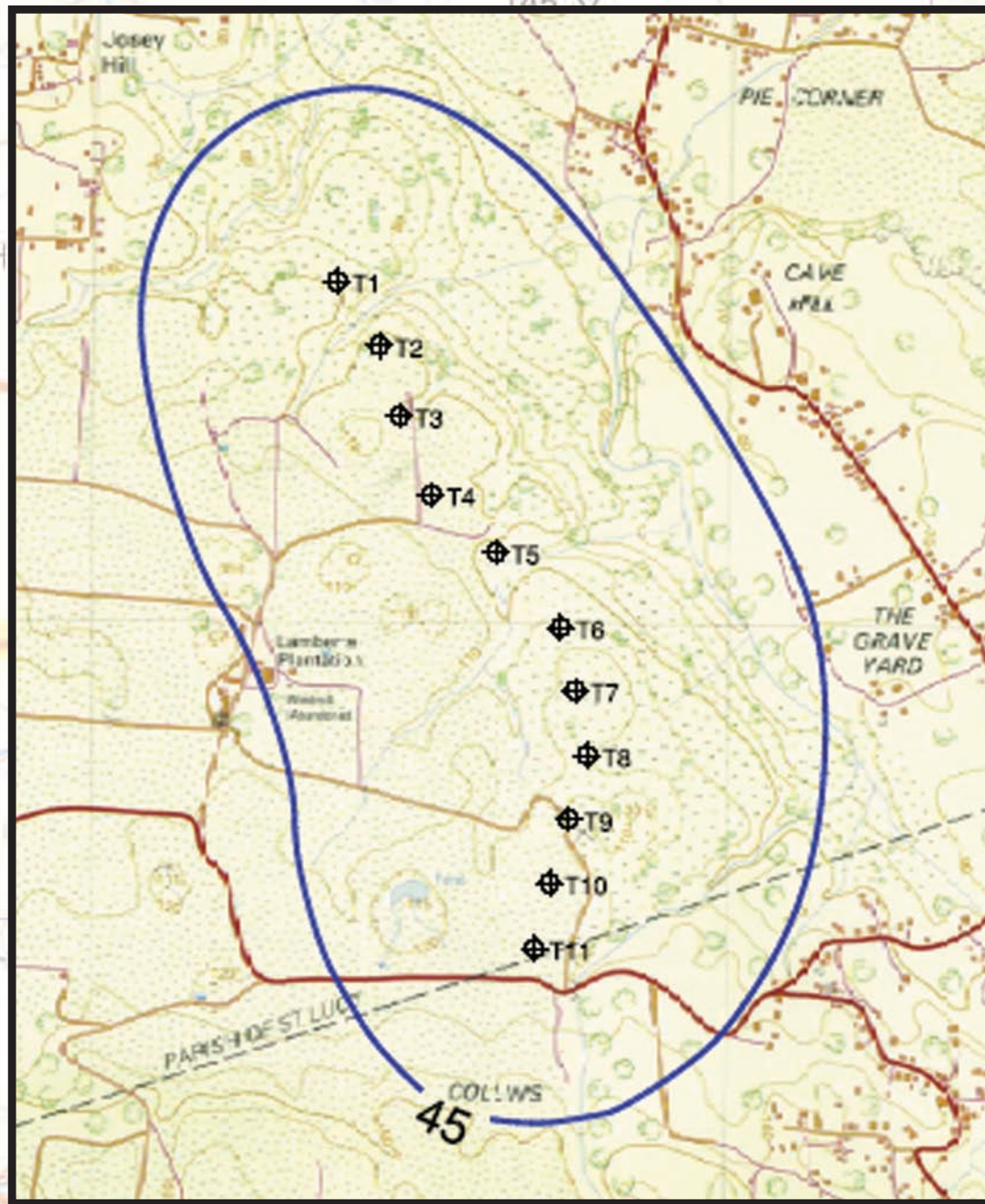


Preparing for the future...NOW!

Lamberts - Are wind turbines noisy?

NOISE

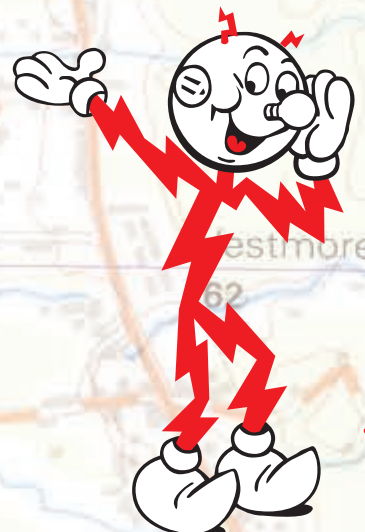
Noise effects are minimal and are below 45 dBA at wind speeds of less than 8 m/s.



At higher wind speed, background sound levels increase at a greater rate than the turbine noise.

Listed below are the noise levels from familiar sounds.

Sound Source	Noise Level (dBA)
Quiet room	50
Room with people talking	57 – 65+
Office (air conditioned)	55 - 60
Dance Hall with music	80 – 100+
Truck passing	80 - 85
Frogs at night	90 - 100



Preparing for the future...NOW!

What's next?

SITE ACTIVITIES IN 2007

- **Tender design**
- **Evaluation of tenders**
- **Negotiation with prospective contractor**
- **Detailed Site investigation**

SITE ACTIVITIES IN 2008

- **Start Civil Work (Building)**
- **Installation of equipment**

SITE ACTIVITIES IN 2009

- **Commissioning of units**



Preparing for the future...NOW!

Why Wind Energy?

The Barbados Light & Power Company is proposing to construct a 10MW wind farm on land at Lamberts' Plantation in the parish of St. Lucy to help meet the Nation's needs for additional power. This new generation site will be a source of renewable energy reducing our dependence on imported fuel.

Reducing electricity generation on hydrocarbon fuels reduces the amount of carbon dioxide produced.

A 10MW Wind Farm could reduce carbon dioxide output by around **20,000 tonnes per year**, the equivalent of:

- *planting 6,700 acres of trees or,*
- *removing 4,400 cars from the roads Barbados.*

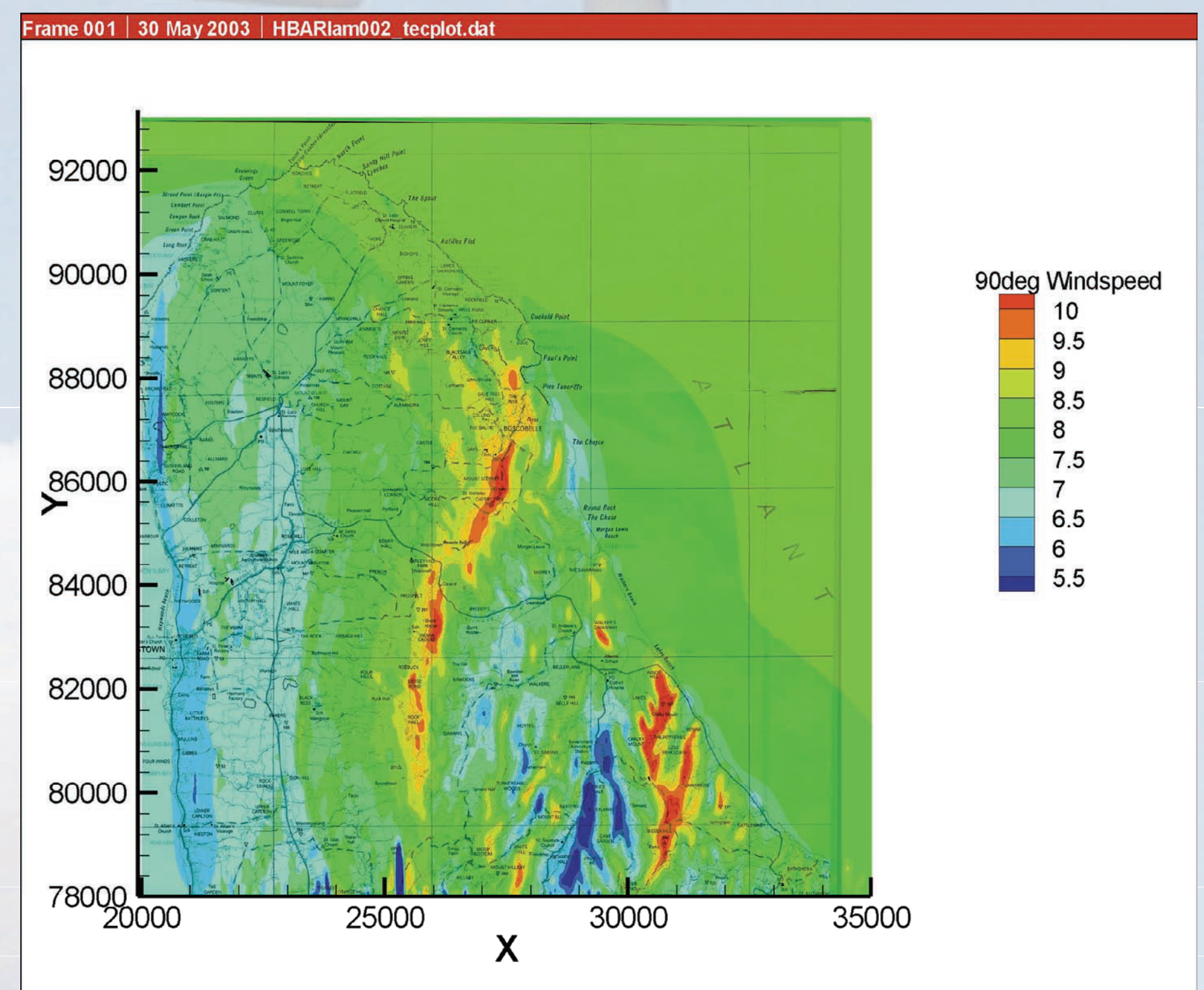
The Lamberts wind farm will consist of 11 wind turbines, with a total installed capacity of around **10 MW** and annual production of **28 million kilowatt-hours**.

- *enough to meet the average annual needs of about 9,275 homes*
- *reducing fuel costs by approximately BDS\$ 5.6 million per year*

The Lamberts wind farm will contribute approximately **2.6%** of projected electricity production in 2009.

Why Lamberts?

The Lamberts site is one of four sites designated in the National Physical Development Plan and is suitable for wind energy development. BL&P completed a feasibility study that considered environmental, technical, financial and wind information to rank the sites. The study determined that Lamberts, St. Lucy was the preferred site.



Preparing for the future...NOW!

Light & Power - doing it right...

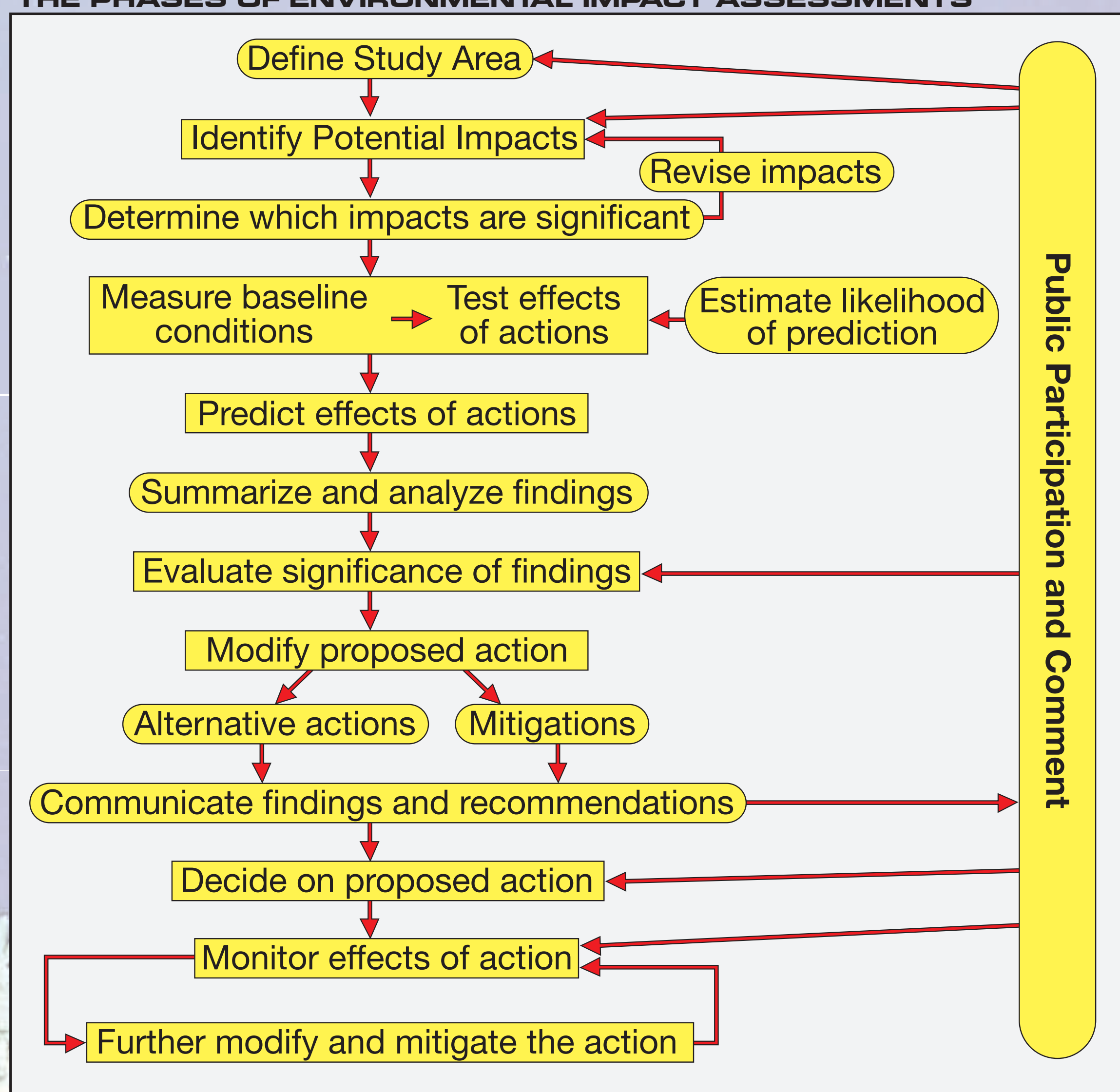
ENVIRONMENTAL IMPACT ASSESSMENT - (EIA)

In any country in the world large projects which have the potential to affect the environment require an Environmental Impact Assessment (EIA). Light & Power is carrying out an Environmental Impact Assessment study to assess the impact, of the proposed Lamberts Wind Farm on the environment.

WHAT IS EIA ?

Environmental Impact Assessment is a process by which a project prior to construction is studied by a variety of persons. These include independent experts, Government technocrats, and other interested parties, in consultation with community members (see Phases of EIA). They determine whether or not there will be any negative consequences to the environment as a result of the project. These impacts could arise during the project's construction or operation. Should the studies show that the environment would be impacted negatively by the proposed project, changes can be made to the plans before the project is implemented and measures can be put in place for the protection of the environment before the project is built.

THE PHASES OF ENVIRONMENTAL IMPACT ASSESSMENTS



WHAT IS THE ENVIRONMENT?

The "environment" consists of physical and social components. Therefore the Environmental Impact Assessment looks at the impact of a project on:

- (i) the physical environment which is the air, water, marine life, plants and animals.
- (ii) the social environment which includes the people in the community.



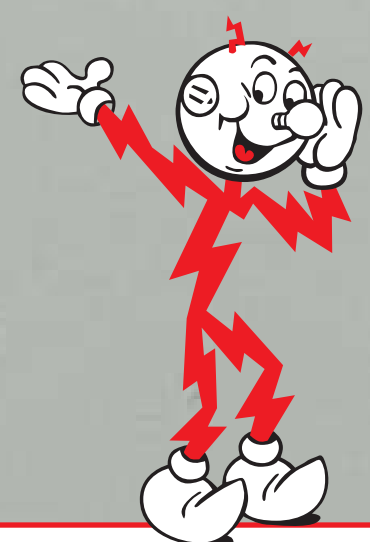
Preparing for the future...NOW!

Electricity powers our lifestyle

Since 1981, householders have increased their use of electricity by 195%.

Electricity is at the centre of Barbados' income earning activities:
Light & Power powers the tourism industry, the offshore sector and manufacturing.

State of the art communications technology and
vital health care equipment all depend on our ability to provide a service
that is reliable and of the highest quality.

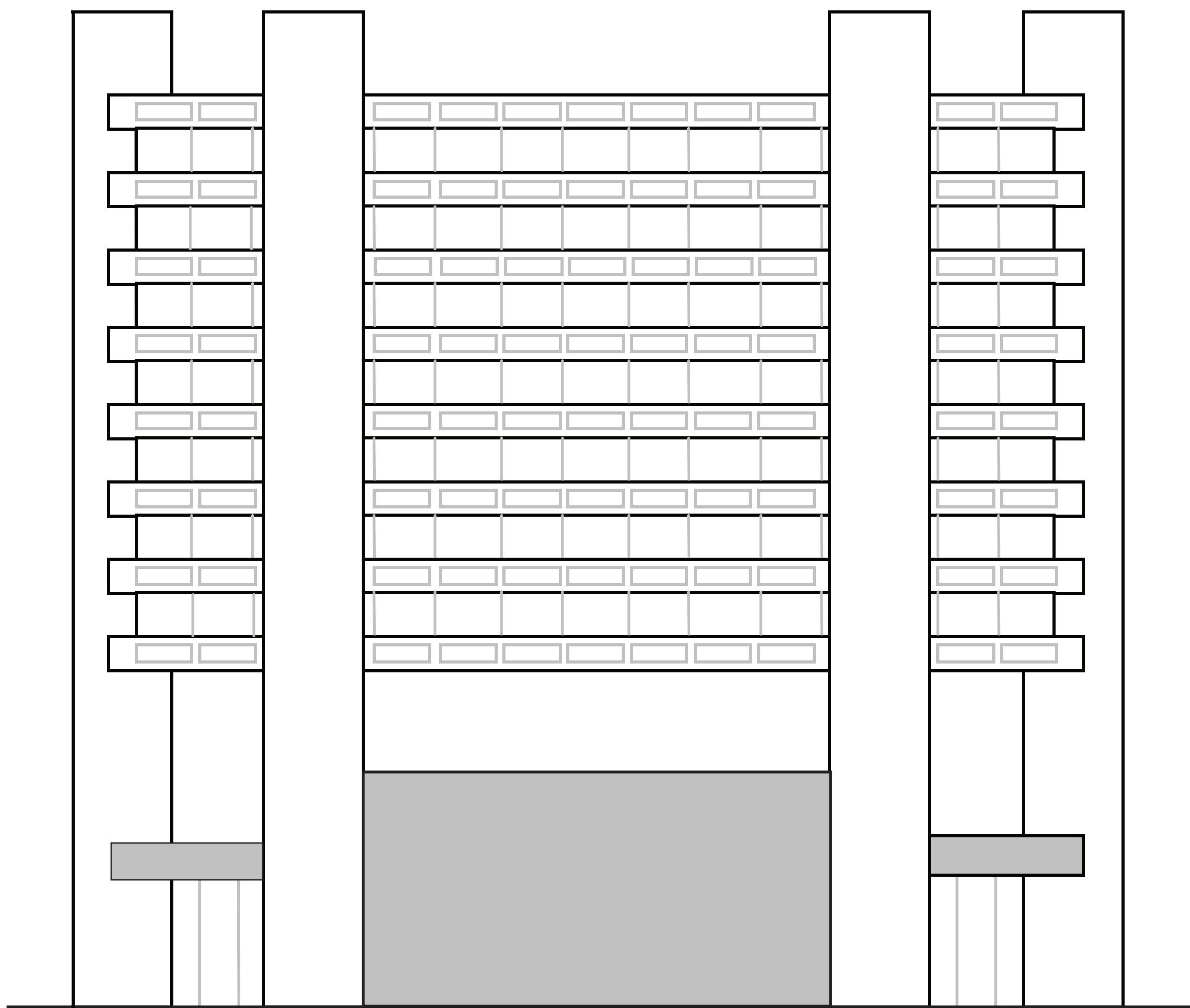


Preparing for the future...NOW!

Wind turbine size comparison

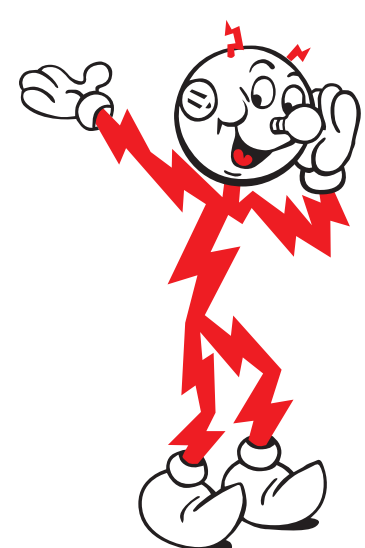
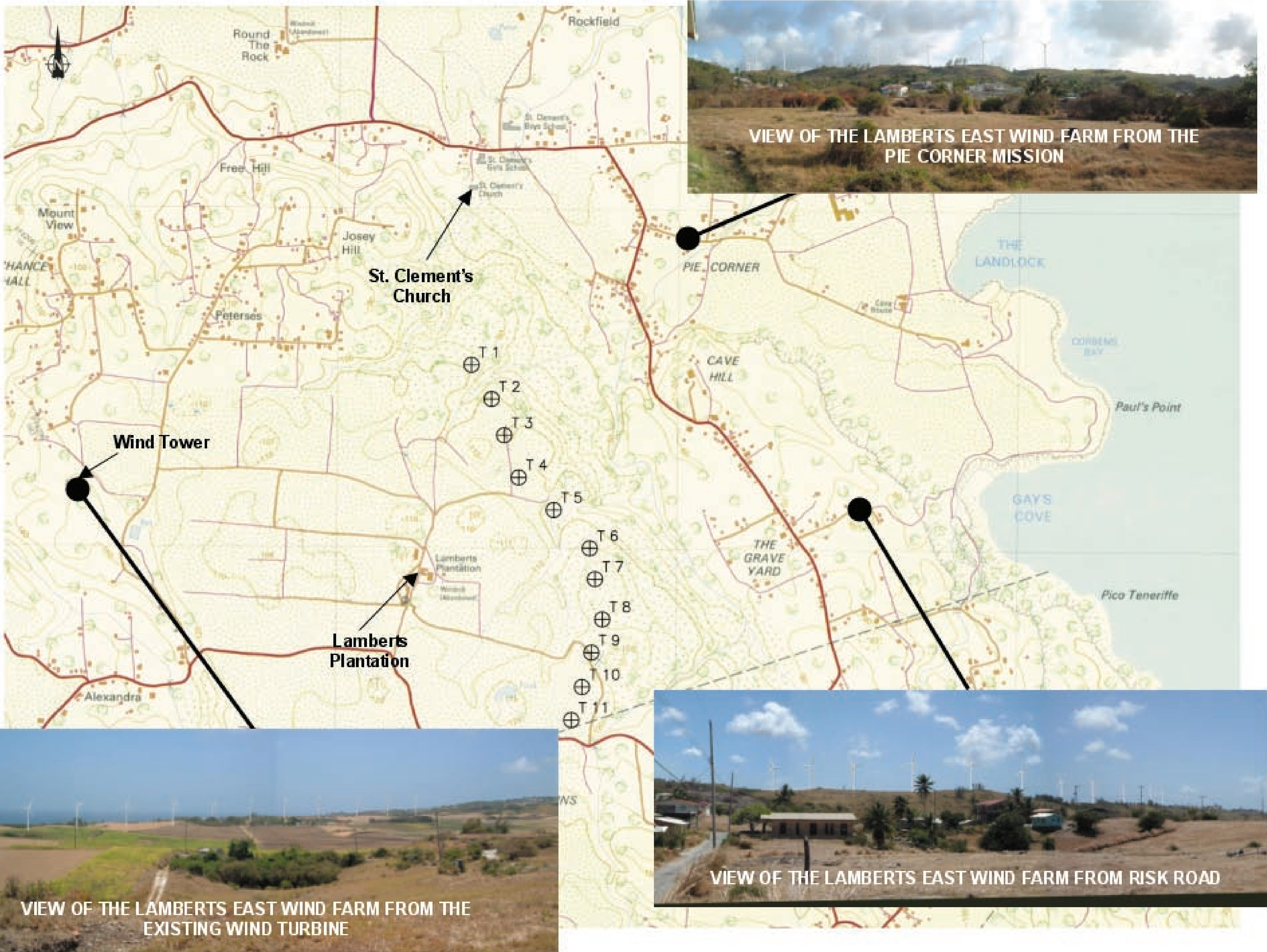
BARBADOS CENTRAL BANK BUILDING

TYPICAL 900kW WIND TURBINE



Preparing for the future...NOW!

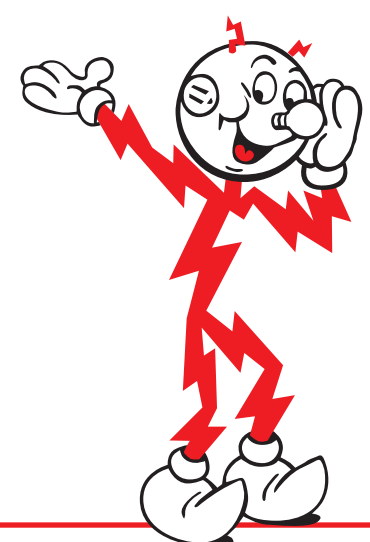
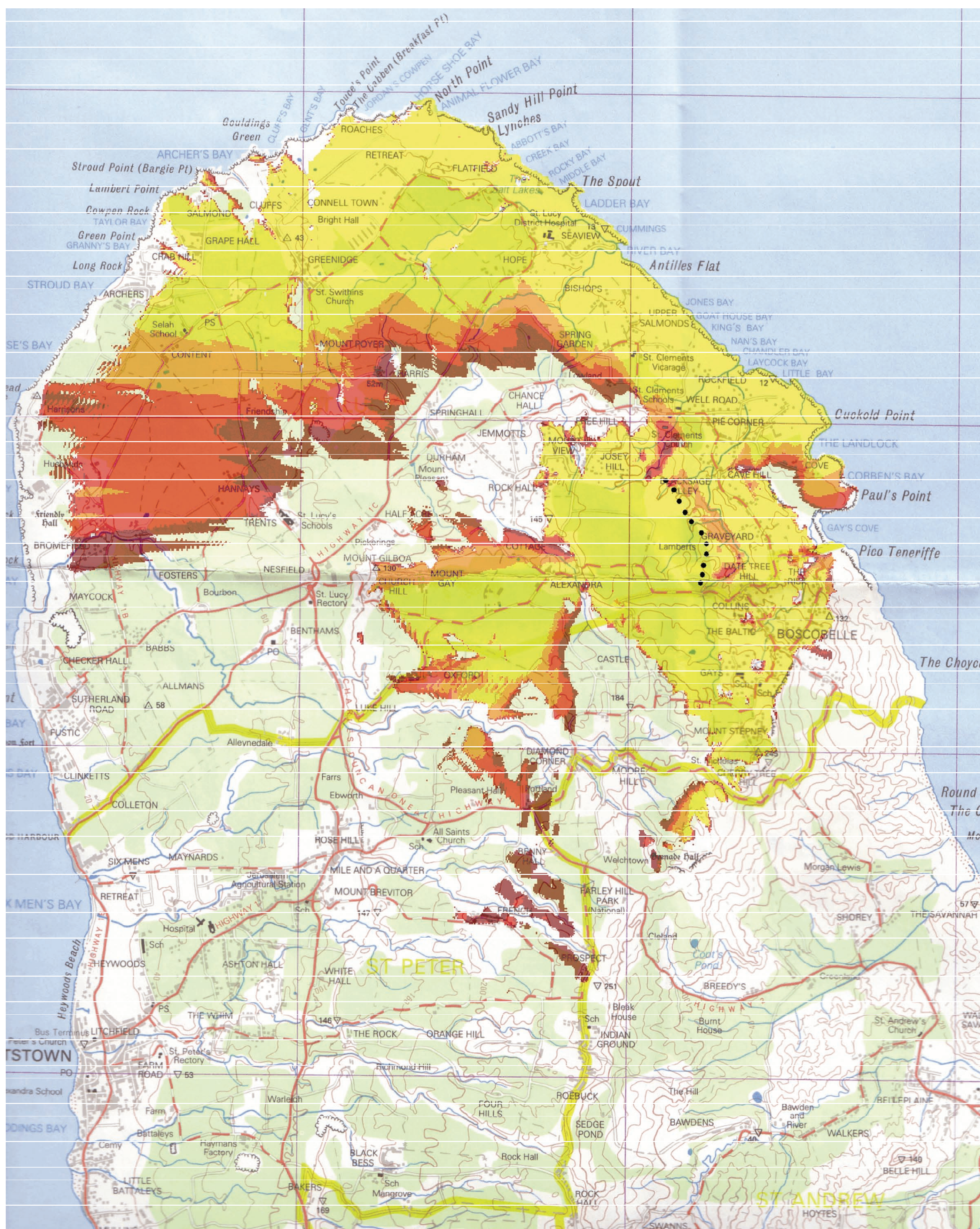
Lamberts - How will they look?



Preparing for the future...NOW!

Lamberts Wind Farm - Zone of Visual Influence

A Zone-of-Visual Influence (ZVI) map shows the number of wind turbine nacelles visible from points in the vicinity of the wind farm.



Preparing for the future...NOW!



THE BARBADOS
LIGHT & POWER
COMPANY LIMITED

We invite you to a Public Information Open Session on our proposed Wind Turbine Project

The Barbados Light & Power Company Limited invites you to attend one of the two public information open sessions being held to discuss the Company's plans for a new wind powered electricity generating station at Lamberts, St. Lucy.

Come visit with us in the assembly hall of the Ignatius Byer Primary School, Lowlands, St. Lucy on Saturday November 4, 2006 and Sunday November 5, 2006 any time between 3p.m. to 6 p.m.

There will be a visual display of the proposed project and copies of the draft Environmental Impact Assessment (EIA) report will be made accessible to interested persons. Representatives from our Company will be available for discussion and will make a note of your comments and queries. We look forward to seeing you there.

For further information, please contact:
Mr. Hallam Edwards at 417-3200
or Mr. Roger Blackman at 417-3279



Preparing for the future... NOW!

LIGHT & POWER

POWER FROM THE WIND

LIGHT & POWER

Wind - A Valuable Natural Resource

Windmills have been used in Barbados since the early 17th Century for grinding cane and pumping water.

LIGHT & POWER

Wind - A Valuable Natural Resource

Today's wind turbines harness the power of the wind and convert it into electricity.

LIGHT & POWER

Wind - A Valuable Natural Resource

- Wind is the fastest-growing energy source in the world.
- Global wind power capacity has tripled over the past five years, growing from 18,000 MW at the end of 2000 to more than 58,000 MW at the end of 2005.
- A record 11,300 MW of new wind power capacity was installed worldwide in 2005.
- There are more than 70,000 wind turbines installed worldwide.
- The current generation of computer controlled turbines has been in production for over 25 years.
- Turbines have now reached the stage where they are expected to be available to generate for over 98% of the year.

Why Lamberts?

- The Lamberts East site was one of four sites designated by the Government in the National Physical Plan as suitable for wind energy developments.
- The Barbados Light & Power completed a feasibility study that considered environmental, technical, financial and wind information to rank the sites.
- The study determined that this site located on the Lamberts Plantation, St. Lucy was the preferred site.
- Measurements show that Lamberts has an excellent wind regime. There is sufficient wind for the turbines to be generating electricity for over 90% of the time

Wind - the free fuel

- The Lamberts East wind farm will consist of 11 wind turbines.
- Total installed capacity will be around **10 MW** and annual production **28 million kilowatt-hours**
 - enough to meet the average annual needs of about **9,275 homes**
 - reducing fuel costs by approximately **BDS\$ 5.6 million per year**
- The Lamberts East wind farm is expected to represent approximately **2.6%** of electricity production in 2009.

Global Warming

- The main greenhouse gas is Carbon Dioxide.
- Reducing electricity generation on hydrocarbon fuels reduces the amount of carbon dioxide produced.
- A 10 MW Wind Farm could reduce Carbon Dioxide output by around **20,000 tonnes per year**, the equivalent of:
 - planting **6700 acres of trees**
 - or
 - removing **4400 cars** from the roads of Barbados

Land Take

- Land use is limited to the small area required for the wind turbine foundations and access tracks leading to them.
- Farming activities in the surrounding fields can continue undisturbed.



Photo: National Renewable Energy Lab

Visual Impact

- Visual Impact can be indicated by photomontages.

VIEW OF THE LAMBERTS EAST WIND FARM FROM THE EXISTING WIND TURBINE



Visual Impact

- Visual Impact can be indicated by photomontages.

VIEW OF THE LAMBERTS EAST WIND FARM FROM RISK ROAD



Visual Impact

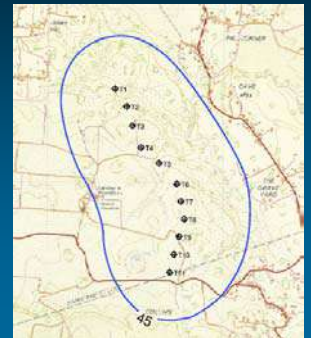
- Visual Impact can be indicated by photomontages.

VIEW OF THE LAMBERTS EAST WIND FARM FROM PIE CORNER MISSION



Noise

- Noise effects are minimal and below 45 dBA (equivalent to a quiet room) at a distance of 350 m and wind speeds of less than 8 m/s.
- At higher wind speeds, background sound levels increase at a greater rate than turbine noise.



Safety

- The wind industry has an excellent safety record.
- There are more than 70,000 turbines across the world. In over 20 years of operation the industry has recorded only one accidental death of a member of public (a German skydiver).
- Many wind farms are sited on public land, often with public footpaths passing through.

Construction

- The following slides illustrate the construction sequence for a typical wind turbine generator installation

Foundation Excavation



Foundation Steelwork



Pouring Foundation



Completed Foundation



Transporting Blades



Rotor Assembly



Turbine Components



Mid Tower Section



Upper Tower Section



Placing the Nacelle



Picking Up the Rotor



Lifting the Rotor



Installing Rotor



Attaching the Rotor



Inside of Tower



Transformer at Tower Base



Laying Power Cables



Completed Wind Turbines

