

NEW YORK STATE
PUBLIC SERVICE COMMISSION

Case 03-E-0188 - Proceeding on Motion of the
Commission Regarding a Retail
Renewable Portfolio Standard

COMMENTS OF ONTARIO POWER GENERATION INC.

ON A PROPOSED POLICY FOR A

RENEWABLE PORTFOLIO STANDARD

Respectfully submitted,

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Dated: March 28, 2003
Toronto, Ontario, Canada

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The Public Service Commission (“Commission”) instituted this proceeding to develop and implement a renewable portfolio standard (“RPS”) for retail electric sales. Pursuant to the Commission’s February 19, 2003 *Order Instituting Proceeding* (the “Order”) a procedural conference was held on March 4, 2003 and the submission of comments was set for March 28, 2003. Two days of collaborative meetings among interested parties are to follow on April 7 and 8, 2003 and thereafter Administrative Law Judge Eleanor Stein (the “Judge”) is scheduled to provide a preliminary report to the Commission on May 2, 2003. The Commission may then issue further directions on how it wishes to proceed.

Ontario Power Generation (OPG) is supportive of the New York Public Service Commission's (PSC's) timely initiative to operationalize Governor Pataki’s ambitious goal of having renewable resources generate 25 percent of New York’s electricity needs within the next 10 years. We would also like to take this opportunity to express our appreciation for the opportunity to participate in this initiative.

OPG is a corporation incorporated under the *Ontario Business Corporations Act* with its head office in Toronto, Ontario, Canada. OPG is an Ontario-based company whose principal business is the generation and sale of electricity to customers in Ontario and interconnected markets and we have been a member of the NYISO since its inception.

The following represents OPG’s initial comments in the New York PSC's proceeding to develop and implement a Renewable Portfolio Standard (RPS) for retail electric energy sales in New York State. Specifically, the following comments are directed to the key “threshold issues” identified in the PSC’s order dated February 19, 2003, with particular reference to issues 1, 2 and 10. As a basic assumption underlying OPG's comments, we note that New York State represents neither an isolated electricity market nor an isolated airshed. Ontario is inextricably linked with New York in both of

these matters and close coordination will enable benefits to all participants in both marketplaces.

The NYISO, in its design and implementation of the state electricity market, has considered the impact of its rules on neighboring electricity markets and has worked to encourage inter-jurisdictional trading. Despite this focus much effort has been expended since market opening in resolving so called "seams issues" which have, in various ways, limited trade to the detriment of all market participants. Similarly, OPG believes that an RPS program that allows for maximum harmonization with neighboring jurisdictions will facilitate successful implementation and help expand trade for renewable electricity.

While complete harmonization between jurisdictions will probably never be possible, the desire to harmonize should not slow down developments in New York. Where it is possible to develop coordinated programs across jurisdictional boundaries however, OPG believes that such efforts can lead to a much more effective and improved renewable energy program and we would encourage any and all such initiatives.

Issue 1--Types of Resources that should be considered as "renewable". The definition of the phrase "renewable energy" has a number of variations across jurisdictions in existing and proposed programs. However, OPG believes that energy generated from low-impact hydro, wind, solar and biomass facilities should meet the criteria of "renewable energy".

In Canada, the Canadian government has sponsored an Environmental Choice Program (ECP) whose goal is to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimizing the impacts of pollution generated by the production, use and disposal of goods and services available to Canadians. The ECP was based on a stakeholder process and has a proposed guideline on what facilities would qualify as "renewable energy". While this guideline has no legislative or regulatory status, it has found some application in industry and a copy is attached for your reference.

In addition, OPG believes that facilities meeting the "renewable energy" definition that were developed prior to the implementation of the proposed RPS should also be included within the portfolio. This would recognize the leadership shown by those stakeholders who had invested in renewable energy even before mandated by any level of government.

Issue 2--Appropriateness of including out of state renewable resource energy. OPG supports the inclusion in the portfolio of renewable resources originating outside New York State. As discussed above, environmental benefits accrue to New York citizens from renewable energy consumption and the resultant displacement of higher emission generating sources. Such benefits should be the goal, regardless of where in the airshed actual consumption and displacement occur. Accordingly, it is the definition of the airshed itself that should determine the geographic reach of the New York State RPS

program. By using this definition, greater potential economies of scale associated with establishing and operating required renewable energy generators are achievable.

Issue 10—Appropriateness of a “renewable attributes trading” system. In developing the components of the renewable attributes trading system, OPG suggests that one of the most important aspects will be the need for harmonization, including the absolute avoidance of double-counting. A key significant advantage of appropriately harmonized programs is assurance that under no circumstances would generators be able to double-count their renewable energy generation under multiple regulatory jurisdictions. Therefore, in order to be included as part of the New York RPS program, the jurisdiction in which the generator is physically located must be deemed to have a "comparable" tracking/verification program already in place. The NYPSC would likely be the appropriate regulatory entity to assess comparability for inclusion under the New York State program.

Respectfully submitted,

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Environmental Choice^M Program

CERTIFICATION CRITERIA DOCUMENT

CCD-003



Product: Renewable Low-impact Electricity

Preamble

Environment Canada's Environmental Choice^M Program (ECP) is pleased to publish the following national certification criteria document **renewable low-impact electricity**.

The Environmental Choice Program is designed to support a continuing effort to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimizing the impacts of pollution generated by the production, use and disposal of goods and services available to Canadians.

Based on a review of currently available life cycle information of the production, use and disposal stages, the product category requirements will produce an environmental benefit through:

- (a) the displacement of non-renewable fuels by renewable, more sustainable fuel sources;
- (b) the reduction of air emissions that contribute to global warming, smog, acid rain and air-borne particulate pollution;
- (c) the reduction of solid wastes arising from both the mining and extraction of non-renewable fuel sources, and the disposal of toxic metal emissions and nuclear wastes; and
- (d) the reduction of impacts on aquatic, riparian and terrestrial ecosystems from electricity generating activities.

Life cycle review is an ongoing process. As information and technology change, the product category requirements will be reviewed and possibly amended.

Environment Canada anticipates that generators and marketers of **renewable low-impact electricity** that conform to this guideline will apply to the Environmental Choice Program for verification and subsequent authority to label the qualifying products with the Environmental Choice Program's EcoLogo^M. The ECP maintains verification protocols that clearly define the terminology and associated criteria limits of this guideline.

Notice

Throughout this document, any reference to a standard or guideline means to its latest edition.

The Environmental Choice^M Program (ECP) reserves the right to accept equivalent test data for the test methods specified in this document.

Notice of Intent

In respect of future developments of regulatory systems related to climate change, the requirements regarding the disposition of environmental benefits (Section 13) will be reviewed within a two to three year timeframe and possibly changed to reflect new policies and/or regulatory requirements that may emerge.

Interpretation

1. In this set of requirements, please note the following definitions:

“alternative-use electricity” means electricity generated from the installation of a supplemental process and/or equipment to alter and/or add to the processes of an existing operation in order to generate electricity from a renewable energy source. The existing operation must not have been originally designed or intended for electricity generation, nor have had any processes in place at the time of commissioning that would have facilitated electricity generation. Examples of alternative-use electricity generation sources include, *inter alia*, irrigation control dams, waterways with locks and waste heat captured from an industrial or commercial process that is fuelled by renewable energy sources. Although certain types of biogas-fueled electricity (e.g., the capture and combustion of landfill gas) are also forms of alternative-use electricity, biogas-fueled electricity is defined as a separate category by this guideline;

“biogas” means gaseous products (primarily methane and carbon dioxide) produced by the anaerobic decomposition of organic wastes. Facilities producing biogas include *inter alia* landfill sites, sewage treatment plants and anaerobic digestion organic waste processing facilities;

“biogas-fueled electricity” means electricity generated from a system in which biogases are captured for combustion and conversion to electricity;

“biomass-fueled electricity” means electricity generated through the combustion of clean biomass as it is defined by the ECP;

“bypassed reach” means that area in the waterway between the initial point where water has been diverted through turbines or other mechanical means for water-powered electricity generation and the tailrace;

“CITES” means the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Secretariat, 15, chemin des Anémones, CH_1219 Châtelaine-Genève, Suisse. Tel. (+4122) 979 9139/40, fax (+4122) 797 3417);

“clean biomass” means organic materials as listed below that have, at no stage in their lifecycle, been treated with organic and/or inorganic substances to change, protect or supplement the physical properties of the materials (including *inter alia* synthetic chemical pest-control products, fungicides, wood preservatives, paints, varnishes or other surfaces coatings, halogenated compounds and/or compounds containing heavy metals). Specific types of clean biomass recognized under this Guideline include:

- (a) the wood-wastes and agricultural wastes that are solid residues arising from the harvesting and processing of agricultural crops or forestry products that might otherwise be sent to landfill and/or incinerated,
- (b) dedicated energy crops,
- (c) liquid fuels derived from biomass as defined in items (a) and (b), including *inter alia* ethanol, biodiesel, and methanol; and
- (d) clean organically-sourced material that has been separated from municipal solid waste (MSW), and subsequently processed (e.g., pelletization, gasification) to serve as a combustion fuel.

Clean biomass does not include materials for which other diversion methods are a viable alternative (e.g., soil amending, farm land applications, horticultural applications), nor the treated by-products of manufacturing processes (e.g., treated chipwood or plywood, painted woods, pressure treated lumber);

“**CO**” means carbon monoxide, and should be measured using the testing frequency, conditions and methods specified in Appendix 1 of this guideline;

“**concentrating solar thermal technology**” means a system that concentrates the heat of the sun through collectors, and uses the collected heat to drive a generating system to produce electricity;

“**dedicated energy crops**” means those non-food crops grown specifically for their fuel value, and in the case of this guideline, for electricity generation. These sources include *inter alia* short-rotation woody crops (such as poplar trees) and herbaceous energy crops (such as switch grass);

“**de-inking sludge**” means solid material filtered out of the wastewater from the process used to remove ink and other undesirable materials from printed wastepaper;

“**diversion**” means the construction of works to divert water into a canal, tunnel, penstock or similar conduit to supply water for electricity generation purposes;

“**elemental chlorine bleaching**” means the chemical process of purifying and whitening pulp, specifically through the use of chlorine in its gaseous, elemental form (Cl₂);

“**fish habitat**” means spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes;

“**fish passage**” means both the upstream and downstream migration of fish that can be ensured with the use of natural and/or human-made methods. Human-made methods include *inter alia* fishways, fish ladders, fish locks, fish elevators, powerhouse collection galleries, diversion screens, and by-pass facilities;

“**generator**” means an entity that produces electricity;

“**greenhouse gas**” means a gas that is considered to contribute to global warming and includes, *inter alia*, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O);

“**habitat compensation**” means replacing habitat which has been subjected to harmful alteration, disruption or destruction with newly created habitat or improving the productive capacity of some other natural habitat;

“**harmful alteration, disruption or destruction**” means, in respect of fish habitat, any change to fish habitat that indefinitely reduces, or permanently and completely eliminates, its capacity to support one or more life processes of fish;

“**head pond**” generally means the body of water immediately upstream of the intake structure of electricity generating facilities. Head ponds may be natural or human-made (lands inundated and/or water bodies created as a result of the construction of the generating station and/or the associated diversion structure(s)), or a combination thereof. Head ponds may serve one or more purposes including, but not limited to: (i) providing the appropriate hydraulic characteristics, such as submergence, for the intake structure; (ii) increasing the available head of the generating facility; and (iii) storing water for subsequent discharge through the generating facility. Head ponds also include changes caused by the diversion of a portion of a river through a canal or penstock;

“**instream flow**” means the water volume flowing in a waterway;

“ISO” means International Organisation for Standardisation;

“marketer” means an entity that receives electricity from a generator(s), possibly combines electricity from various sources, and markets and/or sells the electricity. Note that in some cases, marketers may also be generators;

“MW” means megawatt or 10^6 watts, and a unit of electrical power;

“MWh” means megawatt-hour, and a unit of electricity equal to one megawatt of power produced, consumed or flowing for a period of 1 hour;

“multi-sourced power product” means a combination of electrical power that is offered by marketers, and is comprised of electricity from more than one source and/or generator, where the sources and/or generators may or may not be certified under this guideline;

“NO_x” means nitrogen oxides, and should be measured using the testing frequency, conditions and methods specified in Appendix 1 of this guideline;

“null electricity” means electricity distributed on the grid that has no associated environmental attributes. Once the environmental attributes have been separated from the renewable low-impact electricity, the electricity becomes “null”. Electricity that does not meet the requirements specified in this guideline is also considered to be “null”;

“operational air emissions” means the quantity of air-borne emissions of a specified substance or compound that is released as a result of the generation of electricity;

“PCDDs and PCDFs” means polychlorinated dibenzo-para-dioxins and polychlorinated dibenzo-furans, and is a family of chlorinated organic compounds formed as trace contaminants or by-products in industrial processes. This includes the undesirable toxic contaminants generated when chlorine is used in the bleaching of wood pulp and when salt-laden wood is combusted;

“PM” means particulate matter, including particulate matter less than or equal to 10 microns in size, and should be measured using the frequency and methods specified in Appendix 1 of this guideline;

“photovoltaic (PV) technology” means a cell, module, panel, array and/or array field that directly converts light energy from the sun into electricity;

“renewable” means replenished through natural processes or through sustainable management practices so that a resource is not depleted at current levels of consumption;

“riparian” means the land and habitat found along the banks of streams, rivers and lakes;

“salt-laden wood” means timber and forestry residues that have been impregnated with a high concentration of salt (NaCl), either from prolonged exposure to maritime air or from immersion in marine waters (generally for the purpose of transportation);

“solar-powered electricity” means electricity generated by converting the sun’s light energy and/or heat energy into electricity, and includes *inter alia* photovoltaic technologies and concentrating solar thermal technologies;

“sound environmental management practices” means those practices and goals used to manage forest and/or agricultural products within a sound environmental management system, as defined in the definitions section of this guideline, that have the objectives of maintaining environmental values of the surrounding ecosystem. At a minimum, these practices must address *inter alia*:

- (a) species selection;
- (b) soil structure, temperature and fertility;
- (c) soil composition rates, compaction and conservation;
- (d) erosion control;
- (e) hauling distance from the harvesting site to the combustion/generation site;
- (f) silvicultural practices and techniques;
- (g) harvesting practices including techniques, rates and waste minimization;
- (h) crop regeneration;
- (i) road/trail construction and maintenance;
- (j) protection of biodiversity, wildlife and rare, threatened and endangered species;
- (k) water quality and quantity;
- (l) watershed conservation; and
- (m) prior land use.

“sound environmental management system” means a system, including *inter alia* the ISO 14000 series of standards, used to manage forest and/or agricultural products that incorporates sound environmental management practices. At a minimum, system elements must include:

- (a) planning elements such as: identifying forest and/or agricultural resources; identifying environmental aspects; assessing environmental impacts; identifying environmental legislative and regulatory requirements; and defining and committing to environmental policies, objectives and targets;
- (b) operational elements such as: defining roles and assigning responsibilities; providing adequate staff training; communicating environmental aspects and policies both internally and externally; implementing an environmental management program based on identified environmental aspects and impacts; documenting all policies, goals and procedures; periodically reviewing and, where necessary, revising the system; performing public consultation and/or outreach; and establishing an environmental emergency preparedness and response plan; and
- (c) monitoring and measurement elements such as: monitoring and measuring key aspects of the system; evaluating and mitigating negative environmental impacts; correcting non-conformance with the management system; performing internal reviews; and having third party audits performed;

“SO_x” means sulphur oxides, and should be measured using the testing frequency, conditions and methods specified in Appendix 1 of this guideline;

“species designated as endangered or threatened” means any species that is listed as either “endangered” or “threatened” on recognized catalogues of such species. In Canada, the default listing shall be that of the federal Committee on the Status of Endangered Wildlife in Canada (i.e. COSEWIC), or relevant federal, provincial, territorial, state and/or local listings (e.g. Ontario’s Committee on the Status of Species at Risk in Ontario; i.e., COSSARO) that supercede the former, where designations are more stringent;

“tailrace” means the point at which water is released back into the waterway below a generating station after being passed through turbines or other mechanical means to produce water-powered electricity generation;

“TEQ” means toxic equivalent, and is determined by multiplying the measured concentration level of a given congener by the appropriate I-TEF. By converting the measured concentration levels to a common basis, the TEQ quantities may be summed to provide a single representative quantity. For the purposes of this guideline, TEQs are determined for 2,3,7,8-TCDD and 2,3,7,8-TCDF.

The seven congeners for which 2,3,7,8-TCDD TEQs shall be determined are 2,3,7,8-TCDD; 1,2,3,7,8-P₅CDD; 1,2,3,4,7,8-H₆CDD; 1,2,3,6,7,8-H₆CDD; 1,2,3,7,8,9-H₆CDD; 1,2,3,4,6,7,8-H₇CDD; and OCDD. The ten congeners for which 2,3,7,8-TCDF TEQs shall be determined are 2,3,7,8-TCDF; 1,2,3,7,8-P₅CDF; 2,3,4,7,8-P₅CDF; 1,2,3,4,7,8-H₆CDF; 1,2,3,6,7,8-H₆CDF; 2,3,4,6,7,8-H₆CDF; 1,2,3,7,8,9-H₆CDF; 1,2,3,4,6,7,8-H₇CDF; 1,2,3,4,7,8,9-H₇CDF; and OCDF.

“Type I Electricity” means ECP-certified renewable low-impact electricity from a generation facility that began operations (e.g. generating electricity) prior to January 01, 1991;

“Type II Electricity” means ECP-certified renewable low-impact electricity from a generation facility that began generating electricity from January 01, 1991 to March 31, 2001 inclusive.

Incremental increases in electricity generated as a result of either facility upgrades (including inter alia efficiency improvements) or as a result of facility expansions (including inter alia new turbines or arrays) are eligible for Type II designation. In such cases, the average per annum generation capacity prior to the upgrades and/or improvements will provide the baseline on which to calculate the quantity of Type II electricity generation.

Facilities that have been completely decommissioned at any time and re-powered from January 01, 1991 to March 31, 2001 inclusive are also eligible for Type II designation. Facilities that are decommissioned and re-powered solely to achieve Type II designation will not be granted this designation unless the following conditions are met:

- (a) the facility’s useful life was less than two years prior to its decommissioning; and
- (b) more than 75% of the fair market value of the business activity after re-powering is derived from the newly installed equipment and the changes resulting from the re-powering;

“Type III Electricity” means ECP-certified renewable low-impact electricity from a generation facility that began generating electricity on or after April 01, 2001.

Incremental increases in electricity generated as a result of either facility upgrades (including inter alia efficiency improvements) or as a result of facility expansions (including inter alia new turbines or arrays) are eligible for Type III designation. In such cases, the average per annum generation capacity prior to the upgrades and/or improvements will provide the baseline on which to calculate the quantity of Type III electricity generation.

Facilities that have been completely decommissioned at any time and re-powered on or after April 01, 2001 are also eligible for Type III designation. Facilities that are decommissioned and re-powered solely to achieve Type III designation will not be granted this designation unless the following conditions are met:

- (a) the facility’s useful life was less than two years prior to its decommissioning; and
- (b) more than 75% of the fair market value of the business activity after re-powering is derived from the newly installed equipment and the changes resulting from the re-powering;

“user” means *inter alia* an individual, household, commercial or industrial establishment or institutional facility that purchases electricity from either a generator(s) or marketer(s);

“water-powered electricity” means electricity generated from a system or technology that uses a mechanical method to capture and convert the potential energy of water into electricity;

“water quality” means characteristics of water, specifically including amount of dissolved oxygen, pH, total phosphorus, turbidity, transparency and chlorophyll, and any other item that is critical for or unique to the operating area;

“**wind-powered electricity**” means electricity generated from a wind turbine that converts the kinetic energy of the wind into electricity;

“**wind turbine**” means a system that uses air foils or blades attached to a drive shaft in order to capture the kinetic energy of the wind. The wind pushes against the blades/foils and spins a drive shaft. The drive shaft, either directly or indirectly through a series of gears, moves the generator to produce electricity; and

“**wood-wastes and agricultural wastes**” means a form of clean biomass, and includes *inter alia*:

- (a) mill residues (e.g. waste by-products associated with the processing of forest materials such as bark, sawdust, solid trim, shavings, veneer clippings, clarifier sludge, pulping liquors),
- (b) logging residues (e.g. residual materials left in the forest following harvesting such as slash, sortyard debris, thinning, stumps, roots),
- (c) crop residues (e.g. materials not needed for soil re-incorporation such as straw, chaff, corn cobs, bean residues, and dried stalks of harvested grain), and
- (d) untreated construction wastes.

Category Definition

2. This category comprises electricity from renewable energy sources which are apt to impose relatively low impacts on the environment and produce potential benefits including, *inter alia*, low net greenhouse gas emissions, limited or no depletion of non-renewable resources, reduced emissions of other pollutants and reduced impacts on aquatic, riparian and terrestrial ecosystems and species.

Generating technologies specifically recognized in this guideline include:

- (a) alternative-use electricity;
- (b) biogas-fueled electricity;
- (c) biomass-fueled electricity;
- (d) solar-powered electricity;
- (e) water-powered electricity; and
- (f) wind-powered electricity.

General Requirements

3. To meet the requirements of this Guideline, the **renewable low-impact electricity** must:
- (a) meet or exceed all applicable governmental, industrial safety and performance standards; and
 - (b) be generated in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act, 1999, (CEPA, 1999).

Product Specific Requirements

4. To meet the requirements of this Guideline, the **renewable low-impact electricity** must:
 - (a) be accompanied by evidence that appropriate consultation with communities and stakeholders has occurred, issues of concern have been reasonably addressed, and, where applicable, reasonable mitigation of negative impacts has been addressed;
 - (b) be accompanied by evidence that prior or conflicting land use, biodiversity losses and scenic, recreational and cultural values have been addressed during project planning and development;
 - (c) be accompanied by evidence that the project will not result in irreparable/unmitigable degradation or loss of the site's heritage, cultural, recreational and/or touristic values;
 - (d) be generated in a manner that is reliable and practical (e.g. not in research and development stages, actually generating electricity);
 - (e) be generated by only that proportion of fuel heat input attributed to eligible renewable sources in order to be designated as ECP-certified;
 - (f) be generated in a manner such that no adverse impacts are created for any species designated as endangered or threatened; and
 - (g) meet the criteria and associated definitions in this guideline that are applicable to the generation technology employed.
5. To meet the requirements of this Guideline, **alternative-use electricity** must be generated in such a manner that all applicable certification criteria and definitions in this guideline are met. The environmental impacts from the existing operation and the alternative-use process will be reviewed and allocated on a case-by-case basis.
6. To meet the requirements of this Guideline, **biogas-fueled electricity** must be generated in such a manner that the total of load points assessed for operational air emissions of carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x measured as NO₂) and sulphur oxides (SO_x measured as SO₂), as determined in Appendix 2, does not exceed 6.

In cases where the biogas is used as a partial substitute in a generation facility that is designed to primarily utilize non-renewable fuels, load point calculations will be based only on those operational air emission values that can may be allocated to the combustion of the biogas.

7. To meet the requirements of this Guideline, **biomass-fueled electricity** must be generated in such a manner that:
 - (a) the total of load points assessed for operational air emissions of carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x measured as NO₂) and sulphur oxides (SO_x measured as SO₂) , as determined in Appendix 2, does not exceed 6;

In cases where the clean biomass is used as a partial substitute in a generation facility that is designed to primarily utilize non-renewable fuels, load point calculations will be based only on those operational air emission values that can may be allocated to the combustion of the clean biomass.

- (b) if generated from wood-wastes and/or agricultural wastes, *and* in cases where the generator and the waste source share common ownership:
 - i)* use only wood-wastes and/or agricultural wastes that have been sourced from operations that have implemented a sound environmental management system and are adhering to sound environmental management practices,
 - ii)* ensure the rate of harvest does not exceed levels that can be sustained, and
 - iii)* not use wastes from species that are listed in the **CITES** Appendices;
 - (c) if generated from clean biomass fuel sources containing salt-laden wood, de-inking sludge or spent pulping liquors from mills using elemental chlorine bleaching, the facility must not emit polychlorinated dioxins and/or furans in excess of one of the following, whichever may be lower:
 - i)* 100 pg I-TEQ/m³; or
 - ii)* the limits for new pulp and paper boilers burning salt-laden wood as specified in the Canada Wide Standards for Dioxins and Furans (Canadian Council of Ministers of the Environment); and
 - (d) if generated from **dedicated energy crops**:
 - i)* use only dedicated energy crops that have been sourced from operations that have implemented a **sound environmental management system** and are adhering to **sound environmental management practices**, and
 - ii)* ensure the rate of harvest does not exceed levels that can be sustained.
8. To meet the requirements of this Guideline, **solar-powered electricity** must be generated in such a manner that adequate arrangements (i.e., financial reserves) have been made for the proper disposal or recycling of all solid waste resulting from the generation of electricity, including the disposal of equipment or machinery used in the generation process itself, that contains measurable levels of cadmium.
9. To meet the requirements of this Guideline, **water-powered electricity** must be generated in such a manner that the generating facility:
- (a) operates in compliance with all regulatory licenses, regulatory requirements and/or other authorizations pertaining to fisheries (including, for facilities located in Canada, the *Fisheries Act*), without regard to waivers or variances that may be granted or authorized;
 - (b) operates in compliance with all regulatory licenses, regulatory requirements and/or other authorizations regarding water levels and flows, without regard to waivers or variances that may be granted or authorized;
 - (c) does not operate under any conditional authorization allowing the **harmful alteration, disruption or destruction** of fish habitat unless:
 - i)* such harmful alteration, disruption or destruction is of little importance,
 - ii)* the affected habitat is of little ecological importance, and
 - iii)* loss of the affected habitat is compensated by the creation of similar habitat, supporting the same stock, at or near the development site within the same ecological unit;

For facilities located in Canada, these conditional authorizations include those issued under Section 35(2) of the *Fisheries Act*, by the Minister of Fisheries and Oceans or under regulations made by the Governor in Council under the *Fisheries Act*;

- (d) within practical limits and subject to regulatory direction and approval, ensures that plant operations are coordinated with any other water-control facilities that influence water levels and/or flows operating on the same waterway, in order to mitigate impacts and protect indigenous species and the habitat upon which they depend;
- (e) as a maximum, causes as much water to flow out of the head pond as is received in any 48-hour period;

In cases where this particular criterion cannot be met, the ECP will none-the-less consider certification if the applicant submits evidence that indicates those hydrological and ecological components key to sustainability of the surrounding watershed are maintained and that the electricity generation does not have higher impacts than would a facility with 48 hour shaping. As a minimum, this evidence must include environmental impact assessments and documentation from a formal public consultation process.

In cases where neither of the above conditions is met, the applicant can opt to apply to a multi-stakeholder and public Electricity Review Process to demonstrate equal or lower adverse environmental impacts.

- (f) operates such that reduced water flows in the bypassed reach and reaches downstream of diversion dams and/or dykes are not detrimental to indigenous aquatic and riparian species;
- (g) operates such that instream flows downstream of the tailrace are adequate to support downstream indigenous aquatic and riparian species at pre-project ranges;
- (h) operates such that water quality in a head pond, a bypassed reach, reaches downstream of the tailrace and reaches downstream of any diversion dams and/or dykes remains comparable to pre-project quality in unaltered bodies of water or waterways within the local watershed;
- (i) operates such that any changes in water temperature caused by the facility in the head pond or in reaches downstream of the tailrace or downstream of any diversion dams and/or dykes are not detrimental to indigenous aquatic species;
- (j) where a human-made structure is placed across a waterway where no natural barriers exist, provides fish passage when necessary for the purpose of maintaining pre-existing migration patterns for fish communities both upstream and downstream; and
- (k) provides any measures (including *inter alia* trash racks, oversized intake structures designed to slow intake velocities, underwater strobe and sound, fish screens) necessary to minimize fish mortality that would occur through impingement and entrainment.

10. To meet the requirements of this Guideline, **wind-powered electricity** must be generated in such a manner that:
 - (a) the generating facility and its structures are not detrimental to indigenous or migratory avian species;
 - (b) the generating facility and its structures are not located in an area that is protected for avian species designated as endangered or threatened;
 - (c) construction activities or routine turbine operations do not cause excessive soil erosion such as silting of nearby drainage, streams, ponds, or lakes that would be harmful to aquatic or riparian species and/or increase erosion from steep slopes, plateau edges, or access roadways; and
 - (d) excavated soil is replaced, and uprooted vegetation replanted, after construction or scrapping, where this can be done without interfering with the operation and servicing of the wind facility.
11. To meet the requirements of this Guideline, marketers of **renewable low-impact electricity** must be able to demonstrate to the satisfaction of the Environmental Choice Program that the portion of their multi-sourced power product conforming to this Guideline incorporates a minimum of 50% Type II Electricity and/or Type III Electricity and a maximum of 50% Type I Electricity.

Verification

12. ECP-certified **renewable low impact electricity** must be generated by facilities that are also certified and, therefore, meet the general and technology specific requirements of this guideline. When this certified electricity is sold, the seller must make available upon demand the sources of generation and/or the Type or blend of Types of electricity being sold.
13. For a renewable low-impact electricity product to meet the requirements of this guideline, the rights to all environmental benefits that may have been associated with the offsetting of the same quantity of null electricity from the grid must either be:
 - (a) transferred to the customer as part of renewable low impact electricity product in any transaction; or
 - (b) retired by the marketer or seller of the certified electricity such that the environmental benefits may no longer be transferred, sold or donated.

Electricity product complying with this Guideline must originate from generation facilities operating in compliance with this Guideline, and cannot comprise electricity from planned generation facilities. Through a verification and auditing process, reconciliation measures will be implemented to ensure that sales levels of complying electricity product do not exceed production/ supply levels.

14. To verify a claim that a product meets the criteria listed in the guideline, the Environmental Choice Program and its agents will require access, as is its normal practice, to relevant quality control and production records and the right of access to production facilities on an unannounced basis.

*For additional copies of this guideline or for more information about the Environmental Choice Program, please contact: TerraChoice Environmental Services Inc., 2781 Lancaster Road, Suite 400, Ottawa, Ontario, K1B 1A7
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Appendix 1: Air Emissions Testing Frequency, Conditions and Methods

Compound / Pollutant	Testing Conditions and Frequency
Carbon monoxide (CO) Nitrogen oxides (NO _x) Particulate matter (PM) Sulphur oxides (SO _x)	<p>Frequency: As determined by the Environmental Choice Program specifically for the facility.</p> <p>Conditions: Testing must be performed at operational load. Emissions for load point values must be determined from the concentration measurements (ppm (v/v) converted to mg/m³ at 25°C) and flow rate (dry basis at 101.3 kPa and 25°C) in the duct or stack.</p>

Compound / Pollutant	Testing Methods
Carbon monoxide (CO)	<p>(i) <i>Reference Method for the Monitoring of Gaseous Emissions from Fossil Fuel-fired Boilers</i>, Reference Method EPS 1/RM/15, September 1990; or</p> <p>(ii) Continuous Emissions Monitoring (CEMS) Code (REF. 107), Alberta Environment; or</p> <p>(iii) <i>Reference Method for Source Testing: Measurement of Releases of Carbon Monoxide from Stationary Sources</i> (EPS 1/RM/4, 1990) in conjunction with <i>Reference Method for Source Testing: Measurement of Release of Particulate from Stationary Sources</i> (EPS 1/RM/8, 1993), both from Environment Canada; or</p> <p>(iv) Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment.</p>
Nitrogen oxides (NO _x) measured as NO ₂	<p>(i) <i>Reference Method for the Monitoring of Gaseous Emissions from Fossil Fuel-fired Boilers</i>, Reference Method EPS 1/RM/15, September 1990; or</p> <p>(ii) Method 7E, Determination of Nitrogen Oxide Emissions from Stationary Sources, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment; or</p> <p>(iii) Continuous Emissions Monitoring (CEMS) Code (REF. 107), Alberta Environment.</p>
Particulate matter (PM)	<p>(i) <i>Reference Method for Source Testing: Measurement of Releases of Particulate from Stationary Sources</i>, Reference Method EPS 1/RM/8, December 1993; or</p> <p>(ii) Method 5, <i>Determination of Particulate Emissions from Stationary Sources</i>, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment.</p>
Sulphur oxides (SO _x) measured as SO ₂	<p>(i) <i>Reference Method for the Monitoring of Gaseous Emissions from Fossil Fuel-fired Boilers</i>, Reference Method EPS 1/RM/15, September 1990; or</p> <p>(ii) Continuous Emissions Monitoring (CEMS) Code (REF. 107), Alberta Environment; or</p> <p>(iii) <i>Reference Method for Source Testing: Measurement of Releases of Sulphur Dioxide from Stationary Sources</i>, Report EPS 1-AP-74-3, September 1975; or</p> <p>(iv) Method 6C, <i>Determination of Sulphur Dioxide Emissions from Stationary Sources</i>, in the Alberta Stack Sampling Code (REF. 89), Alberta Environment</p>
Velocity and Volumetric Flow Rate	Method B - Determination of Velocity and Volumetric Flow Rate of Flue Gases, from <i>Reference Method for Source Testing: Measurement of Release of Particulate from Stationary Sources</i> (EPS 1/RM/8, 1993)

Appendix 2: Load Point Determination

The process used to determine the load points for operational air emissions in this guideline is based on a matrix of four environmental air emission parameters, each with a range of values based on actual industry performance. Each level of performance is assigned a specific load point value, and points are then totalled over all parameters. Products with different environmental profiles will thus be able to qualify under this Guideline. The allowable number of points has been set so that, while tradeoffs between parameters is possible, very poor performance in any one parameter will disqualify a generating facility as a supplier of electricity meeting the requirements of this Guideline.

The four parameters used to evaluate electricity generation under this Guideline for ECP-certification are carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x) and sulphur oxides (SO_x). Load point calculations will be based on measured air emissions quantities of these compounds that are from measured emissions released as a result of only those operations directly used to generate electricity. The air emission measurements must represent annual emissions normalized to a per MWh basis, and include more than one datum point.

Measured emissions data and the quantity of annual electricity generated should be documented in *Part 1: Measured Data*, and load points should then be determined by using *Part 2: Load Point Calculation*. The load point for each compound should be taken from the top of each column corresponding to the emissions range for that compound's kilogram per MWh value.

PART 1: MEASURED DATA

1. Into the table, enter the Annual Quantity of Electricity Generated (in MWh) by the facility. This quantity should be measured net of all parasitic loads from the facility, and net of transformer and line losses up to the point of connection to the utility grid or the user's system (if directly connected).
2. Into the table, enter the Annual Measured Quantity of CO, PM, NO_x (measured as NO₂) and SO_x (measured as SO₂) emitted (in kilograms), noting that appropriate test methods and the prescribed frequency and conditions of testing are provided in *Appendix 1* for each compound.
3. Determine the Annual Measured Quantity per MWh of CO, PM, NO_x (measured as NO₂) and SO_x (measured as SO₂) emitted (in kilograms per MWh). These values will be used in the Load Point Calculations in Part 2.

Annual Electricity Generation (in MWh)	Compound	Annual Measured Quantity (in kg)	Annual Measured Quantity per MWh (in kg/MWh)
	CO		
	PM		
	NO _x (as NO ₂)		
	SO _x (as SO ₂)		

PART 2: LOAD POINT CALCULATION

1. Assign the load point value to each compound by taking the value at the top of each column corresponding to the emissions range for that compound's kilogram per megawatt-hour value determined in Part 1.
2. Determine the Total Load Points by summing the four individual load point values.

Compound	Load Points					Assigned Load Points
	0	1	2	3	8	
CO	< 2.15 kg/MWh	2.151 - 3.22 kg/MWh	3.221 - 4.30 kg/MWh	4.301 - 5.37 kg/MWh	> 5.371 kg/MWh	
PM	< 0.228 kg/MWh	0.2281 - 0.387 kg/MWh	0.3871 - 0.516 kg/MWh	0.5161 - 0.645 kg/MWh	> 0.6451 kg/MWh	
NO _x (as NO ₂)	< 0.77 kg/MWh	0.771 - 1.15 kg/MWh	1.151 - 1.52 kg/MWh	1.521 - 1.90 kg/MWh	> 1.901 kg/MWh	
SO _x (as SO ₂)	< 0.141 kg/MWh	0.1411 - 0.212 kg/MWh	0.2121 - 0.282 kg/MWh	0.2821 - 0.352 kg/MWh	> 0.3521 kg/MWh	
TOTAL LOAD POINTS						