



Sustainability Achieved Via Energy Efficiency (SAVE) Rebate Program For Chiller



IMPLEMENTATION GUIDELINES
(VERSION 3)

FOR BUSINESS OWNER & CHILLER VERIFIER

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1.0 DEFINITIONS

“ACEM” - Association of Consulting Engineers Malaysia

“EPP9” - Entry Point Project 9.

“kW/RT” - Kilowatts per Refrigeration Tons.

“IEM” - The Institution of Engineers Malaysia

“MASHRAE” – ASHRAE Malaysia Chapter

“MEGTW” - Ministry of Energy, Green Technology and Water.

“NKEA” - New Key Economic Area.

“OGE” - Oil, Gas and Energy.

“SAVE Program” - Sustainability Achieved Via Energy Efficiency Program.

“SEDA Malaysia” – Sustainable Energy Development Authority Malaysia

“SIRIM QAS” – SIRIM QAS International Sdn Bhd

“RT” - Refrigeration Tons.

2.0 INTRODUCTION

2.1 SAVE PROGRAM UNDER EPP9 (ENERGY EFFICIENCY)

SAVE or Sustainability Achieved via Energy Efficiency, is a program spearheaded by the Ministry of Energy, Green Technology and Water (MEGTW), to improve energy efficiency in Malaysia through five initiatives. The program will be implemented through collaboration between MEGTW, SEDA MALAYSIA and implementation partners (MASHRAE, ACEM, SIRIM QAS and IEM) with participating chiller manufacturers.

The pilot initiative is to stimulate sales of energy-efficient chiller by providing rebates to qualified business owner to replace existing chillers with new energy efficient chillers.

2.2 OBJECTIVES

The objectives of the SAVE Program are:

- i) To create a culture of efficient use of energy among general public and business entities.
- ii) To save daily energy costs by consumers from reduced energy consumption and manage growth energy demand.
- iii) To accelerate the transformation of consumer electrical appliances market and increase the share of Energy Efficient (EE) models in the market. Finally, to phase out inefficient models from the local market.
- iv) As one of the initiatives to mitigate GHG emissions reduction.

2.3 PURPOSE

The purpose of this Guidelines is to explain the SAVE Program structure, eligibility including the procedures and process to participate in the SAVE Program.

3.0 REBATES

Government has allocated the budget for the SAVE Program (Chiller). Funding will be awarded on a first come, first served basis to eligible business owners who replace existing chillers with new energy efficient chillers for their buildings during the rebate offer period through MEGTW and SEDA Malaysia. The rebate amount will be **RM200 per RT (Refrigeration Ton)** which has been proposed and calculated based on total budget allocation and capacity to be applied throughout 2011 and 2012.

4.0 DISTRIBUTION OF CHILLERS BY STATES/REGION

The distributions of chillers by states under SAVE Program for the year 2011/2012 are as table below:

No.	State/ Region	Total Targeted Quantity (Refrigerant Tons, RT)	Percentage (%)
1	Peninsular	61,200	85
2	Sabah & Sarawak	10,800	15
Total		72,000	100

5.0 ELIGIBILITY

5.1 APPLICANT

Applicants for SAVE Rebate Program (Chiller) must meet ALL of the following eligibility criteria:

A. Applicant must be an **eligible** building chiller owner as explained in the table below.

Peninsular Malaysia:

Eligible criteria	<ul style="list-style-type: none"> • Chiller/s for comfort cooling or commercial buildings at operational or non-operational condition; <i>For example: offices, retails or shopping malls, hotels, private hospitals or clinics, factory (office building), private universities or colleges, etc.</i> • Standby chiller/s; or • Existing chiller/s installed before or in year 2002.
Non-eligible criteria	<ul style="list-style-type: none"> • Chiller/s for cooling or chilling for process activities; <i>For example: factory, manufacturing industry, etc.</i> • Chiller/s serving both process and office buildings; <i>For example: factory + office.</i> • Already replaced new chiller/s; or • Existing chiller/s installed after year 2002.

Sabah & Sarawak:

Eligible criteria	<ul style="list-style-type: none"> • Chiller/s for comfort cooling or commercial buildings at operational or non-operational condition; <i>For example: offices, retails or shopping malls, hotels, private hospitals or clinics, factory (office building), private universities or colleges, etc.</i> • Chiller/s for cooling or chilling for process activities; <i>For example: factory, manufacturing industry, etc.</i> • Chiller/s serving both process and office buildings; <i>For example: factory + office.</i> • Standby chiller/s; or • Existing chiller/s installed before or in year 2002.
Non-eligible criteria	<ul style="list-style-type: none"> • Already replaced new chiller/s; or • Existing chiller/s installed after year 2002.

Must submit application form before replace the existing chiller/s and install new eligible energy efficient chiller/s after get approval letter from SEDA Malaysia.

- B. Must make the purchase and completely install new chiller/s within six (6) months from the date of approval.

Rebate Restrictions:

- Rebates will be awarded on a first-come, first-serve basis based on the post-marked date of a complete rebate application received by the MEGTW. Rebate applications submitted outside the specified time frames may not be considered.
- Rebate is applicable to the chiller/s only and cost associated with the repair and/or replacements of associated subsystems are not eligible.

5.2 NEW REPLACEMENT ENERGY EFFICIENT CHILLER

All new replacement energy efficient chiller/s installations must meet the following eligibility criteria:

- A. **Installation date:** Existing air-cooled or water-cooled electric chiller/s that is/are still operational and installed **before or in year 2002** - MUST be replaced with new water-cooled electric chiller/s.
- B. **Efficiency:** Efficiency of the existing operating chilled water system (not only chiller/s) in kW /RT to be verified at site by an authorized verifier appointed by SEDA Malaysia.
- C. **Condition:** The existing chiller/s to be replaced shall be part of a HVAC system and its associated subsystems of a chilled water system that is currently operational and in use.
- D. **Standard:** Efficiency of replacement chiller/s must comply with the minimum kW/TR rating as stipulated in **MS 1525:2007 (Code of Practice on Energy Efficiency and use of Renewable Energy for Non-Residential Buildings)**.

Water-cooled Chiller Type	Size of tonnage	COP (kW/RT) @ 100% Load Conditions
Reciprocating and Scroll	All	0.90
Rotary Screw	Below 150RT	0.88
	150RT – 300RT	0.80
	Above & equal 300RT	0.65
Centrifugal	Below 300RT	0.68
	Above & equal 300RT	0.62

Source: MS1525:2007 (Table 21. Water chilling packages, electrically driven: Chiller energy performance rating)

- E. **Full-load Test:** Every new chiller must be tested at 100% load by chiller manufacturer's recognized testing facilities and submit the factory performance test report to SEDA Malaysia.
- F. **Chiller Info Plate:** Chiller performance data (as selected for manufacture) to be inscribed on metal plate secured to chiller body for future maintenance reference.
- G. **Refrigeration Tons:** Replacement chiller/s may not necessarily be of the same RT (Refrigeration Tons). For example, an existing chilled water system comprising 3 nos. of 500 RT chillers but with a peak cooling load of only 700 RT can be replaced with 3 nos. of 350 RT chillers.

H. **Equipments:** It is expected that associated equipments within the chilled water system such as pumps, cooling towers, valves, etc may also need to be replaced for the system to achieve optimum operating efficiency. However, rebate is only applicable to the chiller/s.

5.3 CRITERIA TO BECOME VERIFIER

The 3rd Party Verifiers shall consist of 2 distinct groups – Group I and II.

Group I	<p>Consist of a HVAC technical expert recognized by MEGTW/SEDA Malaysia.</p> <p>Application for Group I Verifiers will be assessed and recommended by ASHRAE Malaysia Chapter, ACEM and IEM for MEGTW’s approval.</p>
Group II	<p>Consist of a member appointed by MEGTW/SEDA Malaysia nominated from SIRIM QAS.</p>

Pre-Requisites for Group I – 3rd Party Verifier

i)	Member or Associate Member of ASHRAE with a degree in Engineering (Mechanical or Electrical) with at least seven (7) years relevant experience in the HVAC industry.
OR	
ii)	P.Eng (Mechanical or Electrical) registered with the Board of Engineers, Malaysia with at least seven (7) years relevant experience in the HVAC industry.

6.0 REBATE CALCULATION

$$\text{Rebate Amount (RM)} = A \times B \times \text{RM200}$$

where:

A = Nos. of new or replacement chiller/s

B = Capacity of chiller/s based on the higher capacity value of either existing or replacement chiller/s. (unit: Refrigeration Tons, RT)

Note:

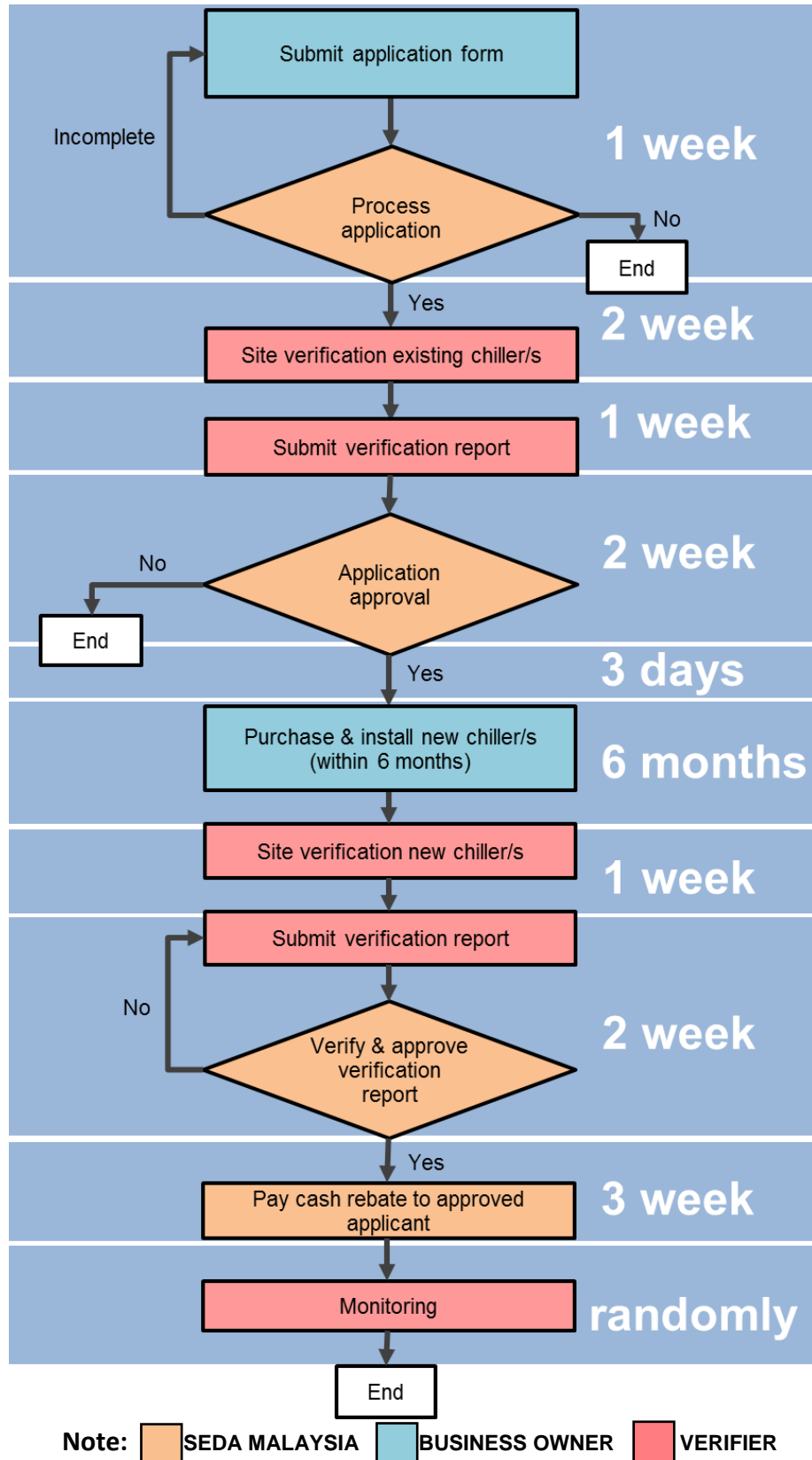
- For example, an existing chilled water system comprising 3 nos. of 500 RT chillers but with a peak cooling load of only 700 RT is replaced with 3 nos. of 350 RT chillers.
- The rebate shall then be calculated based on the original 500 RT chiller capacity. Hence, rebate = 3 x 500 RT x RM200 / RT = RM300,000.
- On the other hand, if the replacement chiller/s is/are of higher capacity than the existing chiller/s, then the rebate will be based on the higher capacity replacement chillers.

7.0 IMPLEMENTATION PARTIES

Function	Party
Implementing agency	MEGTW/SEDA Malaysia
Distribution of rebate	SEDA Malaysia
Provider of energy efficient chillers	Participating manufacturers
Verifying of energy efficient chillers	Coordinated by MEGTW/SEDA Malaysia and assisted by SIRIM QAS, MASHRAE, ACEM and IEM.
Awareness and promotion	Coordinated and implemented by MEGTW/SEDA Malaysia and assisted by MASHRAE and manufacturers

8.0 PROGRAM STRUCTURE

8.1 PROCESS FLOWCHART



8.2 DETAILS PROCESS

i) Submit application form

- a) Application form and guidelines for application can be downloaded through www.saveenergy.gov.my website.
- b) Business owner must submit completed application form and supporting documents to SEDA Malaysia with:
 - i) information of existing chiller/s; and
 - ii) information for the proposed replacement chiller/s and installation as prescribed in the application form.

ii) Process application

- a) SEDA Malaysia will verify the application form and documents for SAVE Program qualification.
- b) Incomplete application will be informed and returned back to business owner for resubmission.
- c) Technical Committee on Chillers (TC) chaired by SEDA Malaysia will evaluate the application form and appoint authorised verifiers.
- d) SEDA Malaysia will issue pre-site installation stage site verification official letter to applicant within 3 days from the date of the TC meeting.

iii) Site verification of existing chiller/s

- a) Verifiers will verify the submitted information of the existing chiller/s including collating missing information where applicable at site.

iv) Submit verification report

- a) Verifiers submit site verification report to SEDA Malaysia within 2 weeks.

v) Approval of Installation New Chiller

- a) Technical Committee on Chillers (TC) chaired by SEDA Malaysia will verify, decide and approve the application based on the site verification report submitted.
- b) SEDA Malaysia will issue approval to install new chiller letter to applicant within 3 days from the date of the TC meeting.

vi) Purchase and install new chillers

- a) Approved applicant must purchase and install the new chiller/s within 6 months from the date of approval.
- b) Approved applicant shall notify implementation schedule to SEDA Malaysia.

vii) Site verification of new chiller/s

- a) Verifiers verify submitted data on performance of new chiller/s at site including collating missing information where applicable.
- b) Verify that permanent sub-metering (power-meter) is installed to measure and monitor the kW/RT of the new chiller/s.
- c) Verify that proper testing and commissioning of the new chiller/s have been carried out such as (but not limited) to verifying pressure drop versus flows.

viii) Submit verification report

- a) Verifiers submit site verification report to SEDA Malaysia within 2 weeks.

ix) Verify and approve verification report

- a) Technical Committee on Chillers chaired by MEGTW will verify, decide and approve the cash rebate based on the verification report submitted.

x) Pay cash rebate to approved applicant

- a) SEDA Malaysia issue payment to approved applicant within 3 weeks from the date of approval.

xi) Monitoring

- a) Randomly site monitoring by SEDA Malaysia or authorised verifiers.
- b) The applicant will be required to submit randomly progress reports to SEDA Malaysia as specified in the official approval letter.

9.0 EFFECTIVE DATE OF SAVE PROGRAM

The SAVE Program launched by Minister of MEGTW on July 7, 2011. SAVE Program will continue from this date until all allocations are exhausted or when a public notice closing the rebate offer is issued whichever is earlier.