

THE CASE FOR

PERMANENT ENERGY MONITORING

by Bill Holmes, P.E.

**Since 1979 I have been
installing permanent energy
monitoring systems as the
first step in every project**

And creating immediate

savings simply by:

Tuning up *existing systems*

in *existing buildings*

No capital projects
were required

**The ROI was weeks
or months in every case!**

Client	Annual Savings	Payback
General Electric	\$250,000	3 months
Golden Castings	\$300,000	3 months
Kosmos Cement	\$250,000	6 months
Ice Arena*	67%	immediate
School District	35%	immediate
Mental Health Hospital	59%	immediate
* DOE Award		

What have I learned?

There is a huge difference
between the energy
systems *should be using*

**And the amount of
energy systems
are actually using**

**Most people assume
that solutions come from
Technology, not People**

I found the opposite

Technology is

only a tool;

People are the key



Equipment is not the
problem; the problem is
operation, maintenance
and management

Capital improvements

if required at all

Should be the last step

Certainly not the first

**The 1st step in reducing
your energy consumption
and meeting your
Sustainability Goals**

Should be –
simply tuning up
your existing
energy systems

How do you start?

What do you do?

The first step
must always be the
“Information”

Planes, Trains & Automobiles
have Permanent
On-Board Diagnostics

**Buildings should have
On-Board Diagnostics too,
Permanent Energy
Monitoring Systems**

**In 2013 there is little
*energy information available***

Don't believe me?

**Why else are energy audits
being done?**

What points

should you monitor?

Think of Energy as Dollars

Set up a simple budget

How much comes in?

Where does it go?

The single most important
points to monitor are the
Utility Meters

They allow you to see
when ever dollar is spent

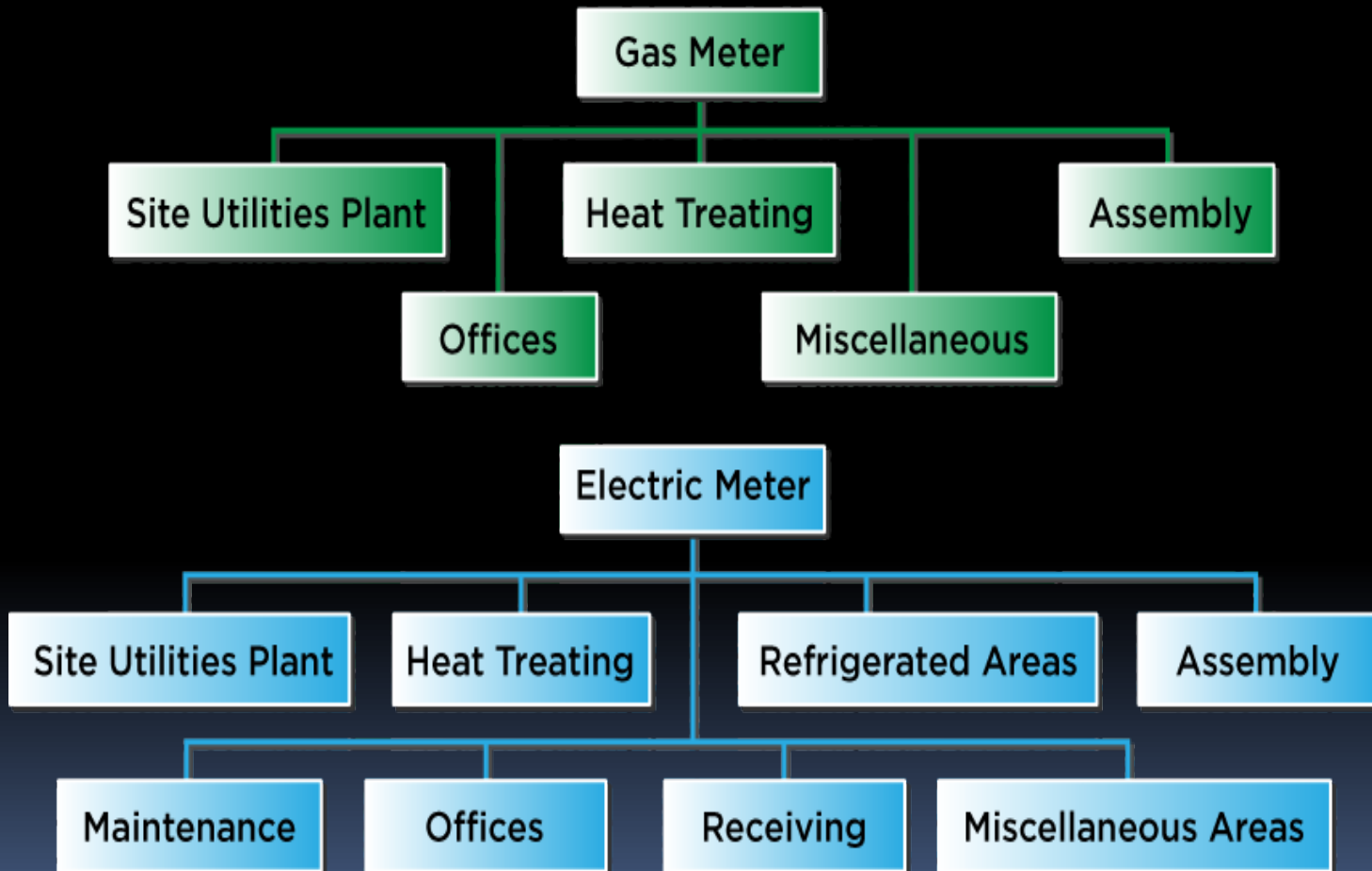
Monitor significant systems

from largest to smallest

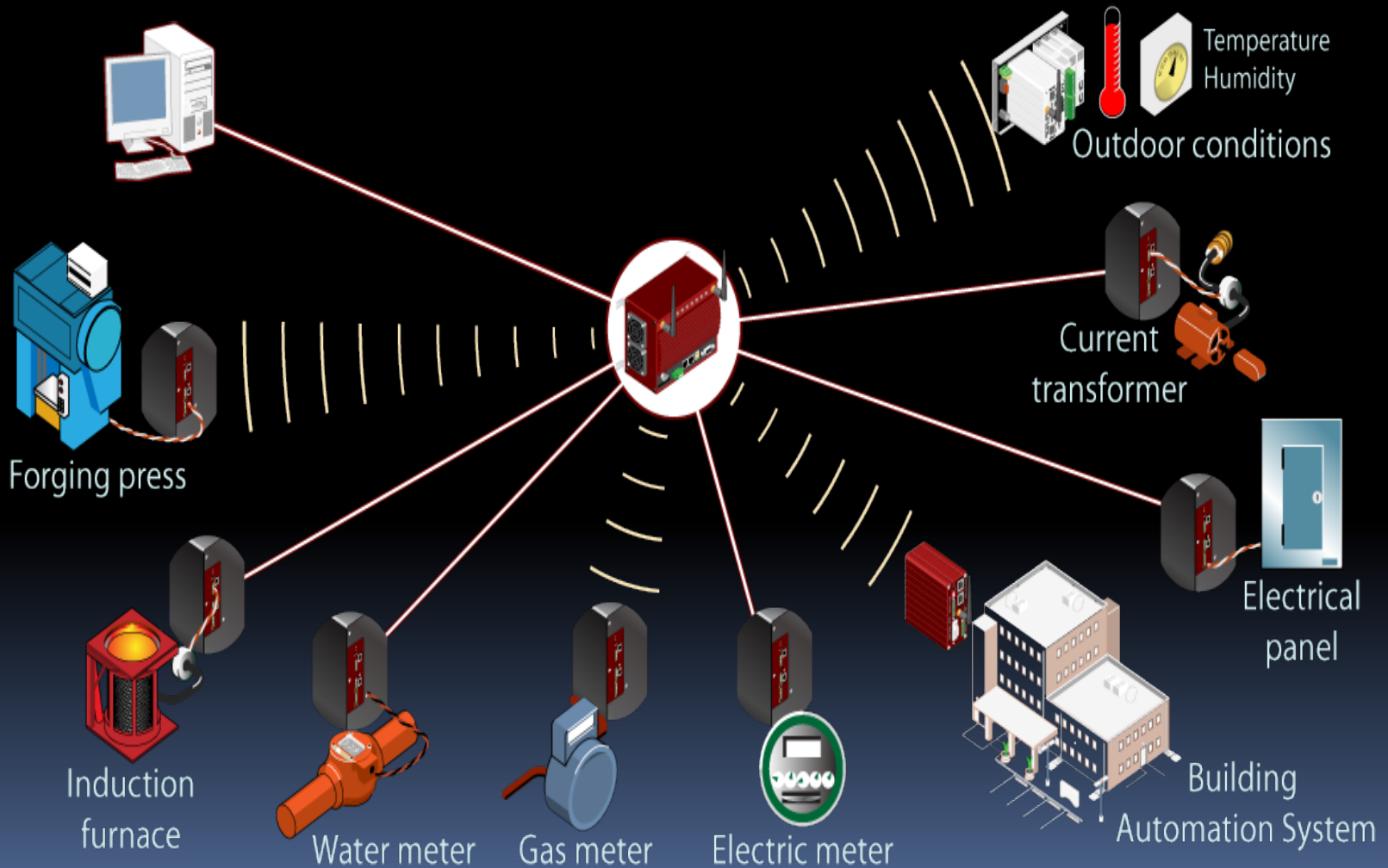
Minimize hardware by using

Software with Analytics

Select Points from Top Down

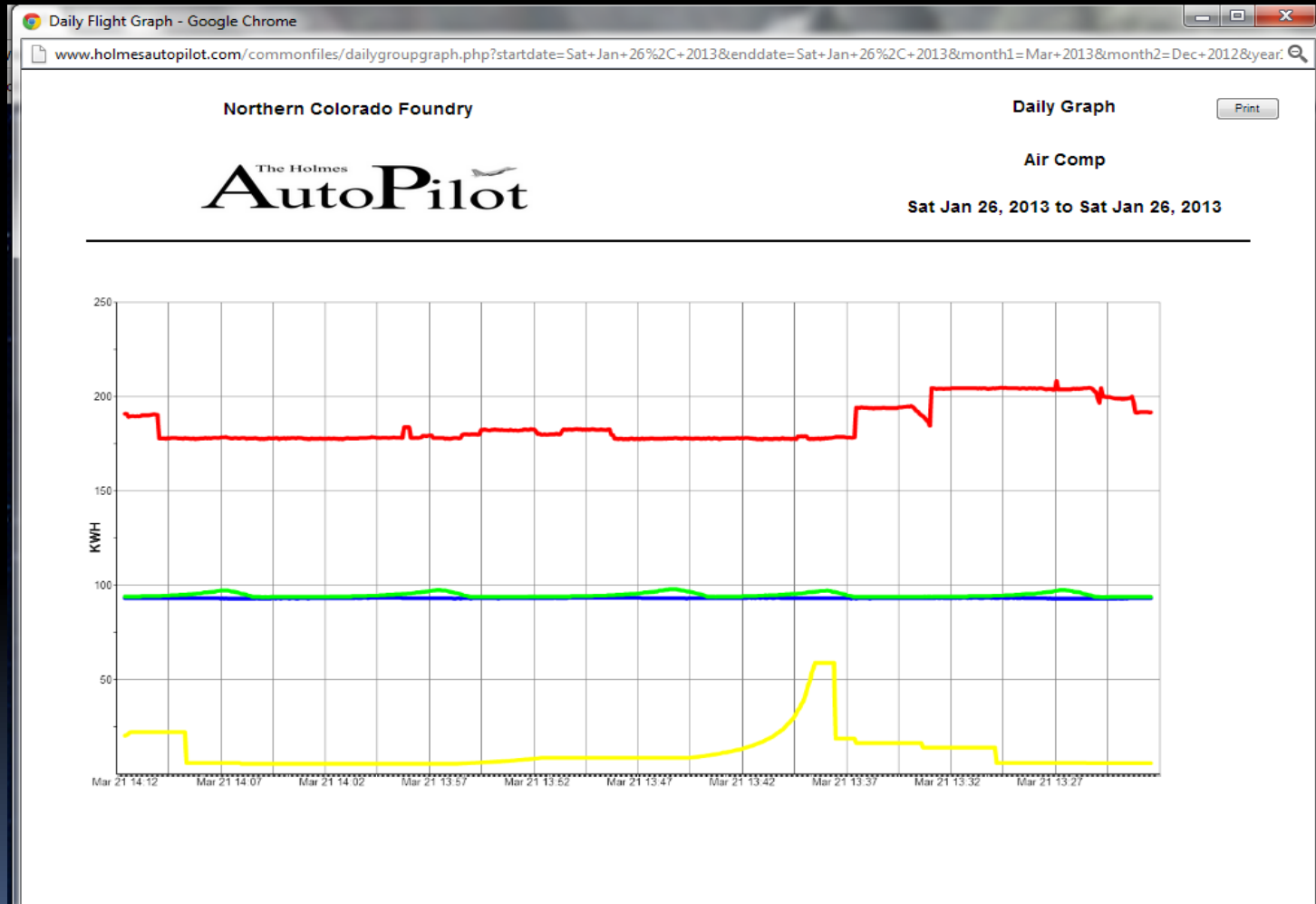


Install Monitoring Sensors

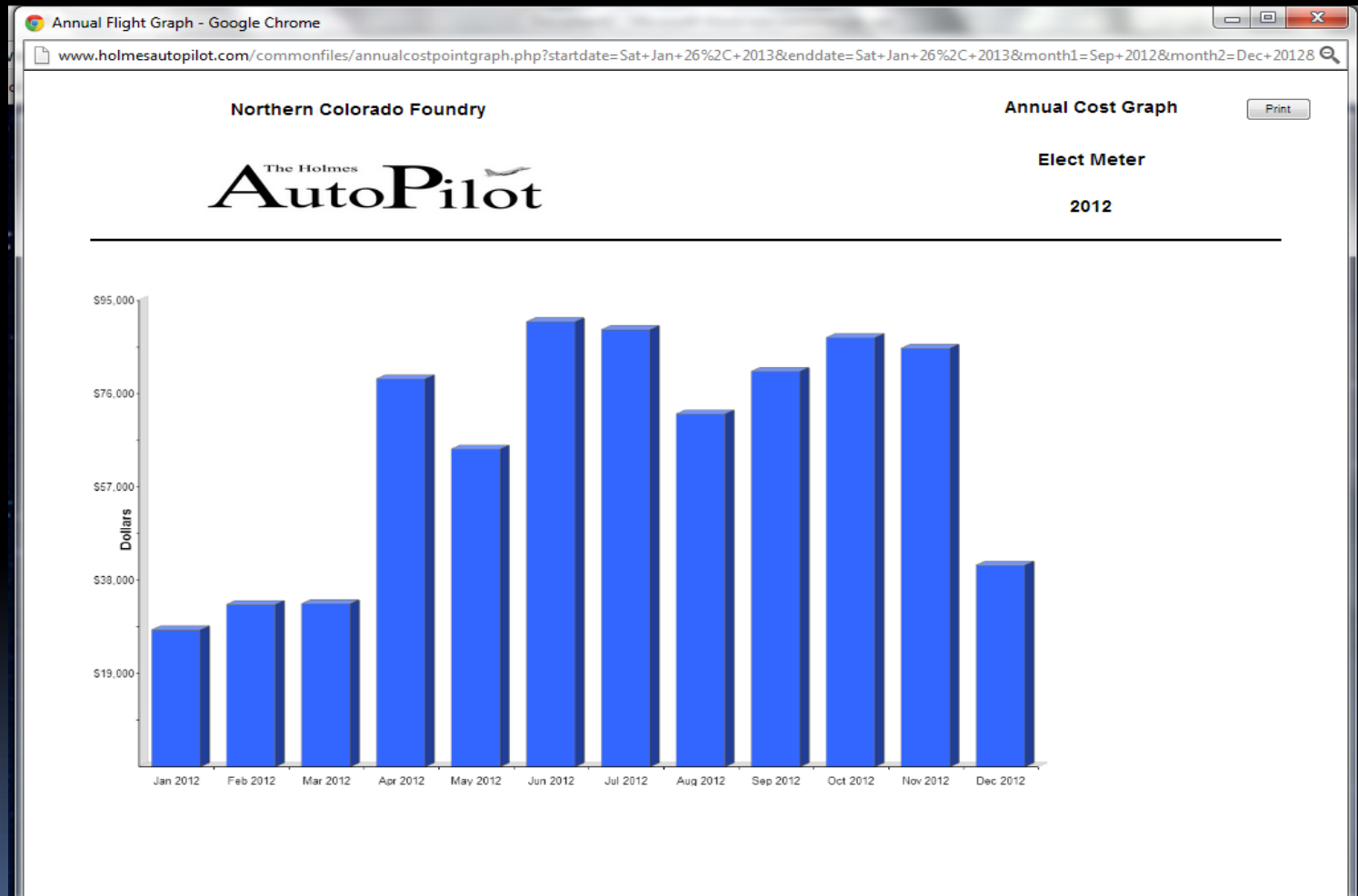


Provide both
Real-Time and Historical
Reports & Graphs

15 Minute Air Compressor KWH



Monthly Electric Costs



**Generate reports showing
when and where
every utility dollar is
spent within your facility**

For each area,
department, system,
product and process

**Extend your financial
management system to
include utility costs**

**The monitored data
will provide an accurate,
continuous, unbiased**

Energy Audit

The monitored data
will verify that
energy systems are
working properly

The monitored data
will verify that
energy systems are
running efficiently

The monitored data
will help to accurately
predict savings from
possible energy projects

The monitored data
will help to
verify savings from
actual energy projects

In Summary

Energy Costs Need

to be Managed

Like All Other Costs

**Solutions need to be based
on actual data, not
just audits, spot checks
and estimates**

**Good management needs
to take priority over
buying new equipment**

Automotive Components Plant

- Moved Production Line to 3rd Shift - Cut Peak Demand 500 KW
- Shut down unused equipment - Saved 100,000 KWH per month
- Identified as No. 1 opportunity for cost reduction corporation-wide

Cement Plant

- Reduced Peak Demand 2,250 KW through scheduling changes
- Shut down unused equipment - Saved 200,000 KWH per month
- Avoided catastrophic failure of 3,000 Hp motor – saved \$100,000

- Meat Packing Plant Found 400 ton false load in refrigeration system – avoided new compressors and transformers
- Hospital - Found cooling tower piped wrong – avoided new 1,000 ton tower

"Intelligent management must be based on exact knowledge of facts. Guesswork will not do." - James J. Hill,

Questions?