

## Metering System Assessment Guidelines

### General Automated Metering Assessment Procedure

1. Conduct a site assessment to determine the current number of standard electric, natural gas, fuel oil, steam, and water meters.
2. If the facility has standard (mechanical meters with no automated meter reading capabilities) electric, natural gas, fuel oil, steam, or water meters, calculate the cost effectiveness of installing an advanced meter using the following steps:
  - As a first order of approximation, assume that the meter will reduce the electric, natural gas, or water utility costs by 2% (see Table 1).

**Table 1. Metering Savings Ranges<sup>1</sup>**

Action	Observed Savings
Installation of meters	0% to 2% (the Hawthorne effect)*
Bill allocation only	2.5% to 5% (improved awareness)
Building tune-up	5% to 15% (improved awareness, and identification of simple O&M improvements)
Continuous commissioning	15% to 45% (improved awareness, identification of simple O&M improvements, project accomplishment, and continuing management attention)

Source: FEMP

\*Improvements in productivity or process resulting from the awareness of extra attention or observation of that process.

- Use Table 2 to approximate the installed cost of the metering system.

**Table 2. Approximate Installed Costs of a Metering System<sup>2</sup>**

Advanced Electric System Costs per Meter		
Installation Cost	Low (\$)	High (\$)
Meter	1,000	1,500
Ancillary device	300	600
Communications (modem)	100	200
Software	0	100
Installation	500	1,000
Install phone line or LAN	0	2,000
Total	1,900	5,400
Metering System Ongoing Costs per Meter		
Recurring Costs per Month	Low (\$)	High (\$)
Phone/LAN	05.00	40.00
Data collection	00.00	01.70
Data analysis/billing	04.50	04.50
Total	09.50	46.20

Source: Pacific Northwest National Laboratory

- Use the following calculation to determine the cost effectiveness of installing an advanced meter:

**Formula and sample calculation:**

$$\frac{\left( \frac{\text{Installed Cost}}{\text{Desired Simple Payback}} \right) + \text{Annual Cost}}{\% \text{ Annual Savings}} = \text{Minimum Annual Electric Bill}$$

Source: FEMP

**Figure 1. Advanced meter calculation<sup>3</sup>**

<sup>1,3</sup> *Guidance for Electric Metering in Federal Buildings*. DOE/EE-0312. U.S. Dept. of Energy, Federal Energy Management Program. [www.femp.energy.gov/pdfs/adv\\_metering.pdf](http://www.femp.energy.gov/pdfs/adv_metering.pdf). February 3, 2006.

<sup>2</sup> Sullivan, G.; Pugh, R.; Hunt, W. *Metering Best Practices: A Guide to Achieving Utility Resource Efficiency*. Prepared by Pacific Northwest National Laboratory for U.S. Dept. of Energy, Federal Energy Management Program. [www.femp.energy.gov/pdfs/mbpg.pdf](http://www.femp.energy.gov/pdfs/mbpg.pdf). October 2007.