

Appendix I

This appendix aims to define the tasks involved in carrying out a complete energy audits of SPC buildings and operating systems in Noumea headquarters and Fiji regional offices in Suva.

It specifies the process for carrying out these studies by a technical service provider external to SPC, as well as the procedures in implementing the recommendations.

The energy audits will be divided **into 4 phases:**

Phase 1: status and data collection

the data collection a list of reference documents required for the study (map, principle schemes, invoices, technical documentation) will be elaborated and communicated to facilities prior to onsite visits.

For reference, last 2 SPC energy audits conducted for the sites mentioned in 2012 will be provided for the consultancy to be planned with adequate supporting information.

This phase will also allow to combine, measure, and verify all elements enabling the design of the energy profile of sites. In particular will be collected:

1. Meteorological and topographic data
2. Building map and structure plans
3. Principle scheme with technical appliances (aircond, VMC, ECS etc.)
4. Energy invoices and contracts
5. Regulation systems data (timeline..)=
6. Technical functioning data
7. Previous Suva and Noumea energy audits reports

The reference documents can be transmitted digitally if they are digitized, or consulted on site if they are not.

It is the contractor's responsibility to verify the availability of the information required for the proper execution of the contract.

Phase 2: treatment and analysis of data

This second phase will focus on the treatment and analysis of data collected throughout phase 1. This step conducted offsite will cover:

- Critical analysis of existing situation occupancy and operating conditions, envelope quality, climatic installation
- Site energy balance, building by building: comparison of actual and theoretical consumption levels.
- Enumeration and ranking of possible improvements: low-investment and rapid execution or more time-consuming ones.
- Analysis of the energy and environmental impact of recommendations
- Feasibility study for setting up and extending a renewable energy electricity production system (potentially over Suva/Nabua new building currently in project)
- Feasibility study for setting up a more reasonable and sustainable use of water on sites, including treatment and recycling.

Phase 3: coherent Improvement programme

This third phase will build on the conditions of the previous phase to draw up a work program for the project owner. It will distinguish:

1. corrective measures that do not require major investment, but rather focus on regulation, equipment management and user habits,
2. measures which are more costly and time-consuming, but which are also likely to bring about a more significant improvement in the site's energy balance.

For each operation planned, will be given:

- a detailed description of how the work will be carried out (surface area, length, thickness, materials, etc.)
- the corresponding costs (unit and quantity), specifying the source of information for the prices.
- a profitability calculation based on the state of play. The gross payback time should be specified in relation to the estimated lifespan of the material or equipment used, and preferably a discounted overall cost calculation. This calculation should include energy price estimations for the duration of the material.
- to facilitate the decision-making process, the service provider will include in his costing the financial support arrangements or measures applicable depending on the project owner's situation: energy saving certificates, tax credits, national or local subsidies, etc.

Energy accounting for the buildings will be developed to enable SPC to monitor consumption and technical operating data for the site. This tool could be based on metering and data collection, transmitted, stored and presented locally or remotely, but in all cases, it would be simple and effective.

A presentation of ISO 50001 certification will be given, with the targets to be achieved and their conditions of implementation. An assessment of current SPC energy use, identification of opportunities for improving energy efficiency and recommendations for energy-saving measures will be done.

The relevance of setting up an energy management service (EnMS) on the CPS campuses will be assessed and, where appropriate, the conditions for its implementation (tools, costs, timescales) will be developed. Energy policies, performance targets and continuous improvement opportunities will be described in detail.

phase 4: financial analysis

A detailed financial analysis based on the global cost method will be carried out for all work programs.

Calculations will include at least the following elements:

1. The estimated cost of the work (by item and overall), based on a preliminary budget estimate of +/- 20%.
2. Operating costs for each energy user (building, and other specific electrical uses)
3. Plant maintenance costs:
 - a. Estimated replacement costs for heavy equipment over the period used for the overall cost analysis.
 - b. Estimated costs of treatment or recycling for small assets and equipment purchased and used by SPC.

This financial analysis will enable the project owner to precisely identify the cost of the work and the payback period. It will also enable these works to be scheduled over the coming years.