

ENERGY COMMISSION



LICENCE MANUAL

for

SERVICE PROVIDERS IN THE RENEWABLE ENERGY INDUSTRY

(WHOLESALE ELECTRICITY SUPPLY LICENCE)

September, 2012

PREFACE

The Licence Manual for Service Providers in the Renewable Energy Sector has been developed by the Energy Commission of Ghana to formally establish a framework for licensing service providers as stipulated by the Renewable Energy Act 2011, Act 832.

The issue of the Licence Manual for Service Providers in the Renewable Energy Sector marks a significant development in the implementation of the recently passed Renewable Energy Act. The Act aims at providing for the development, management and utilisation of renewable energy sources for the production of heat and power in an efficient and environmentally sustainable manner. It is also to create an enabling environment to attract investment into the renewable energy sector.

It is anticipated that the Act will enhance appreciable investments in the deployment of Renewable Energy Technologies in the country, particularly towards increasing access to electricity in the rural areas, energy security as well as environmental benefits. These are expected to be achieved through the development and introduction of regulatory and institutional reforms that would assure open access and transparency of transactions and operations within the sector.

Finally, users of the Licence Manual are highly encouraged to make submissions on any part or portion of it that needs improvement and refinement to assist in the establishment of a versatile licensing framework for the renewable energy industry in Ghana. Submission of any relevant comments and ideas should be forwarded to:

The Executive Secretary,
Energy Commission,
PMB, Ministries Post Office,
Accra, Ghana;
Email: info@energycom.gov.gh,
Website: www.energycom.gov.gh
Tel: (+233) 302 813762/ 813763/ 813756
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WHOLESALE ELECTRICITY SUPPLY LICENCE TO GENERATE ELECTRICITY FROM RENEWABLE ENERGY SOURCES

7.1 CHECK LIST of Requirements for the Acquisition of Wholesale Electricity Supply Licence. Details of each Exhibit are given below.

STAGE 1: ACQUISITION OF PROVISIONAL LICENCE

Required Submissions

- Exhibit WS1 - Scope of Operation (Summary description of project, including technical details)
- Exhibit WS2 - Company Registration Certificates & Documents (include Forms 3 & 4)
- Exhibit WS3 - Principal Officers, Director and Partners (include contact details)
- Exhibit WS4 - Ownership and Corporate Structure
- Exhibit WS5 - Cross-ownership and Ring Fencing
- Exhibit WS6 - Disclosure of Liabilities and Investigations
- Exhibit WS7 - Financial Capability and Proposed Financial Plan
- Exhibit WS8 - Statement of Assets
- Exhibit WS9 - Feasibility Report
- Exhibit WS10 - Business Plan
- Exhibit WS11 - Company History and Existing Activities
- Exhibit WS12 - Industry Participation
- Exhibit WS13 - Operational Experience and Expertise
- Exhibit WS14 - Specific Licence Conditions and Exemptions
- Exhibit WS15 - Indicative Implementation Plan
- Exhibit WS16 - Commercially Sensitive Information
- Exhibit WS17 - Generating Plant Technology and Type of Renewable Energy Resource

STAGE 2: PRIOR TO CONSTRUCTION

A. ACQUISITION OF SITING PERMIT

Required Submissions

- Exhibit WS18 - Site Analysis Report (Submit according to Appendix 1, after which a Presentation shall be made to the Siting Committee)

B. ACQUISITION OF CONSTRUCTION WORK PERMIT (AUTHORISATION TO CONSTRUCT) Required Submissions

- Exhibit WS19 - Land Conveyance Agreement (Land documentation)
 - Exhibit WS20 - Geological Survey
 - Exhibit WS21 - Health, Safety and Environmental Plan
 - Exhibit WS22 - Environmental Permit
 - Exhibit WS23 - Site Layout and Right of Way
 - Exhibit WS24 - Water Use Permit (applicable to ONLY hydro power generation)
 - Exhibit WS25 - Implementation Agreements
 - Exhibit WS26 - Detailed Implementation Schedule
 - Exhibit WS27 - Plant and Machinery Specifications
 - Exhibit WS28 - Construction Contract
 - Exhibit WS29 - Gazetted Feed-In-Tariff by the Public Utilities Regulatory Commission
 - Exhibit WS30 - Power Purchase Agreement (with an off-taker)
- ** Dynamic Grid Impact Studies Approved by Transmission or Distribution Utility

STAGE 3: ACQUISITION OF OPERATIONAL LICENCE (AUTHORISATION TO OPERATE)

Required Submissions

- Exhibit WS31 - Supply Agreement (equipment, parts, etc.)
- Exhibit WS32 - Operations and Maintenance Plan
- Exhibit WS33 - Safety and Technical Management Plan (Include Environmental Management Plan)
- Exhibit WS34 - Commissioning Report
- Exhibit WS35 - Plant Drawing
- Exhibit WS36 - Receipt of Initial Licence Fee

** Applicant to submit Dynamic Grid Impact Studies approved by GRIDCo if connection is to the NITS, and Dynamic Network Impact Studies approved by a Distribution Utility if connection is to the Distribution System.

Stage 1: Procedure for Acquisition of Provisional Wholesale Supply Licence to Generate Electricity from Resource Energy Source

- 7.2 An applicant shall submit a signed application letter addressed to the Executive Secretary of the Commission.
- 7.3 Applicants shall fill and submit one original application form signed by a Principal Officer (reference schedule I - Application Form).
- 7.4 Applicants shall attach receipt confirming the payment of prescribed licence application fee (reference schedule II – Schedule of Licence Fee).
- 7.5 Applicants shall provide three (3) hard copies and a soft copy of the following exhibits as a separate attachment, clearly labelled and all pages sequentially numbered:

Exhibit WS1 – “Scope of Operation” provide a written description of the operational nature of the applicant’s business.

Exhibit WS2 - "Company Registration" provide evidence that the applicant has registered with the Registrar General’s Department.

Exhibits required include:

- a. Certificate of Incorporation / Registration.
- b. Certificate to Commence Business.
- c. Regulations 8 to 82; Second schedule to the Companies Code, 1963 (Act 179).

Exhibit WS3 - "Principal Officers, Directors and Partners" provide the names, titles, nationality, addresses and telephone numbers of the applicant’s principal officers, directors, partners, or other similar officials.

Exhibit WS4 - "Ownership & Corporate Structure" provide a description of the applicant’s corporate and ownership structures, including a graphical depiction of such structure, and a list of all affiliate and subsidiary companies.

Exhibit WS5 - “Cross-ownership and Ring Fencing” Applicants should outline the following:

- i. The basis on which services and resources will be transacted between relevant operating areas of the applicants, or the applicant and its other related entities;
- ii. In the case of applicants that are wholly owned subsidiaries, information on proposed audit arrangements should be provided and also stated whether separate reports for the licensee and its parent company (if applicable) are to be prepared and made publicly available; and
- iii. Other guidelines or standards relating to financial separation, ring-fencing and separate audit arrangements which the applicant intends to follow.

Exhibit WS6 – "Disclosure of Liabilities and Investigations" provide a description of all existing, pending or past rulings, judgments, contingent liabilities, revocation of authority, regulatory investigations, or any other matter that could adversely impact the applicant's financial or operational status or ability to provide the services it is seeking to be certified to provide. Also include a statement whether the applicant or any of his associates, or partners, or promoters, or Directors was ever refused licence or had licence cancelled, and if so, the particulars of such application, date of making the application, date of order refusing or cancelling licence and reasons for such refusal or cancellation.

Exhibit WS7 – "Financial Capability and Proposed Financial Plan" provide the two most recent Annual Reports to Shareholders and copies of the applicant's three most recent years of audited financial statements (balance sheet, income statement, and cash flow statement). If audited financial statements are not available, provide officer certified financial statements. If the applicant has not been in business long enough to satisfy this requirement, it shall file audited or officer certified financial statements covering the life of the business. Provide copies of the applicant's financial arrangements to conduct electricity business as a business activity (e.g., guarantees, bank commitments, contractual arrangements, credit agreements, etc). Provide two years of forecasted financial statements (balance sheet, income statement, and cash flow statement) for the applicant's operation, along with a list of assumptions.

Exhibit WS8 – "Statement of Assets, Technology & Type of Renewable Energy Resource" provide a list of major plant and machinery to be installed, stating technology and type of renewable energy resources and proposed layout plan. In the case of hydro power plant indicate whether the reservoir or run-of-river and type of turbines to be used.

Exhibit WS9 – "Feasibility Report" provide a Feasibility Study Report on the new facility or installations to be used by the applicant. The report should include, among other things, drawings of generator's and/or substation's installations and equipment specifications together with proposed interconnections to the relevant distribution or transmission network.

Exhibit WS10 – "Business Plan" provide a written explanation of the company's business model for the venture.

Exhibit WS11 – "Company's History & Existing Activities" provide a concise description of the applicant's company history and principal business interests. It should include all jurisdictions in which the applicant or any affiliated interest of the applicant is, at the date of filing the application with respect to licensing or otherwise authorisation to provide retail or wholesale electric services.

Exhibit WS12 – “Industry Participation” provide general information about its existing activities, both within and outside the renewable energy industry. The application should summarise the reasons why the applicant intends to participate in the Ghanaian renewable energy industry, and the broad nature of that participation. In providing the above explanation, the applicant should address the Commission's objectives as set out in Section 2 of the Act and the objects of the Act and explain how the granting of a licence would be consistent with those requirements.

Exhibit WS13 – “Operational Experience & Expertise” provide names, titles, e-mail addresses, telephone numbers, and the background of key personnel involved in the operational aspects of the applicant's business. Provide the following information:

- (a) details of their experience in and knowledge of the renewable energy industry;
- (b) a summary of the skills and experience of the directors and senior managers, and their relevance to meeting the requirements of the licence;
- (c) evidence that the applicant has the capacity to comply with the licence conditions, codes and guidelines relevant to its application; and
- (d) if the applicant is to rely on another entity to provide staff and resources, a summary of the relationship between the applicant and this entity, including any formal agreements to provide services, and a summary of this other entity's experience in and knowledge of the renewable energy industry, and technical capacity to meet the relevant requirements of the licence should be provided.

Exhibit WS14 – “Specific Licence Conditions and Exemptions” Where the applicant is seeking particular licence conditions, the nature and reasons for seeking those conditions should be explained. In such circumstances, the applicant should also provide a draft outline of the proposed licence condition(s) or exemptions. The Commission may waive any of the requirements for a licence in respect of a particular applicant provided the waiver does not compromise on public safety.

Exhibit WS15 – “Indicative Implementation Schedule” provide indicative timelines for the specific activities that must be performed to produce the various project deliverables, establishing interdependences and sequencing.

Exhibit WS16 – “Commercially Sensitive Information”

The Commission may make public the information included in an application for a licence. Where the applicant considers information contained in an application to be commercially sensitive, the applicant should clearly identify such information and state the reasons why they are to be regarded as commercially sensitive, to enable the Commission determine its consideration of the confidentiality request.

Exhibit WS17 – “Generating Plant Technology and Description” provides details as per Schedule III – Generating Plant Technology and Description.

Stage 2

A. Procedure for Acquisition of Siting Clearance

- 7.6 An applicant shall submit a signed application letter addressed to the Executive Secretary of the Commission.
- 7.7 Proof of payment of prescribed licence application fee.
- 7.8 Applicants shall provide ten (10) copies and a soft if available of the following exhibits as separate attachment, clearly labelled and all pages sequentially numbered.

Exhibit WS18 – “Site Analysis Report” provides details as per Appendix I - Site Analysis for the siting of Electric Power generating Plant.

Exhibit WS19 – “Land Conveyance Agreement” provide appropriately approved documentation of proof of title to land, site plan, and relevant municipal permits for construction (i.e. Town & Country Planning Permit), etc.

Exhibit WS20 – “Geological Survey” provide a report from the Geological Survey Department of Ghana attesting to either the absence of or acceptable levels of seismic activity on and around the proposed site.

Exhibit WS21 – “Health, Safety & Environmental Plan” provide plans to comply with all legislation and standards relevant to the firm’s activities and implement systems and structures that prevent the recurrence of injuries, ill health and hazardous conditions.

Exhibit WS22 – “Environmental Permit/Certificate” provide an Environmental Assessment permit or certificate granted by the Environmental Protection Agency.

Exhibit WS23 – “Site Layout & Right-of-Way” provide detailed Site-Layout and “Right-of-Way” drawings. Provide a programme for compensation payments (where relevant).

Exhibit WS24 – “Water Use Permit” provide a permit granted by the Water Resources Commission (**applicable ONLY to hydro power generation**).

B. Procedure for Acquisition of Siting Clearance

- 7.9 An applicant shall submit a signed application letter addressed to the Executive Secretary of the Commission.
- 7.10 Proof of payment of prescribed licence application fee.
- 7.11 Applicants shall provide ten (10) copies and a soft if available of the following exhibits as separate attachment, clearly labelled and all pages sequentially numbered.

Exhibit WS25 – “Implementation Agreements” provide copies of licences, Memorandum of Understanding (MOUs), etc with agencies relevant to the implementation.

Exhibit WS26 – “Detailed Implementation Schedule” provide detailed timelines for the specific activities that must be performed to produce the various project deliverables, establishing interdependences and sequencing.

Exhibit WS27 – “Plant and Machinery Specifications” detailed engineering design and equipment specifications.

Exhibit WS28 – “Construction Contract” provide basic terms between the owner and the contractor. This details the contractor's basic duties and responsibilities, including bonds and insurance, progress and final payments, and substantial completion.

Exhibit WS29 – “Feed-In-Tariff” provide approved feed-in-tariff from the Public Utilities Regulatory Commission.

Exhibit WS30 – “Power Sales and Purchase Agreement” provide power purchase agreement signed between wholesale supplier and electricity distribution utility or bulk customer.

Stage 3: Procedure for acquisition of Authorisation to Operate

- 7.12 An applicant shall submit a signed application letter addressed to the Executive Secretary of the Commission.
- 7.13 Applicants shall provide ten (10) copies and a soft if available of the following exhibits as separate attachment, clearly labelled and all pages sequentially numbered.

Exhibit WS31 - “Supply Agreement (equipment, parts, etc)” provide equipment and parts agreement for major spare parts and frequently changed parts or equipment. Provide supply agreement for network access, supply of biomass waste (in the case of biomass power plant), etc.

Exhibit WS32 - “Operations & Maintenance Plans” Operations and maintenance agreement, and plan.

Exhibit WS33- “Safety & Technical Management Plan” Safety & Technical Management Plan (STMP) approved by the Energy Commission and shall include:

- a) Company safety policy statement.
- b) Company’s safety codes and practices.
- c) Demarcation, protection and prevention of unauthorised entry of site.
- d) Employee health and safety requirements in accordance with Ghana’s labour regulations.
- e) Waste Management policy and plan in line with EPA or WHO regulations & standards (effluents, cooling water, drainage of runoff water etc.).
- f) Compliance Plan.
- g) Environmental hazards impact mitigation measure, actions and plans (sampling, monitoring analysing of air, aquatic toxicity, noise etc.).
- h) Emergency preparedness.
- i) Deployment of disaster management measures.
- j) Fire safety (prevention and fighting measures).
- k) Precautions for prevention of environmental hazards (battery contamination, pollutants, etc).
- l) Operational and maintenance safety rules, procedure and instructions.
- m) Company’s operation and maintenance culture.

- n) Adherence to equipment manufacturer's recommended maintenance schedules.
- o) Specific commitment and arrangements to operate facilities/installation to ensure safe and reliable electricity supply.

Exhibit WS34 – “Commissioning Report” Satisfactory commissioning test report.

Exhibit WS35 – “Plant Drawing” As-built drawings and layout of plant and/or facilities.

Exhibit WS36 – “Receipt of Initial Licence Fee” Evidence of payment of initial licence fee to Energy Commission.

SCHEDULE I
APPLICATION FORM

A-1 Applicant/Company intends to be licensed for the service of: (check all that apply)

- Wholesale Electricity
- Supply Biofuel Production
- Bulk Biofuel Transportation
- Bulk Biofuel Storage
- Biofuel Export
- Charcoal Production
- Bulk Charcoal Transportation
- Charcoal Wholesale/Storage
- Charcoal Export
- Briquettes Production
- Briquettes Export
- Importation of Renewable Energy Products Installation and Maintenance

A-2 Applicant/Company's legal name, postal address, telephone number and web site address

Legal Name _____
Postal Address _____
Telephone # _____ Fax # _____
Website address (if any) _____

A-3 Office location address

House/Plot Number _____
Street Name _____
Town/City _____ Region _____

A-4 Contact person for regulatory matters

Name _____
Title _____
Business address _____
Telephone # _____ Fax # _____
E-mail address (if any) _____

A-5 Customer Segment (Check all that apply)

- Distribution Company
- Bulk Customer
- Refinery
- Oil Marketing
- Company Public
- Overseas customer
- Industrial, commercial and residential

A-6 Location where applicant intends to establish production or service facility

Community_____

Town/City_____

District_____

Region_____

A-7 Provide the approximate start date that the applicant proposes to begin delivering service

A-8 Number of years in the Renewable Energy Industry _____

SIGNATURE_____

DATE_____

SCHEDULE II

SCHEDULE OF LICENCE FEES

TYPE OF PERMIT	APPLICATION FEE (GHC)	SITING FEE (GHC)	CONSTRUCTION PERMIT FEE (GHC)	SIZE OF PLANT	INITIAL LICENCE FEE (GHC)	ANNUAL OPERATING FEE (GHC)	
						FIXED	VARIABLE
Wholesale Electricity Supply	23,500.00	40,000.00	0.1% of EPC	Small Scale: 2MW < 10MW	9,500.00	9,500.00	0.25% of PURC Approved Tariff
				Medium Scale: 10MW ≤ 100MW	38,000.00	47,000.00	
				Large Scale: ≥100MW	71,000.00	71,000.00	

** The fees shall be reviewed annually.*

SCHEDULE III

ELECTRICITY GENERATING PLANT TECHNOLOGY AND DESCRIPTION

A. Solar PV Generating Plant

Type of Solar PV Modules	Number of modules	Name of Manufacturer	Installed Capacity (MW)	Available Output (MW)	Generating Voltage	Frequency	Age of Plant	Remarks

B. Wind Power Generating Plant

Type/ Model of Wind Turbines	Number of Wind Turbines	Name of Manufacturer	Installed Capacity (MW)	Available Output (MW)	Generating Voltage	Frequency	Age of Plant	Remarks

C. Cogeneration Plant

Type/ Model of Biomass Plant	Name of Manufacturer	Installed Capacity (MW)	Available Output (MW)	Gross Heat Rate (KJ/kWh)	Cycle Mode	Generating Voltage	Frequency	Emission Parameters	Age of Plant	Remarks

D. Hydro Power Plant

Type of Dam	Type/ Model of Plant	Name of Manufacturer	Installed Capacity (MW)	Available Output (MW)	Head		Generating Voltage	Frequency	Flow Rate	Age of Plant	Remarks
					Max	Min					

APPENDIX I

Siting Analysis for Electric Power Generating Facilities

- A. Project summary and facility overview
- B. Review of need for proposed project
- C. Site alternatives analyses
- D. Technical data
- E. Financial and Economic impact data

A. Project summary and facility overview

1. An applicant for clearance to site an electric power generating facility shall provide a project summary and overview of the proposed project. The summary and overview shall include:
 - (i) an explanation of the general purpose of the facility;
 - (ii) a description of the proposed facility;
 - (iii) a description of the site selection process, including descriptions of the major alternatives considered;
 - (iv) a discussion of the principal environmental and socioeconomic considerations of the preferred and alternate sites; and
 - (v) an explanation of the project schedule for which purpose a bar chart is acceptable.
2. Information filed by the applicant in response to the requirements under this section (A) shall not be deemed as responses to any other section [from (B) to (F)] of the application requirements.

B. Review of need for proposed project

1. ***Need statement:*** An applicant for a clearance to site an electric power generating facility under this guidelines shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable).
2. ***Description of proposed generation and associated facility:***
 - (a) The applicant shall submit for each alternative:

- (i) type, number of units, and designed ISO rating, annual capacity factor and hours of annual generation;
 - (ii) land area requirement;
 - (iii) fuel type, quantity and quality;
 - (iv) a list of types of pollutant emissions; and
 - (v) water requirement, source of water, treatment, quantity of any discharge and names of receiving streams.
- (b) The applicant shall submit a summary description of the major equipment.
- (c) The applicant shall submit a brief description of the need for new transmission line(s) associated with the proposed facility.

3. ***Project schedule:***

- (a) The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:
- (i) acquisition of land and land rights;
 - (ii) preparation and submission of the Siting Clearance application;
 - (iii) consideration and grant of Siting Clearance;
 - (iv) issuance of the wholesale supply licence;
 - (v) preparation of the final design;
 - (vi) construction of the facility; and
 - (vii) commercial operation of the facility.
- (b) The applicant shall describe the impact of critical delays on the eventual date of commencement of operations.

C. Site alternative analyses

1. The applicant shall conduct a site selection study prior to submitting a Siting Clearance application for an electric power generating facility. The study shall be designed to evaluate at least two alternate sites for the proposed facility.
- (a) The applicant shall provide the following:
- (i) a description of the study area or geographic boundaries selected, including the rationale for the selection;
 - (ii) a map of suitable scale which includes the study area and which depicts the general sites which were evaluated;
 - (iii) a comprehensive list of all siting criteria utilized by the applicant, including any quantitative or weighting values assigned to each;
 - (iv) a description of relevant factors, or constraints, identified by the applicant and utilized in the site selection process;

- (v) a description of the process by which the applicant utilized the siting criteria to determine the proposed site and any proposed alternative site(s);
 - (vi) a description of the sites selected for evaluation, their final ranking, and the rationale for selecting the proposed site and any proposed alternative site(s); and
 - (vii) a description of any qualitative or other factor utilized by the applicant in the selection of the proposed site and any proposed alternative site(s).
- (b) The applicant shall provide one copy of any constraint map utilized for the study to the Committee for review.
2. The applicant shall provide a summary table comparing the sites, utilizing the technical, financial, environmental, socioeconomic, and other factors identified in the study. Design and equipment alternatives shall be included where the use of such alternatives influenced the siting decision.
 3. The applicant may provide a copy of any site selection study produced by or for the applicant for the proposed project as an attachment to the application. The study report may be submitted in response to paragraphs 1 and 2 of this section, provided that the information contained therein is responsive to the requirements of the referenced paragraphs.

D. Technical data

Site

1. Information on the location, major features, and the topographic, geologic, and hydrologic suitability of the proposed site and any proposed alternative site(s) shall be submitted by the applicant. Specifically, the applicant shall provide the following for each site alternative:
 - (a) **Geography and topography:** The applicant shall provide a map of 1:50,000 scale containing a five-kilometre radius from the proposed facility and showing the following features:
 - (i) the proposed facility;
 - (ii) major population centers and geographic boundaries;
 - (iii) major transportation routes and utility corridors;
 - (iv) bodies of water which may be directly affected by the proposed facility;
 - (v) topographic contours;
 - (vi) major institutions, parks, recreational areas; and
 - (vii) residential, commercial and industrial buildings and installations.

- (b) A digital survey map of 1:2,500 scale of the site, showing the following existing features shall be provided:
 - (i) GPS coordinates of the site;
 - (ii) topographic contours;
 - (iii) land use and classifications;
 - (iv) existing vegetative cover and the vegetative cover that may be removed during construction;
 - (v) individual structures and installations;and
 - (vi) surface water bodies.

- (c) **Geology and seismology:**. The applicant shall provide a geological and structural map of suitable scale of the proposed facility site and also describe:
 - (i) the suitability of the site with respect to seismic sensitivity status; and
 - (ii) the suitability of soil for grading, compaction, and drainage, and describe plans to remedy any identified inadequacies.

- (d) **Hydrology and wind:** The applicant shall provide
 - (i) the natural and the man-made water bodies, and if available, daily and monthly river/stream flows likely to be directly affected by the proposed facility;
 - (ii) an analysis of the prospects of floods for the area, including the probability of occurrences and likely consequences of various flood stages, and describe plans to mitigate any likely adverse consequences; and
 - (iii) an analysis of the prospects high winds for the area, including the probability of occurrences and likely consequences of wind velocities, and describe plans to mitigate any likely adverse consequences.

Layout and construction

- 2. The applicant shall provide information on the proposed layout and preparation of the proposed site and any proposed alternative site(s) and the description of proposed major structures and installations located thereon.
 - (a) **Site activities:** The applicant shall describe the proposed site preparation and reclamation operations, including:
 - (i) test borings;

- (ii) removal of vegetation;
 - (iii) grading and drainage provisions;
 - (iv) access roads;
 - (v) removal and disposal of debris; and
 - (vi) post-construction reclamation.
- (b) **Layout:** The applicant shall supply a map of 1:2,500 scale of the proposed electric power generating plant site, showing the following features of the proposed and existing facility and associated facilities:
- (i) electric power generating plant;
 - (ii) fuel, waste, and other storage facilities;
 - (iii) fuel and waste processing facilities, if any;
 - (iv) water supply and sewage lines;
 - (v) transmission lines;
 - (vi) substations;
 - (vii) transportation facilities and access roads;
 - (viii) security facilities;
 - (ix) grade elevations where modified during construction; and
 - (x) other pertinent installations.
- (c) **Structures:** The applicant shall describe, in as much detail as is available at the time of submission of the application, all major proposed structures, including the following:
- (i) estimated overall dimensions;
 - (ii) construction materials;
 - (iii) colour and texture of facing surfaces;
 - (iv) artist's pictorial sketches of the proposed facility from public vantage points; and
 - (v) any unusual features.
- (d) **Plans for construction:** The applicant shall describe the proposed construction sequence.
- (e) **Future plans:** The applicant shall describe any plans for future additions of electric power generating units earmarked for the site (including the type and timing) and the maximum electric power generating capacity anticipated for the site.

3. **Equipment**

- (a) The applicant shall describe the proposed major *electric power generating equipment* for the proposed site and any proposed alternative site(s).
- (b) The applicant shall describe all *safety equipment* including:
 - (i) the reliability of the equipment and the reduction in efficiency for partial failure; and
 - (ii) all proposed major public safety equipment.
- (c) The applicant shall describe any other major equipment constituting the proposed facility that is not discussed in paragraph 3(b).

4. **Power Evacuation arrangement and facilities**

- (a) The applicant shall submit the following documentation relating to the facilities required for the adequate evacuation of the power to be generated into the distribution or national interconnected transmission system:
 - (i) the electrical single line diagram and equipment layout design showing how the new system would connect with the existing network;
 - (ii) the steady-state power flow calculations for the interconnected grid with special emphasis on the simulated performance of the new plant and the determination of losses resulting from power production from the new plant at the proposed point of interconnection; and
 - (iii) the short circuit calculations to determine the impact of the new generation facility on the short circuit capability of the existing power system.
- (b) Applicants should note that the granting of an operating licence would require full compliance with the national electricity grid code, especially in the areas of machine size of generating units, system stability considerations etc.

E. Financial and Economic impact data

1. The applicant shall state the type, current and proposed ownership status of the proposed facility, including site(s), rights-of-way, structures, and equipment.
2. **Capital and intangible costs:** The applicant shall:
 - (a) Submit estimates of applicable capital and intangible costs for the various alternatives. The data submitted shall be classified according to

Public Utilities Regulatory Commission uniform system of accounts for utility companies (i.e. electricity generation or supply company, or a natural gas supply company).

- (b) Provide and tabulate total costs per kilowatt, the present worth and annualised cost for capital costs and any additional cost details as required to compare capital cost of alternative sites considered (using the start of construction date as reference date), and describe techniques and all factors used in calculating present worth and annualised costs.

3. **Operation and maintenance expenses:** The applicant shall:

- (a) Supply applicable estimated annual operation and maintenance expenses for the first two years of commercial operation. The data submitted shall be classified according to Public Utilities Regulatory Commission uniform system of accounts for utility companies (i.e. electricity generation or supply company, or a natural gas supply company).
- (b) Tabulate the total operation and maintenance cost per kilowatt, the present worth and annualised expenditures for operating and maintenance costs as well as any additional cost breakdowns as required to compare alternative sites, and describe techniques and factors used in calculating present worth and annualised costs.

4. **Delays:** The applicant shall submit an estimate of the cost for a delay prorated to a monthly basis beyond the projected commercial operation date.

5. **Economic impact data:** The applicant shall provide estimates of:

- (a) the annual total and present worth of construction and operation payroll;
- (b) the construction and operation employment and estimate the number that will be employed from the area, locality and region;
- (c) the increase in national and local tax revenue accruing from the facility; and
- (d) the economic impact of the proposed facility on local commercial and industrial activities.