



ENERGY AUDIT REPORT MINIMUM REQUIREMENTS

Energy Audit Reports must contain the following:

1) Eligibility Criteria:

- a) Evidence demonstrating that the eligibility criteria were met.

2) Participant Information:

- a) Participant name;
- b) Participant address, including the street, the city, the province and the postal code;
- c) Participant status:
 - i) eligible Owner;
 - ii) eligible Lessee;
 - iii) eligible Owner Manager; or
 - iv) eligible Lessee Manager.

3) eligible Facility Information:

- a) Facility address;
- b) Facility name (if available);
- c) type of Facility or purpose of the Facility;
- d) portion of the Facility that was the subject of the Energy Audit (where applicable);
- e) Facility Characteristics, including, but not limited to, the following:
 - i) Facility floor area in Square Feet;
 - ii) year the Facility was built;
 - iii) number of floors;
 - iv) description of existing cooling system; and
 - v) description of existing heating system.



4) Energy Auditor Information:

- a) Name of Energy Auditor and their company name, if applicable; and
- b) Address of Energy Auditor and their company address, if applicable, including the street, the city, the province and the postal code.

5) Energy Audit Information:

- a) Date the Energy Audit was conducted and the term of such Energy Audit;
- b) Energy Audit type:
 - i) Electricity Survey and Analysis – where the Participant is the eligible Owner or eligible Owner Manager of an eligible Facility;
 - ii) Detailed Analysis of Capital Intensive Modifications – where the Participant is the eligible Owner or eligible Owner Manager of an eligible Facility that is larger than 50,000 Square Feet in size; or
 - iii) Building Systems Audit; or
 - iv) Electricity Survey and Analysis – where the Participant is an eligible Lessee or eligible Lessee Manager of an eligible Facility; and
- c) Cost of the Energy Audit, together with invoices and supporting documentation.

6) Estimates with respect to the Electricity Survey and Analysis:

- a) Energy Savings and Demand Savings to an accuracy of +/- 30%; and
- b) Costs of implementing retrofits to an accuracy of +/- 50%.

7) For an Electricity Survey and Analysis for an eligible Owner or eligible Owner Manager of an eligible Facility, the Energy Audit Report will include:

- a) a description of the physical characteristics of the eligible Facility, as well as its current condition, state of repair and maintenance, approximate date of last major renovation, age and construction type;
- b) a description of the major existing electricity-using equipment including lighting, all sources of heating and cooling, their energy consumption and fuel type as well as the manufacturer, model number, age, physical condition and estimated remaining years of service;
- c) a complete breakdown of current building electricity usage (i.e., operating schedule), consumption and costs by end-use type from (b) above as determined by a metered utility data analysis and a lighting audit;
- d) an analysis of irregularities in electricity use patterns, with suggestions as to their possible causes;



- e) a comparison to electricity usage of similar buildings, where available (in which case the source, size and date of the sample used in this comparison is to be provided);
- f) target indices for electricity usage, the methodology for establishing those targets, and the estimated savings of current costs that could be saved if those targets were met;
- g) identification of special problems identified including possible revisions to usage and operating and maintenance procedures;
- h) an analysis and ranking of the recommended measures and their resulting net effect on electricity consumption for each energy source, and electricity peak demand reduction for the eligible Facility (highlighting low-cost and no-cost opportunities);
- i) an analysis of the potential change in operations and maintenance costs from (g) above;
- j) the estimated total capital cost for any retrofit projects from (h) above including both material and installation cost, broken down by measure;
- k) an assessment of non-financial considerations, including the health, safety and comfort of the occupants and staff, as well as new skills and training required for staff;
- l) identification of Measures that were considered but not recommended to be implemented, along with the rationale for why such Measures were not recommended; and

8) For a Building Systems Audit, except a Building Systems Audit for a Compressed Air System, the Energy Audit Report will include:

- a) a detailed engineering analysis certified by the Energy Auditor, including:
 - i) Description of system evaluated including purpose, capacity, efficiency, model number, performance curves and age.
 - ii) System evaluation - measurement of actual operating conditions including flow, pressure loss and power input. Evaluation is to include operating hours and a reasonable estimate of consumption and demand profiles (during the defined peak period).
 - iii) Recommendations - savings and cost estimates for recommended measures including both operational, replacement and retrofit opportunities; and,
- b) project cost estimates and simple payback calculations, with and without potential implementation of Measures pursuant to other Initiatives within the Program as well as other initiatives outside of the Program or any third party contributions, which estimates may also allow for changes in operating and maintenance costs.

9) For a Detailed Analysis of Capital Intensive Modifications for an eligible Owner or eligible Owner Manager of an eligible Facility, the Energy Audit Report will include:



- a) an electricity performance model, prepared using building energy software that has been calibrated to electricity utility data for not less than the previous two calendar years, and is fully representative of the actual building performance throughout that period;
- b) a second energy performance model using the same modelling software based on the proposed electricity retrofit measures, along with a summary of the projected lifetime electricity savings, estimated electricity cost savings and electricity demand reduction;
- c) revisions as appropriate to any estimates made in an Electricity Survey and Analysis in Section 8 above; and
- d) project cost estimates and simple payback calculations, with and without potential implementation of Measures pursuant to other Initiatives within the Program as well as other initiatives outside of the Program or any third party contributions, which estimates may also allow for changes in operating and maintenance costs.

10) For an Electricity Survey and Analysis for an eligible Lessee or eligible Lessee Manager of an eligible facility, the Energy Audit Report may only be in respect of lighting systems and electricity consuming equipment located in the eligible Facility and will include:

- a) a description of the physical characteristics of the eligible Facility, as well as its current condition, state of repair and maintenance, approximate date of last major renovation, age and construction type;
- b) a description of the major existing electricity-using lighting systems and electricity consuming equipment, their energy consumption and fuel type as well as the manufacturer, model number, age, physical condition and estimated remaining years of service;
- c) a complete breakdown of current building electricity usage (i.e., operating schedule), consumption and costs by end-use type from (b) above as determined by a metered utility data analysis and a lighting audit;
- d) an analysis of irregularities in electricity use patterns, with suggestions as to their possible causes;
- e) a comparison to electricity usage with respect to lighting systems and electricity consuming equipment of similar buildings, where available (in which case the source, size and date of the sample used in this comparison is to be provided);
- f) target indices for electricity usage with respect to lighting systems and electricity consuming equipment, the methodology for establishing those targets, and the estimated savings of current costs that could be saved if those targets were met;
- g) identification of special problems identified including possible revisions to usage and operating and maintenance procedures;
- h) an analysis and ranking of the recommended measures and their resulting net effect on electricity consumption for lighting systems and electricity consuming equipment, and electricity peak demand reduction for the eligible Facility (highlighting low-cost and no-cost opportunities);



- i) an analysis of the potential change in operations and maintenance costs from (g) above;
- j) the estimated total capital cost for any retrofit projects from (h) above including both material and installation cost, broken down by Measure;
- k) an assessment of non-financial considerations, including the health, safety and comfort of the occupants and staff, as well as new skills and training required for staff; and
- l) identification of Measures that were considered but not recommended to be implemented, along with the rationale for why such Measures were not recommended.

11) For a Building Systems Audit for a Compressed Air System the Energy Audit Report will include:

1. A detailed engineering analysis, certified by the energy auditor, including:

a) System description

- i) Written description of compressed air system, including its main purpose
- ii) Specify the typical operational hours of the system and of the production cycle
- iii) Block Diagram showing all major equipment including compressors, dryers, filters, after coolers, flow/pressure controllers, receivers, flow measurement points, supply trunk nominal diameter and configuration (ring, tree, ring+tree), typical system pressures at key locations, if available
- iv) Equipment Inventory of major components including those in the block diagram, with make/model, age, type, plus the following key parameters:
 - 1. For compressors include rated HP, flow and pressure (maximum allowable working pressure and actual operating pressure), rated kW/100 CFM, cooling method, control method (examples: start/stop, load/unload, modulating, dual/auto, VSD, variable displacement).
 - 2. For dryers, include CFM capacity, rated or estimated kW/100 CFM, type (Refrigerated - direct expansion, cycling, thermal mass, VSD; Regenerative: Heatless or heated)
 - 3. For flow/pressure controllers, the design inlet and outlet pressures and flows
 - 4. For receivers and storage, volume in US Gallons
- v) Copies of available CAGI Data Sheets, if available, for applicable equipment

b) System Evaluation



- i) Measurements. Summary and plots of simultaneously-obtained measurements of actual operating conditions for at least one full production cycle (typically a minimum of one week), including:
 - 1. Description of measurement strategy, measurements performed, time interval used, and measurement equipment used. Minimum measurement requirements are:
 - a. Power (kW) input to each compressor;
 - b. System pressure in PSI (indicate location(s) on block diagram);
 - c. Total system air flow in CFM (measure where possible or estimate using measured power or amps).
 - 2. Units of production (items, pounds, meters, etc) and time scale (per hour, day, week), if applicable, or other drivers of compressed air use
 - 3. Supporting tabular data in spreadsheet soft copy as an appendix
- ii) Analysis
 - 1. System Operating Costs
 - a. Estimate of total compressed air system annual energy use (kWh) and cost (state assumed energy cost \$/kWh), based on measured data and operating schedule. This should be related to a production index if possible, such as kWh per unit of production.
 - b. Estimate total system contribution to 60-minute average monthly peak power (kW) and cost (state assumed power cost \$/kW)
 - c. Approximate system annual maintenance cost, as reported by the participant
 - 2. State adequacy of system compressed air storage volume, in US Gallons/CFM
 - 3. State adequacy of main distribution system pipe size (via pressure loss or main pipe air velocity)
 - 4. Estimate airflow lost due to leaks. Describe the method used to determine the losses (such as end-use survey, pressure decay test, ultrasonic leak detector, flow during non-production time)
- c) Recommendations
 - i) Written description of recommendations, including equipment operation changes, equipment replacement, maintenance procedural changes, and retrofit opportunities.



ii) Summary table of recommendations, with the following information, as applicable to each measure:

1. Recommendation name
2. Capital cost
3. Annual energy saved (kWh), peak hour power saved (kW) [60-minute average]
4. Annual electricity cost savings
5. Other annual operational and maintenance cost savings
6. Simple payback [Capital Cost / Total Annual Cost Savings]

2. Project cost estimates and simple payback calculations, with and without potential implementation of Measures pursuant to other Initiatives both within and outside of the Program or any third party contributions, which estimates may also allow for changes in operating and maintenance costs.