



Measured, Not Assumed

Device-level metering and measurement and verification for plug load control



BERT (Best Energy Reduction Technologies) · Version 1.0 · September 2026

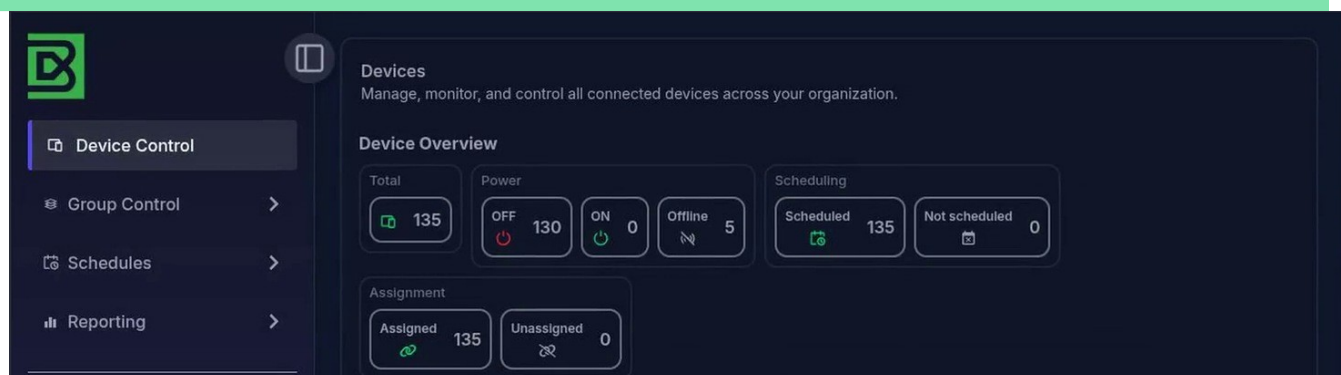


Figure 1. BERTBrain device overview (demo data).

EXECUTIVE SUMMARY

A savings claim is only as good as how it was measured. Efficiency programs of every kind have the same credibility problem: a number modeled once, presented as final, and never checked against what actually happened. Plug load control doesn't have to work that way. A defensible program moves through three stages — an early estimate, a real post-installation baseline, and ongoing device-level reporting — and each stage answers a different question for a different audience. This paper walks through that progression in plain terms, without going into the detailed calculations behind each stage, and explains what "measured" should mean to an owner, an ESCO, or a utility program reviewer deciding whether to trust a number.

1. Why "Measured, Not Assumed" Matters

Measurement and verification (M&V) exists as a discipline because a modeled estimate and a measured result are two different things, and an efficiency program that only ever produces the first one is asking to be trusted on faith. This isn't a plug-load-specific problem — it shows up anywhere an efficiency claim is made before, and never checked after, a project is installed. The industry-standard International Performance Measurement and Verification Protocol (IPMVP) exists precisely to give programs a shared, credible way to measure savings after the fact, rather than simply project them once and move on.

Plug and process loads are an easy place for this discipline to slip, because the equipment is small, numerous, and easy to estimate in aggregate rather than measure individually. That's exactly why device-level measurement matters more here, not less.

2. Three Stages, Not One Number

A credible plug load program moves through three stages of increasing certainty, each suited to a different decision:

1. An Early Estimate

Before installation, an estimate — a rough order of magnitude based on building type and schedule, a field-observed device count, or an audit — sizes the opportunity and supports a purchase decision. This is a planning number, built to be refined, not a final answer.

2. A Measured Baseline After Installation

Once equipment is installed, BERT measures a baseline period (typically 30 or 45 days) before any control schedule takes effect. This baseline captures how the equipment actually operates in that specific building — not a generic assumption — and it's what recommended schedules are built from.

3. Ongoing Measured Reporting

After schedules activate, BERT continues to measure and report actual performance — kWh and cost — against that baseline, device by device. The estimate did its job getting the project started; the baseline and the ongoing measurement are what make the savings real and checkable.

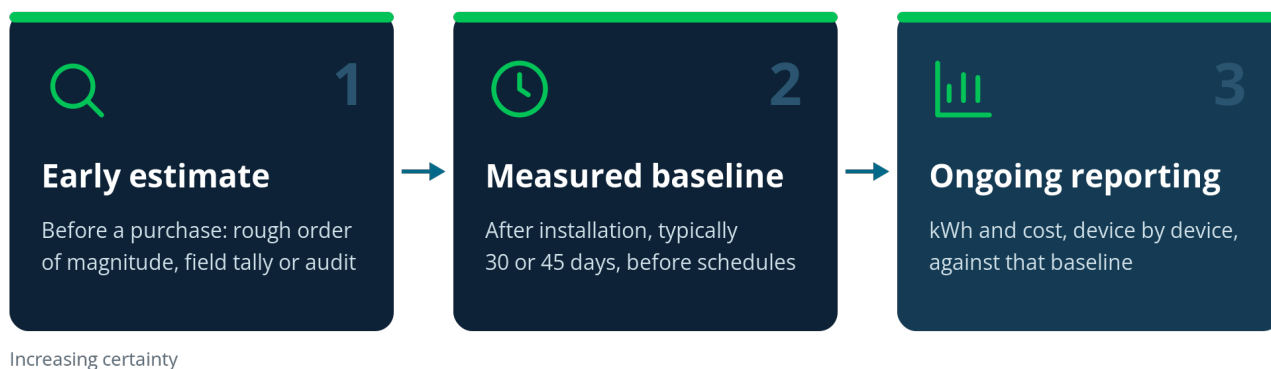


Figure 2. Three stages of increasing certainty: estimate, measured baseline, ongoing measured reporting.

This progression reflects BERT's savings and measurement methodology, which is informed by IPMVP and ASHRAE Guideline 14. BERT does not claim to comply with or be certified to IPMVP.

3. What "Measured" Means in Practice

Every BERT controller measures the load it controls, to within $\pm 3\%$. For a plug-in controller that's the individual device, not a circuit total or an estimate for a category of device. Reporting rolls up from there: by device, by group, by department, by building, or across a whole portfolio.

Two practical points matter more than they might seem to:

- Missing data is treated as missing, not as zero. A gap in the record is a gap, not a silent assumption that nothing happened.

- Savings are calculated from the equipment's actual measured operation during the period being evaluated, not from a single instantaneous reading — a device switched off doesn't retroactively make its whole history look like that one moment.

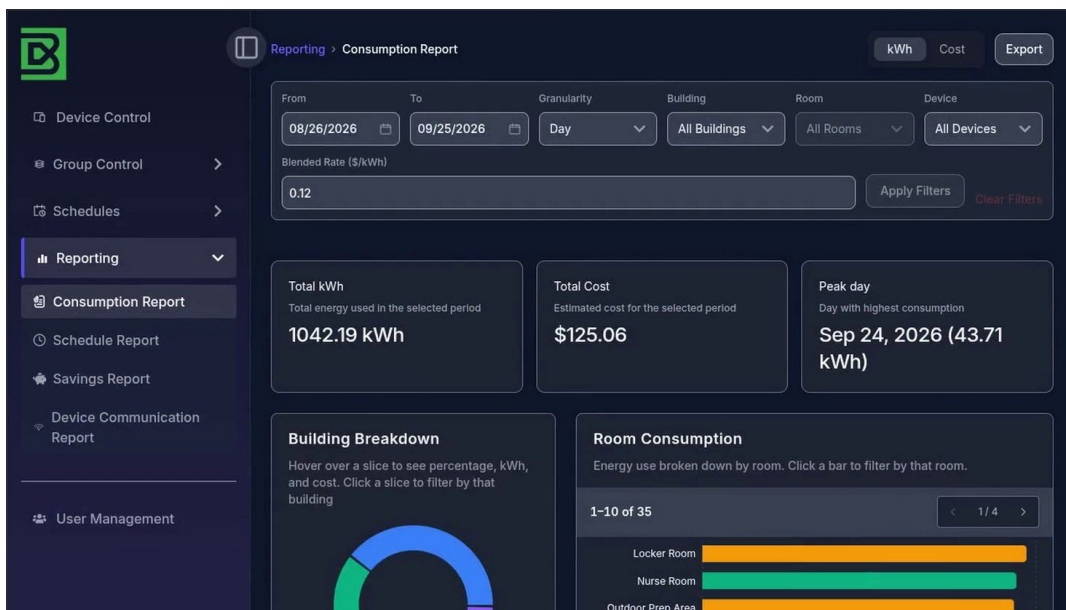


Figure 3. BERTBrain consumption reporting in kWh and cost (demo data).

4. What This Replaces

The alternative, and the common failure mode across efficiency programs generally, is a single pre-installation estimate presented as if it were a final, measured result — with no baseline established after installation and no ongoing check against it. An estimate is a legitimate and necessary first step. The problem isn't having one; it's stopping there.

5. Where This Leaves the Numbers

A defensible plug load savings report should be able to show a facilities director, a utility program reviewer, or an ESCO's M&V team: what was measured, over what period, compared against what baseline, device by device. That standard doesn't require a formal M&V engagement for most projects — though formal M&V support is available under a separate written scope when a contract or program requires it, using the project's own measured data as the foundation.

6. What This Isn't

This paper describes a measurement discipline, not a promise of a specific result. Savings figures are planning ranges, and nothing here should be read as a code-compliance claim — code compliance is always a determination made by the design professional and the authority having jurisdiction for a given project.

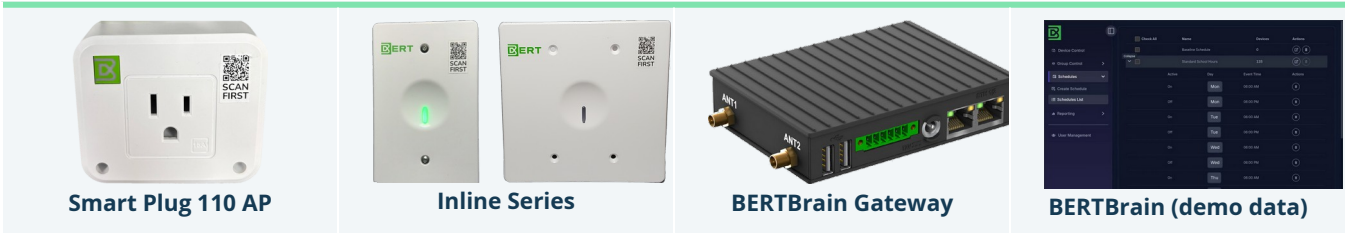


Figure 4. The BERT system that produces the measurements: controllers, the on-site BERTBrain Gateway, and BERTBrain software.

Sources

1. BERT website: the Savings page and FAQ.
2. International Performance Measurement and Verification Protocol (IPMVP) — referenced as public, industry-standard background only.
3. ASHRAE Guideline 14, Measurement of Energy, Demand, and Water Savings — referenced as public, industry-standard background only.



About BERT

BERT (Best Energy Reduction Technologies, LLC) has focused on commercial plug and process load management since 2011, based in Wayne, PA, just outside Philadelphia. bertbrain.com