

## Energy Master Auditor Accreditation Assessment Form

### Assessment of an energy audit report to certify a CEP Accredited Energy Master Auditor

<b>Assessors Name</b>		<b>Assessment Date</b>	
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<b>Applicants Name</b>	
<b>Company</b>	
<b>Postal Address</b>	
<b>Telephone Number(s)</b>	
<b>Email Address</b>	

**Audits Assessed**

Site		Comments
1		
2		
3		
4		

<b>Sub Total A</b>		(Out of a possible 560 – min. 280 required)
<b>Sub Total B</b>		(Out of a possible 440 – min. 220 required)
<b>Sub Total C</b>		(Out of a possible 1,000 – min. 500 required)

**PASSED** *(Separate passes in Parts A, B and C are required for a pass)*

**YES / NO**

Reasons & Comments for Pass	Reasons & Comments for Not Passing

*(NB: The feedback provided will be included in the outcome letter to applications)*

## Guide to Assessment of Energy Master Auditor

Three types of audits are defined in the Australia / New Zealand Energy Audit Standard, AS/NZS 3598.1:2014 (Commercial Buildings) and AS/NZS 3598.2:2014 (Industrial and related activities). *(NB: Please reference these Standards for more detail.)*

- Type 1 – Basic Energy Audit ('basic grade')
- Type 2 – Detailed Energy Audit ('detailed analysis' – 'investment grade' for Commercial Buildings)
- Type 3 – Precision Subsystem Audit ('investment grade' for Industrial operations).

**The applicant should demonstrate that they are competent to complete at least one Type 2: Detailed Energy Audit.** They should provide you with examples of energy audit reports from one or more facilities completed by them (which include information for three different energy end-uses), including supporting information (copies of energy invoices and calculations) used to evaluate recommendations, and their CV. If there is not enough information provided by the applicant, then you should contact them to secure this information. The more information provided by the applicant the better.

Use your best judgment and experience to rate the quality of each of the items listed on the following pages, on the rating scale below. Then multiply your rating by the weighting in the table to get the points for that item. Items where ratings are not applicable should be rated 5 however, if the material should be there and *is not* then the rating should be 0.

Finally, sum all the points into a subtotal for each section, transfer these totals to the front page and calculate the two scores as shown.

Candidates must meet the requirements of both the combined parts A and B and part C to pass. *(NB: In the case of failed candidates, assessors are encouraged to write notes sufficiently explaining where audits are deficient.)*

Rating	Description
10	High quality professional work that fully answers each of the audit report requirements in excellent detail and with full clarity and understanding.
9	Quality professional work that answers each of the audit element requirements in good detail and with clarity and understanding.
7	Sufficient quality work that answers each of the audit element requirements in some detail and with clarity and understanding.
5	Work that answers most of the audit element requirements in some detail and with some understanding.
3	Superficial work that answers some of the audit element requirements in some detail and with limited understanding.
1	Very limited work that answers little of the audit element requirements.
0	No relevant material included in the audit element.

**PART A – General Competencies**

Overall Report	Weighting	Rating/10	Points (WxR)	Comments
Is it a clear layout, easy to read? Is there a list of important contact people and a description of the site and what it is used for or what it produces?	2			
Are Charts clear and explicit?	2			

Executive Summary	Weighting	Rating/10	Points (WxR)	Comments
Is it a clear, well presented?	1			
Are existing costs clearly stated?	2			
Is the energy use index or situation (good/average/poor) described?	2			
Is there a clear listing of recommendations, each with explicit costs and savings?	4			
Are recommendations cross referenced to more detailed analysis in report?	2			

Analysis of Energy Use & Purchases	Weighting	Rating/10	Points (WxR)	Comments
Presentation and commentary on seasonal (monthly) patterns	2			
Presentation and commentary on daily (over 24 hours) patterns	2			
Commentary on trends (if more than one year's data available)	1			
Are all energy charges described (kVA, transmission, price change points for gas)?	2			
Are marginal costs made explicit for savings calculations?	2			
Have alternative fuels been considered?	2			
Has time-of-use electricity or alternative lines charge options been considered?	2			

Analysis of Energy Use & Purchases continued	Weighting	Rating/10	Points (WxR)	Comments
Check: is EUI present and = annual total energy use / floor area or production?	3			
Check: is annual total energy use = sum of monthly total energy use?	2			
Check: is daily total energy use = 24 hours x daily average energy use?	2			

Description of End Uses	Weighting	Rating/10	Points (WxR)	Comments
Is this clearly laid out, easy to understand; are the technologies using each fuel listed?	3			

Also look at four individual end-uses areas – see Section B following.

Energy “Balance” (correlation of energy purchases with end-uses)	Weighting	Rating/10	Points (WxR)	Comments
Is this shown explicitly as a table of showing each load?	3			
Does it account for all energy purchases?	2			
Does it describe how it was calculated?	1			
Is energy balance calculation methodology reasonable and does it include all loads?	2			
Are assumptions in calculations identified?	2			
Does commentary discuss seasonal and overnight loads?	2			

Recommendations	Weighting	Rating/10	Points (WxR)	Comments
Do they seem logical and understandable?	2			
Are various options described?	2			
Discussion of differences or trade-offs between different options.	2			

**Sub Total A**

**(56)**

**PART B – Assessment and Analysis of End-Uses** *(Choose four only)*

Choose the Energy Management Section plus three others most appropriate. The three others must score 5 or more otherwise mark as zero. Comments below rating box suggest some considerations.

	Weighting	Rating/10	Points (WxR)	
<b>Energy Management</b>	8			<b>Comments</b>
Have existing energy management activities been commented on, including:  Energy Manager responsibilities?  Monitoring (and targeting) of energy purchases?  Company energy policy?  Staff training and awareness?  Energy efficiency upgrades planned or implemented?				

	Weighting	Rating/10	Points (WxR)	
<b>Lighting</b>	12			<b>Comments</b>
Is lighting energy use significant?  Has interior lighting power density (W/m <sup>2</sup> ) been measured and compared with typical levels?  Are the lamp types described, and have more efficient lamps been considered?  Are the luminaries described, and have more efficient ones been considered?  Have illumination (lux) levels been measured and commented on?  Have the times of use of lighting been described?  Have lighting controls been considered?				

	Weighting	Rating/10	Points (WxR)	
<b>HVAC</b>	12			<b>Comments</b>
<p>Have at least two fuel types of heating, cooling, and ventilation systems conditioning spaces exceeding 1000 m2 been described?</p> <p>Have the times of conditioning spaces been commented on, or measured?</p> <p>Have temperatures in the conditioned space been measured?</p> <p>Have the types of control used (timers, thermostats) been discussed?</p> <p>Is there any commentary about occupant comfort (or discomfort)?</p> <p>Is the amount of mechanical ventilation measured, and compared to the number of people in the space?</p>				

	Weighting	Rating/10	Points (WxR)	
<b>Office Equipment</b>	12			<b>Comments</b>
<p>Is office equipment energy use significant?</p> <p>Have the number of pieces of office equipment in use been tabulated?</p> <p>Has the after-hours use of this equipment been described (is it switched off)?</p> <p>Has after-hours switch-off of equipment been considered?</p> <p>Has more efficient equipment been considered?</p> <p>Have office management procedures that reduce time the equipment is on been considered?</p>				

	Weighting	Rating/10	Points (WxR)	
<b>Boilers / Steam / Hot Water Systems</b>	12			<b>Comments</b>
<p>Is steam and water energy use significant?</p> <p>Are the uses of thermal energy on-site described?</p> <p>If electricity is used for thermal energy, are alternatives discussed?</p> <p>Have any opportunities for heat recovery been discussed?</p> <p>Have the sizes of boilers been described or measured?</p> <p>Are heat losses from pipe and calorifier surfaces calculated or measured?</p> <p>Has the boiler efficiency (and tune-up interval) been measured or commented on?</p> <p>(If steam) is condensate return commented on? Are steam traps functional and maintained?</p>				

	Weighting	Rating/10	Points (WxR)	
<b>Motor Driven Systems</b>	12			<b>Comments</b>
<p>Is motor energy use significant?</p> <p>Are the large motors on-site tabulated by size and number?</p> <p>Have the actual loading of those motors been measured?</p> <p>Have the hours of use of the motors been discussed or measured?</p> <p>Has any control of the motors, to stop them when not in use, been considered?</p> <p>Have variable speed motor controllers been considered?</p>				

	Weighting	Rating/10	Points (WxR)	
<b>Compressed Air</b>	12			<b>Comments</b>
<p>Is office compressor energy use significant?</p> <p>Is the compressor(s) size (kW) listed?</p> <p>Is the air delivery pressure listed?</p> <p>Has heat recovery from the compressor been discussed?</p> <p>Has air leak reduction been discussed?</p> <p>If multiple compressors, has their control been discussed?</p>				

	Weighting	Rating/10	Points (WxR)	
<b>Refrigeration</b>	12			<b>Comments</b>
<p>Is refrigeration energy use significant?</p> <p>Have the temperatures of refrigerated spaces been measured?</p> <p>Is there any commentary about the use of refrigerated spaces (doors left open/needs in different seasons)?</p> <p>Have variable speed motor controllers been considered where hot gas bypass load control is used?</p> <p>What is the condensing temperature set for and can it be controlled down?</p> <p>Has heat recovery from the super heated gas off the compressor(s) and the condensing refrigerant been considered?</p> <p>Are defrost methods and control evaluated?</p>				



	Weighting	Rating/10	Points (WxR)	
Other end-use (if necessary)	12			Comments

**Sub Total B**

**(44)**

### PART C - Calculations to Determine Energy and Cost Savings

This section is scored separately to reflect the importance of the correct calculation of energy and cost savings and capital costs. *(NB: If this part of the audit is deficient then excellence in the items scored in parts A and B is of no value.)*

Calculations to Determine Energy Savings: Proportionately more weight should be given to the larger energy saving measures	Weighting	Rating/10	Points (WxR)	Comments
Are assumptions in calculations identified, and their reasonableness and the effects of varying them discussed?	15			
Is methodology used in calculations reasonable?	20			
Are correct energy costs used (including on- and off-peak electricity costs?)	10			
Will assumptions and methodology yield savings that meet the accuracy requirements of the level of audit undertaken? (Min level 2 with results to + or – 20%). Where the data precludes this level of accuracy or where the calculations refer to an area marked for further investigation, does accuracy achieved reflect the accuracy of the information available?	20			

<b>Financial Analysis:</b> Proportionately more weight should be given to the larger energy saving measures	<b>Weighting</b>	<b>Rating/10</b>	<b>Points (WxR)</b>	<b>Comments</b>
Is the source of costs for recommendations described?	15			
Is "payback" calculated right?	5			
Was more than just simple "payback" used?	5			
Will assumptions and methodology yield costs and savings that meet the accuracy requirements of the level of audit undertaken? (Min level 2 with results to + or – 20%). Where the data precludes this level of accuracy or where the calculations refer to an area marked for further investigation, does accuracy achieved reflect the accuracy of the information available?	10			

**Sub Total C**

**(100)**