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ENERGY CONSERVATION ACT
(CHAPTER 92C)

ENERGY CONSERVATION
(ENERGY MANAGEMENT PRACTICES)
(AMENDMENT) REGULATIONS 2019

In exercise of the powers conferred by section 78(1) of the Energy Conservation Act, the Minister for the Environment and Water Resources makes the following Regulations:

Citation and commencement

1. These Regulations are the Energy Conservation (Energy Management Practices) (Amendment) Regulations 2019 and come into operation on 1 January 2020.

New Part IV

2. The Energy Conservation (Energy Management Practices) Regulations 2013 (G.N. No. S 246/2013) are amended by inserting, immediately after regulation 11, the following Part:

“PART IV

ENERGY EFFICIENCY OPPORTUNITIES
ASSESSMENTS FOR REGISTERED CORPORATIONS

Definitions of this Part

12.—(1) In this Part —

“assessment period”, in relation to a relevant business activity, means —

- (a) the first assessment period relating to the first assessment for the relevant business activity; or
- (b) a subsequent assessment period relating to a subsequent assessment for the relevant business

activity following the first assessment period mentioned in paragraph (a);

“assessment report” means a report in respect of a first assessment or subsequent assessment, as the case may be;

“energy” and “energy commodity” have the meanings given by paragraph 2 of the Energy Conservation (Registrable Corporations) Order 2013 (G.N. No. S 248/2013);

“energy efficiency opportunities assessor” means an individual mentioned in regulation 21(a);

“first assessment”, in relation to a relevant business activity, means an energy efficiency opportunities assessment conducted under regulation 14(1);

“first assessment period” has the meaning given by regulation 14(2) or (3)(c) or (d), as the case may be;

“reference period” has the meaning given by regulation 19(a);

“subsequent assessment”, in relation to a relevant business activity, means an energy efficiency opportunities assessment that is conducted after a first assessment was conducted for the relevant business activity;

“subsequent assessment period” means the period mentioned in regulation 15(2) or (3), as the case may be.

(2) In this Part, the total energy consumed by a relevant business activity —

- (a) must be derived from all fuel and energy commodities used to provide or produce the energy consumed; but
- (b) excludes energy produced from any fuel or energy commodity that is already accounted for in the total figure.

Application of this Part

13.—(1) This Part applies to every relevant business activity carried out by a registered corporation, except the generation, transmission or distribution of electricity involving the operation of at least one gas turbine, steam turbine or unit containing one or more gas turbines and steam turbines, that has a designed power output of more than 10 megawatts.

- (2) This Part does not apply to a registered corporation if —
- (a) in relation to a first assessment for a relevant business activity — the registered corporation ceases, before the expiry of the first assessment period for that relevant business activity, to have operational control of the relevant business activity;
 - (b) in relation to a subsequent assessment for a relevant business activity — the registered corporation ceases, before the expiry of the subsequent assessment period for that relevant business activity, to have operational control of the relevant business activity; or
 - (c) the registration of the registered corporation is cancelled under section 25(2) of the Act.

(3) Regulations 18 and 20 do not apply in relation to an energy-consuming system that is an aircraft engine test cell.

First energy efficiency opportunities assessment

14.—(1) A registered corporation must, before the expiry of the first assessment period for each relevant business activity under its operational control —

- (a) conduct a first assessment for the relevant business activity; and
- (b) submit to the Director-General an assessment report in respect of the first assessment.

(2) Subject to paragraph (3), the first assessment period for a relevant business activity is the period of 6 years starting on the

day the registered corporation establishes operational control of the relevant business activity on or after 1 January 2020.

(3) A registered corporation that established operational control of a relevant business activity before 1 January 2020 is taken to have complied with paragraph (1) if the registered corporation —

- (a) conducts a first assessment for the relevant business activity that satisfies the requirements in regulation 16; and
- (b) submits an assessment report that satisfies the requirements in regulation 22,

in respect of the applicable first assessment period as follows:

- (c) where the registered corporation established operational control of the relevant business activity on or before 2 June 2017 — the period starting on 1 January 2016 or the day the registered corporation established operational control of the relevant business activity (whichever is later) and ending on 31 December 2021;
- (d) where the registered corporation established operational control of the relevant business activity after 2 June 2017 — the period of 6 years starting on the day the registered corporation established operational control of the relevant business activity.

(4) For the purposes of paragraph (3), where the day on which the registered corporation establishes operational control of the relevant business activity falls on 29 February, the anniversary of that date in a year that is not a leap year is to be taken as 1 March.

Subsequent energy efficiency opportunities assessments

15.—(1) A registered corporation must, where the total energy consumed by any relevant business activity under its operational control in at least 2 of the 3 calendar years in the applicable period for that relevant business activity —

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- (a) is equal to or more than 500 terajoules of energy consumed per calendar year — comply with paragraph (2) in relation to that relevant business activity; or
 - (b) is equal to or more than 54 terajoules, but is less than 500 terajoules, of energy consumed per calendar year — comply with paragraph (3) in relation to that relevant business activity.

(2) In relation to a relevant business activity mentioned in paragraph (1)(a), the registered corporation must, before the expiry of the period of 6 years starting immediately after the end of the immediately preceding assessment period for the relevant business activity —

- (a) conduct a subsequent assessment for the relevant business activity; and
- (b) submit to the Director-General an assessment report in respect of the subsequent assessment.

(3) In relation to a relevant business activity mentioned in paragraph (1)(b), the registered corporation must, if the Director-General by written notice requires —

- (a) conduct a subsequent assessment for the relevant business activity; and
- (b) submit to the Director-General an assessment report in respect of the subsequent assessment,

before the expiry of the period of 6 years starting on the date of the written notice.

(4) In this regulation —

“applicable period” means —

- (a) in relation to the first assessment period for a relevant business activity over which the registered corporation established operational control on or before 2 June 2017 — the calendar years 2018, 2019 and 2020; or

- (b) in any other case — the 3 calendar years immediately before the last calendar year of the immediately preceding assessment period for a relevant business activity;

“last calendar year” includes part of a calendar year.

Requirements of energy efficiency opportunities assessments

16. A registered corporation required to conduct a first assessment or subsequent assessment for a relevant business activity must determine the following:

- (a) the methods and processes of the relevant business activity;
- (b) the energy-consuming systems of the relevant business activity in accordance with regulation 17;
- (c) the objective of the assessment in accordance with regulation 18;
- (d) the reference period of the assessment in accordance with regulation 19;
- (e) the methods and processes to be used to conduct the assessment in accordance with regulation 20;
- (f) the individuals conducting the assessment, including each individual’s role and experience, in accordance with regulation 21.

Energy-consuming systems of relevant business activities

17. For the purposes of regulation 16(b), the energy-consuming systems of a relevant business activity include —

- (a) all energy-consuming systems, the aggregate energy consumption of which is not less than 80% of the total energy consumption of the relevant business activity during the reference period; and

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- (b) any energy-consuming system that uses, directly or indirectly, energy produced by any energy-consuming system mentioned in paragraph (a).

Objective of energy efficiency opportunities assessments

18.—(1) For the purposes of regulation 16(c), the objective of the first assessment or subsequent assessment (as the case may be) includes —

- (a) establishing the specific energy consumption of each energy-consuming system of the relevant business activity assessed;
- (b) identifying all energy efficiency opportunities that are available in respect of the relevant business activity, including taking into account any dependencies in respect of the processes and energy-consuming systems of the relevant business activity, after reviewing the matters in paragraph (2);
- (c) assessing the technical and economic feasibility of implementing each energy efficiency opportunity mentioned in sub-paragraph (b), based on a comparison of all the matters in paragraph (3) with the existing processes of, the equipment installed in and the configuration and existing operations of, each energy-consuming system;
- (d) establishing the reason or reasons why the implementation of any energy efficiency opportunity mentioned in sub-paragraph (b) is assessed to be not feasible; and
- (e) where no energy efficiency opportunities mentioned in sub-paragraph (b) are identified, establishing the reason or reasons why no energy efficiency opportunities have been identified.

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- (2) The matters mentioned in paragraph (1)(b) are —
- (a) the existing processes of, equipment installed in and configuration of each energy-consuming system of the relevant business activity;
 - (b) the existing operations, including the variables (including temperature, rate of flow, pressure and power) and production requirements, of —
 - (i) the relevant business activity; and
 - (ii) each energy-consuming system of the relevant business activity; and
 - (c) the available alternative technology choices (including best available technology) for —
 - (i) the relevant business activity;
 - (ii) the optimum methods or processes of the relevant business activity; and
 - (iii) the energy-consuming systems of the relevant business activity mentioned in regulation 17.
- (3) The matters mentioned in paragraph (1)(c) are —
- (a) the estimated investment and operation cost;
 - (b) the estimated annual energy savings;
 - (c) the estimated specific energy consumption of each energy-consuming system;
 - (d) the estimated annual greenhouse gas emissions;
 - (e) the estimated financial savings;
 - (f) the estimated returns on investment, including the payback period; and
 - (g) any other criterion, including any non-energy related benefits such as greater productivity or improved reliability, that the registered corporation considers appropriate.

(4) In this regulation —

“best available technology” means technology that results in the best energy efficiency, use and consumption;

“payback period”, in relation to an energy efficiency opportunity mentioned in paragraph (1)(b), means the total investment cost of implementing the energy efficiency opportunity divided by the annual financial savings attributable to that investment.

Reference period of energy efficiency opportunities assessments

19. For the purposes of regulation 16(d), the registered corporation —

- (a) may determine any reference period, being a period of 12 consecutive months that falls within an assessment period; but
- (b) must ensure that the operations of a relevant business activity during the determined reference period are representative of the typical day-to-day operations of the relevant business activity operating at its intended capacity.

Methods and processes to be used for energy efficiency opportunities assessments

20.—(1) For the purposes of regulation 16(e), the first assessment or subsequent assessment (as the case may be) must, in relation to each energy-consuming system mentioned in regulation 17 —

- (a) establish the current energy performance of the energy-consuming system, based on material and energy flows data that is continuously measured for a period of not less than 2 weeks;
- (b) identify the relevant variables (including temperature, rate of flow, pressure and power) that affect the energy performance of the energy-consuming system;

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- (c) in relation to each energy efficiency opportunity identified for the energy-consuming system or any part of the system, measure continuously, for a period of not less than 2 weeks, the following:
 - (i) material and energy flows data for the energy-consuming system or part of the system, as the case may be;
 - (ii) the variables mentioned in sub-paragraph (b) relating to the energy-consuming system or part of the system, as the case may be;
 - (d) adopt the instrument types, the accuracies of the instruments used and the practices used for on-site measurements that are specified in any applicable testing method for the energy-consuming system, subject to any applicable standard adopted under section 79(1) of the Act;
 - (e) use only data that relate to the assessment period for the energy-consuming system or part of the system, as the case may be; and
 - (f) verify, using energy and mass balances, the usability (including completeness, accuracy and method of acquisition) of all data collected and used for the purposes of the assessment.

(2) In this regulation, “material and energy flows data”, in relation to an energy-consuming system or part of the system, means —

- (a) data relating to the actual material and energy flows (including flows of fuel or energy commodities) in and out of the energy-consuming system or part of the system, as the case may be; or
- (b) where the data mentioned in sub-paragraph (a) cannot be measured or obtained, data derived from any variables (including temperature, pressure, power and material flow rates) relating to material and energy

flows in and out of the energy-consuming system or part of the system, as the case may be.

Individuals conducting energy efficiency opportunities assessments

21. For the purposes of regulation 16(*f*), the first assessment or subsequent assessment (as the case may be) must be conducted by —

- (*a*) at least one individual who is certified by the Institution of Engineers, Singapore as an energy efficiency opportunities assessor; and
- (*b*) at least one individual who is conversant with the energy-consuming systems of the relevant business activity mentioned in regulation 17.

Requirements of assessment reports

22.—(1) The assessment report in respect of a first assessment or subsequent assessment (as the case may be) must include, in respect of each relevant business activity, the following:

- (*a*) an executive summary that summarises the important findings of the assessment, including the following:
 - (*i*) the total energy consumption of the relevant business activity during the reference period;
 - (*ii*) the energy consumption, expressed as a percentage of the total energy consumption of the relevant business activity, of each energy-consuming system;
 - (*iii*) the energy-consuming systems identified for the purposes of regulation 17(*a*);
 - (*iv*) the energy efficiency opportunities identified;
 - (*v*) the proposed timeframe for implementing each energy efficiency opportunity identified and assessed to be feasible;

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- (b) general information on —
 - (i) the registered corporation;
 - (ii) the energy efficiency opportunities assessor who is principally responsible for conducting the assessment; and
 - (iii) any individual (including an individual mentioned in regulation 21(b)) who contributed to the assessment;
 - (c) general information on the relevant business activity, including the following:
 - (i) the type of business activity;
 - (ii) the outputs of the relevant business activity;
 - (d) information about the manner in which the assessment is conducted and the methodology used for the assessment, including —
 - (i) the method of data collection and the degree of accuracy of that method; and
 - (ii) the basis and degree of accuracy of any calculations or estimates, and the assumptions used for those calculations or estimates;
 - (e) information about the energy efficiency opportunities identified, including —
 - (i) considerations relating to the technology or practices chosen for each energy efficiency opportunity, as compared to the existing technology or practices used for or in the relevant business activity;
 - (ii) the evaluation of all energy efficiency opportunities identified, including the ranking of those opportunities and the basis of, and criteria for, the ranking;

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- (iii) the proposed timeframe for implementing the energy efficiency opportunities identified and assessed to be feasible; and
 - (iv) any planned or intended changes to the scope or scale of the relevant business activity, and the estimated impact of those changes on the energy consumption of the relevant business activity;
- (f) information about the requirements mentioned in regulation 16.
- (2) Without limiting paragraph (1)(d), the information mentioned in paragraph (1)(d) includes the following:
- (a) the variables measured, or derived from variables measured, relating to the material and energy flows data mentioned in regulation 20;
 - (b) the energy content of the fuel or energy commodity (called in this paragraph the energy input) consumed by each energy-consuming system mentioned in regulation 17(a);
 - (c) the aggregate energy inputs of all energy-consuming systems mentioned in regulation 17(a);
 - (d) block, process or energy flow diagrams that show the energy flows and interactions between any 2 or more energy-consuming systems;
 - (e) a description of each energy-consuming system mentioned in regulation 17, including information relating to the energy input and output and specific energy consumption of the energy-consuming system;
 - (f) the energy and mass balance —
 - (i) within each energy-consuming system; and
 - (ii) between any 2 or more energy-consuming systems;

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- (g) process or energy flow diagrams that show the breakdown of the equipment comprising each energy-consuming system;
 - (h) the specific energy consumption of each fuel or energy commodity used in each energy-consuming system over the timeframe specified in the assessment report;
 - (i) the methodology for deriving the energy consumption of each energy-consuming system from the variables mentioned in sub-paragraph (a);
 - (j) the data collected and used for the assessment, and the types of instruments or meters used to collect that data, including —
 - (i) the accuracies of the instruments or meters; and
 - (ii) the duration and frequencies of the measurements taken.
- (3) The assessment report mentioned in paragraph (1) must be —
- (a) signed by the energy efficiency opportunities assessor who is principally responsible for conducting the assessment;
 - (b) endorsed by the chief executive of the registered corporation;
 - (c) made —
 - (i) using the relevant form set out in the electronic service provided at <http://www.nea.gov.sg>; and
 - (ii) in the manner specified by the Director-General; and
 - (d) submitted by a person authorised by the registered corporation using the electronic service provided at <http://www.nea.gov.sg>.
- (4) Every application under section 31B(2) of the Act for the waiver of the application of section 27B of the Act must —

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- (a) be in writing;
 - (b) state the reasons for the inability of the registered corporation to comply with section 27B of the Act; and
 - (c) be accompanied by supporting documents.

Records to be kept for this Part

23.—(1) A registered corporation must keep and maintain complete and accurate records of any information or records relied upon by the registered corporation in preparing the assessment report submitted under regulation 22(3) for not less than 10 years after the date the assessment report to which the information relates is submitted to the Director-General.

(2) The records kept and maintained pursuant to this regulation may be kept and maintained in electronic form.”.

[G.N. Nos. S 752/2017; S 605/2018]

Made on 30 December 2019.

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Ministry of the Environment and
Water Resources,
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