

Power Locator

Bruce Nordman

Lawrence Berkeley National Laboratory

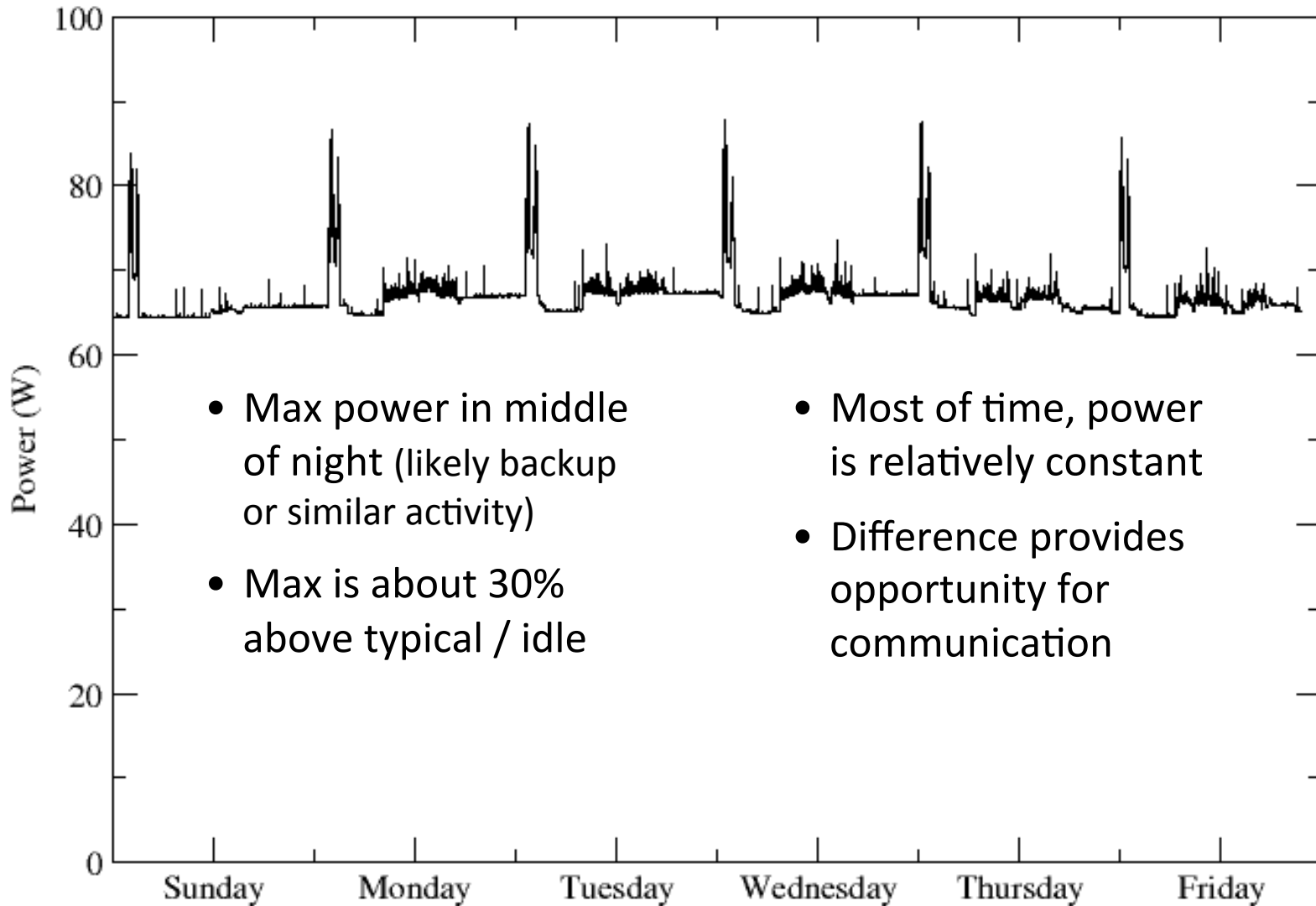
BNordman@LBL.gov

Location

- How do I know “where”* in a building each specific device is?
 - *“where” is location in power distribution tree
- Complex buildings have many circuits and many individual devices
- Knowing location needed for monitoring and control
- Manual methods are possible
 - Automatic would be cheaper and more reliable

Sample device – PC

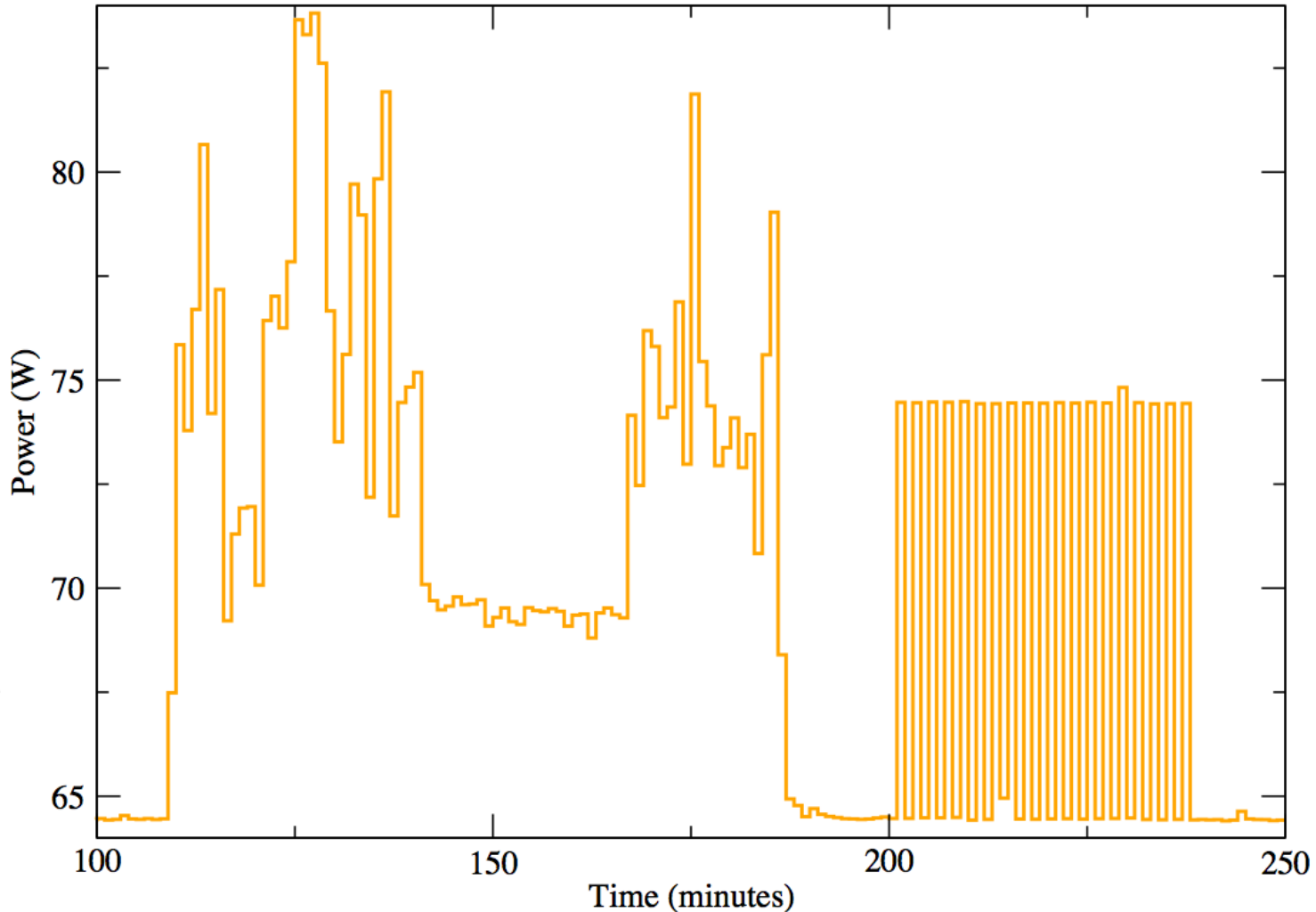
Six days of data



Locator service example

Same PC – Four hours of data

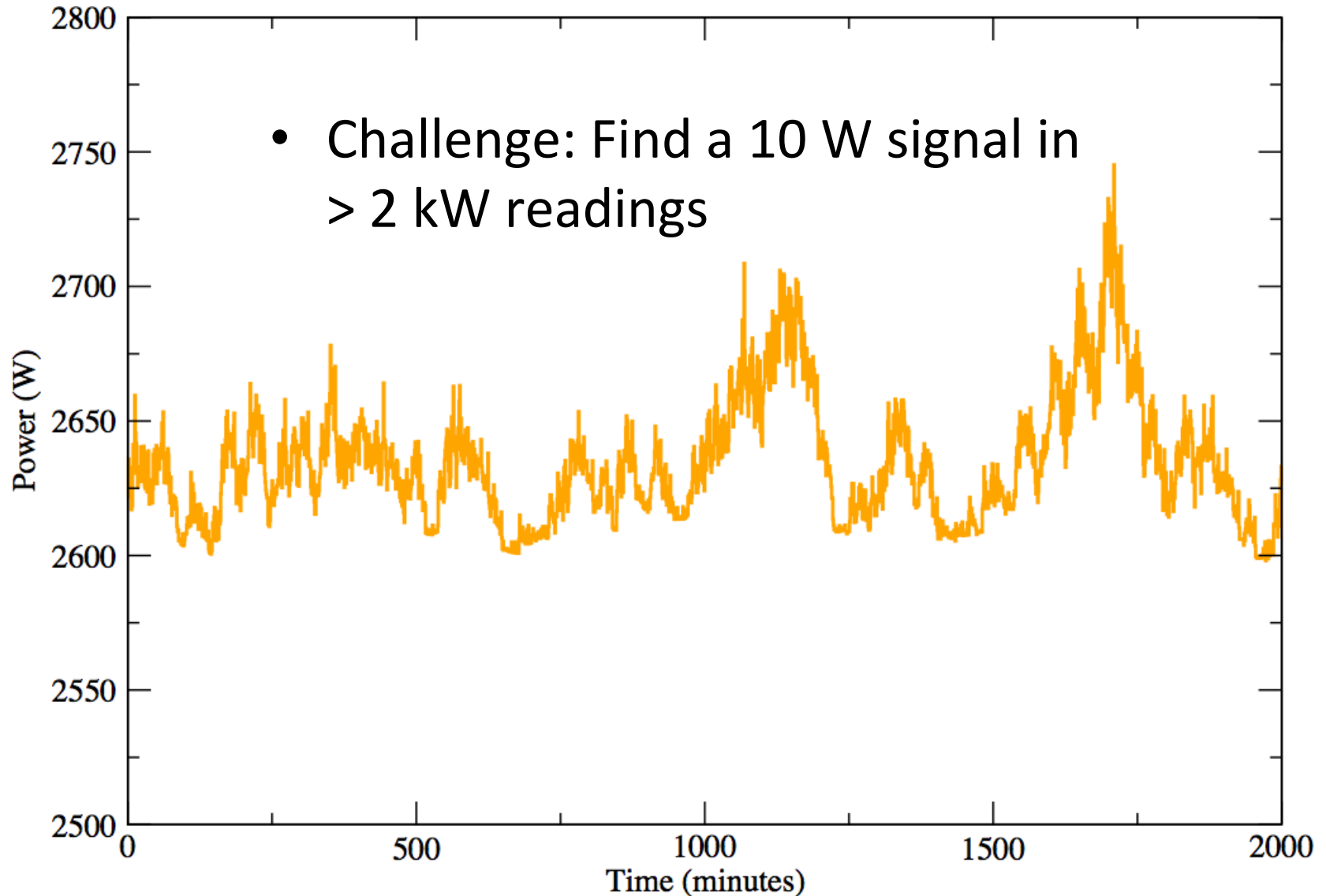
- 10 W signal added to ~65 W idle level
- Present during alternate minutes



Algorithm

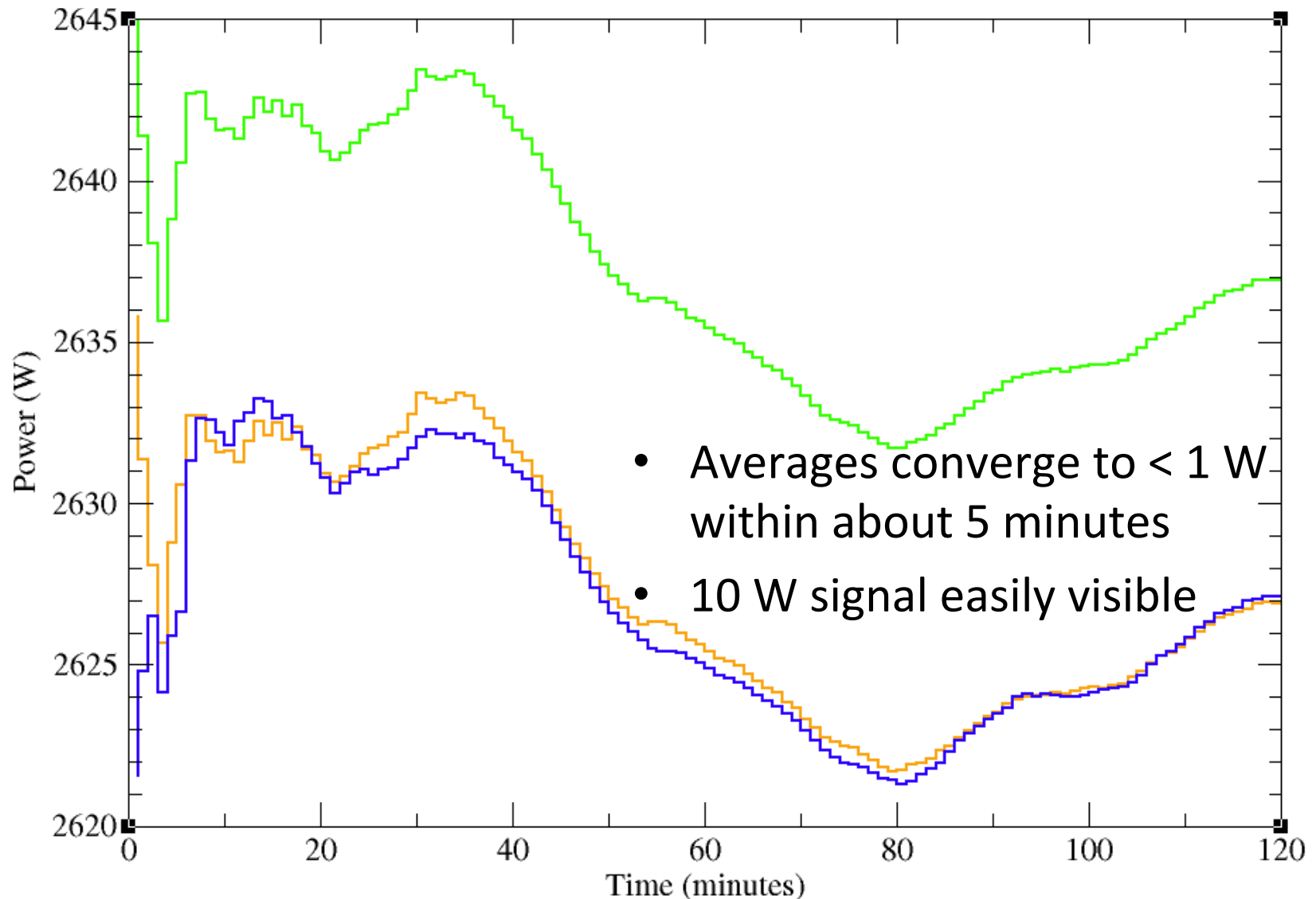
- Begin reading all submeters synchronously at fixed intervals
- Request target device to enter locator mode with identical timing
- Analyze meter data until signal is visible in one (or more) meter(s)
- Terminate locator mode

Synthetic submeter data – 40 PCs



Submeter data – cumulative average

Time series data divided into odd/even series



Locator request details

- Bitmap of signal (and length)
 - can be more complex than 10101010.....
- Period
 - length of time of each bit
- Duration
 - number of periods to signal for
- Can use SNMP
- Mode begins immediately

Thank you