

Energy assessment (element 3)

To provide verifiable data on actual performance of a building, it is important to establish the energy use within the building. If performing POE/BPE as active research, it is desirable to collect data before and after interventions are made.

Electricity and other non-electricity fuel sources should be assessed separately and not considered as total delivered energy. Depending on the level of detail to be analysed within the study, there are three main aspects to differentiate when doing energy assessments. These are:

- Space conditioning: heating, cooling and ventilation
- Non-space conditioning: end uses such as appliances and lighting.
- Generation, e.g. photovoltaics

Level 1: Systematic meter readings / energy bill collection

Cost: ₹	Time: ⌚	Skills: 🙌
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Potential tools needed:

- Pen and paper for notes
- Camera
- Meter key
- Watt meter

How: Two sources of Level 1 energy data are:

- Physical meter readings
- Energy bill collection

Physical meter readings can be taken on a regular basis, e.g. weekly, monthly, in order to get a systematic record of energy use. To reduce researcher effort in visiting the building on a regular basis, occupants or facility management can be enlisted to help by taking the readings and emailing them to the research team. Where smart meters are installed this data can be accessed online; however, this would qualify as level 2 as there will be a higher level of granularity.

Similar to providing monthly electricity and gas meter readings, if remote monitoring systems are not suitable, a useful way of collecting basic data on the performance of photovoltaics (PV) is to record monthly meter readings from the generation (and export, if present) meter.

Energy bill collection is perhaps the easiest source of energy data but it is not always available. One valuable benefit to collection of energy bills is that pre-POE/BPE energy data can be collected providing a retrospective look at energy consumption and generation.

Timing: Energy data collection is an ongoing measure that should begin immediately (by requesting energy bills).

Potential barriers: Monthly meter readings can be time consuming (the researcher needing to contact/visit the household every month on a specific day) and potentially inaccurate (the occupant writing down the wrong figure, or taking readings on different days). There are also further practical issues in that the occupants may be away on the meter reading day. In past studies several occupants forgot to record their meter readings, and would have benefitted from prompts, either by text message, telephone call or email.



In addition energy bills are not always retained by occupants/owners. They also may not be an accurate representation due to some readings being estimated (e.g. balanced pay arrangements). Equally, being reliant on occupant records is difficult, as some readings may have been missed and/or read incorrectly.

