

Guidebook Helps Turn Building Energy Data into Actionable Information

The *2010–2011 Energy Information Handbook*, released by the Lawrence Berkeley National Laboratory, promises to help people who have little experience in energy analysis transform energy data into actionable information that can save money. Analysis and performance-monitoring tools can cut overall building energy consumption by between 5 and 15 percent, but building owners and operators often don't have the time or training to ensure that the data they're collecting are used effectively. The *2010–2011 Energy Information Handbook* slices through the confusion and offers a clear, step-by-step process for turning energy data into energy savings. The guidebook answers questions such as "Which data points are required for proactive energy management?" "Which analysis methods should be performed?" and "How frequently should I perform them?"

The handbook was specifically designed to present energy analysis methods in a simple and easy-to-understand way. User-friendly summary tables (**Figure 1**) rank the analysis methods according to three criteria: minimum data requirements, building system type, and amount of expertise required to use the analysis. These summary tables are especially useful as lookup tools. For example, you can determine which analysis methods can be used with your available energy data or which analysis methods apply to a specific building system, such as whole building, heating, cooling, lighting, or plug loads.

Figure 1: Guidebook summary tables

Summary tables in the *2010–2011 Energy Information Handbook* help the user decide which analysis methods are most appropriate, given the available data and the system type.

Minimum Data Requirements						Applicable Building Systems							
Analysis Methods	Utility		Interval Meter		Submeter			Other*	Whole Building	Heating	Cooling	Lighting	Plug Loads
	Gas	Electric	WB Gas	WB Electric	Heating Load	Cooling Load	Lighting Load						
Simple Tracking	●	●						●	●	●	●	●	
Utility Cost Accounting	●	●						●	●	●	●	●	
Internal Rate of Return	●	●					●	●	●	●	●	●	
Carbon Accounting	●	●					●	●	●	●	●	●	
Longitudinal Benchmarking	●	●					●	●	●	●	●	●	
Cross-Sectional Benchmarking	●	●					●	●	●	●	●	●	
Loading Profiling			●	●				●	●	●	●	●	
Peak Load Analysis				●				●					
PV Monitoring							●	●					
Loading Histograms					●	●		●	●	●	●	●	
Simple Baselines	●	●					●	●	●	●	●	●	
Model Baselines			●	●			●	●	●	●	●	●	
Lighting Efficiency							●	●			●		
Heating and Cooling Efficiency					●	●		●	●	●	●	●	
Energy Signature	●	●					●	●	●	●	●	●	
Energy Savings	●	●					●	●	●	●	●	●	
Cumulative Sum	●	●					●	●	●	●	●	●	
Anomaly Detection			●	●			●	●	●	●	●	●	

WB = whole-building.
*Other includes for example, weather data, square footage, or equipment costs.

*Energy production from PV arrays is typically accounted for at the whole-building level.
Source: Lawrence Berkeley National Laboratory

The handbook groups the analysis methods into three chapters based on the type of data available and the complexity of the analysis. At the most basic level, the Reporting and Tracking chapter covers the use of utility-bill analysis so the user can track building energy, financial details, and carbon performance.

For the next level of complexity, the Fundamental Methods chapter describes the use of interval meter or time-series data—like temperature—for system-specific or whole-building analysis.

Although the analyses are more complex, the techniques described in the Advanced Methods chapter actually require less user expertise than those discussed in the Fundamental Methods chapter. This is because much of the analysis is automated, taking place “under the hood” of the existing software, and the results are interpreted for the user.

If you’ve been struggling with complicated explanations of how to analyze your energy data, want to understand what analysis techniques your building automation system offers, or if this handbook just sounds intriguing, you can download a free electronic copy from the [Lawrence Berkeley National Laboratory Energy Information Systems website](#). Want to take a hard copy to the office or jobsite? Paperback copies are on sale through [Amazon](#).

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