

THE CASE FOR

PERMANENT ENERGY MONITORING

by Bill Holmes, P.E.

**In 1979 I founded a
business to manage energy
systems for building owners**

**built my first
monitoring system
in my living room
from an Apple II**



Installed it *at my expense*

in my first project,

a Mental Health Hospital

and used the
resulting data
to cut the
energy costs
59%



Through good management
of existing energy
systems *aLone*

**No new equipment or
capital projects
were required**

**I have done the same thing
in every project since**

And created energy savings
of 20%, 30% and more by
tuning up existing systems
in existing buildings

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

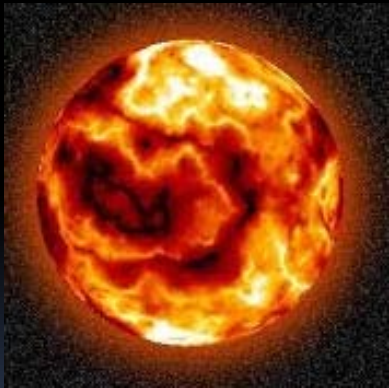
Client	Annual Savings	Payback
General Electric	\$250,000	3 months
Golden Castings	\$300,000	3 months
Kosmos Cement	\$250,000	6 months
Ice Arena*	67%	immediate
School District	35%	immediate
Mental Health Hospital	59%	immediate
* DOE Award		

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**

There are Two Different Worlds



The World Of Theory

Preparing To Save Energy

Audits

Studies

Benchmarking

Designs

Capital Projects



Believing things work as designed

And The Real World

Actually Saving Energy

**Operation
Control
Maintenance
Management**



Making things work every day

I've Lived In Both Worlds



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

I found the opposite

Technology is

only a tool;

People are the key



**“I believe the best programs occur when
the people side is attacked first ..”**

Wayne Turner, PE, PhD, CEM – Editor

Journal Of Energy Engineering Summer 2011

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

Energy management is an
ongoing process not
a one-time project

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
to save energy?
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?**

**Where can you get the
information you need?**

**Some utility companies
may be able to
provide limited data.**

**There are more and more
companies offering
monitoring hardware and
software all of the time**

**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

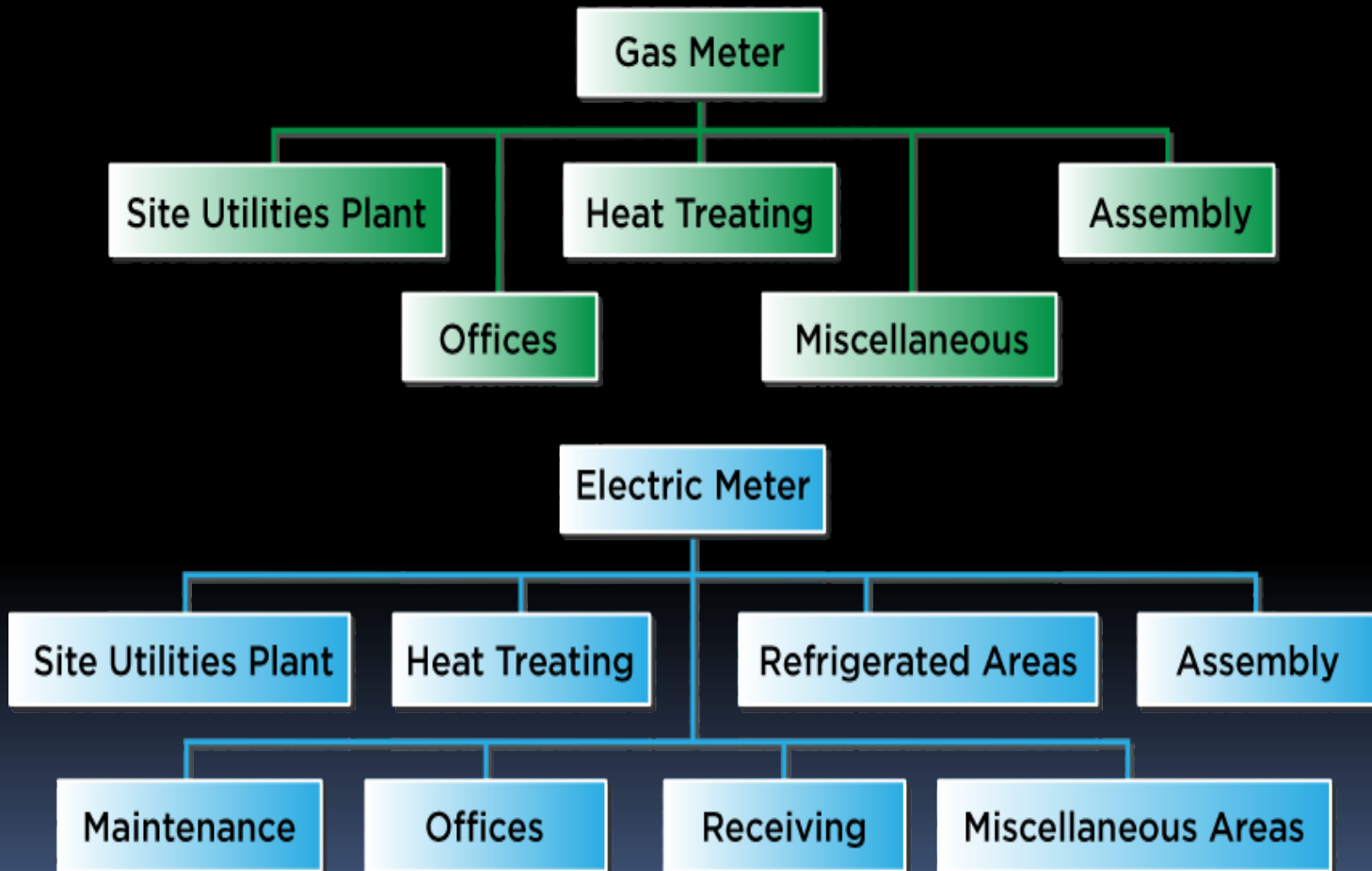
Utility Meters may include

Electric, Gas, Water

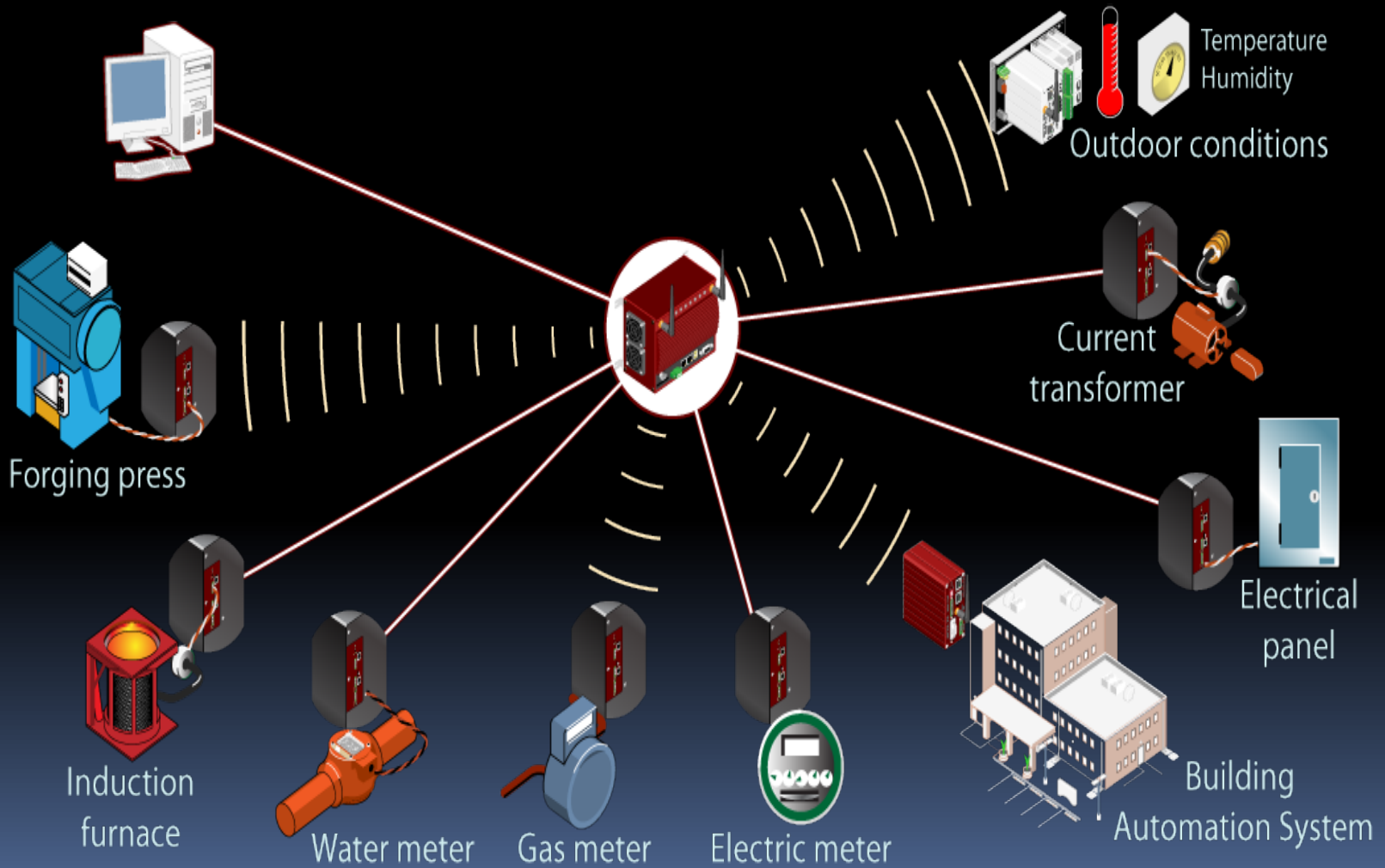
Steam, Chilled Water & more

**Then large systems such
as Refrigeration, Boilers,
Chillers & Air Compressors**

Select Points from Top Down



Install Monitoring Sensors



Monitor significant systems

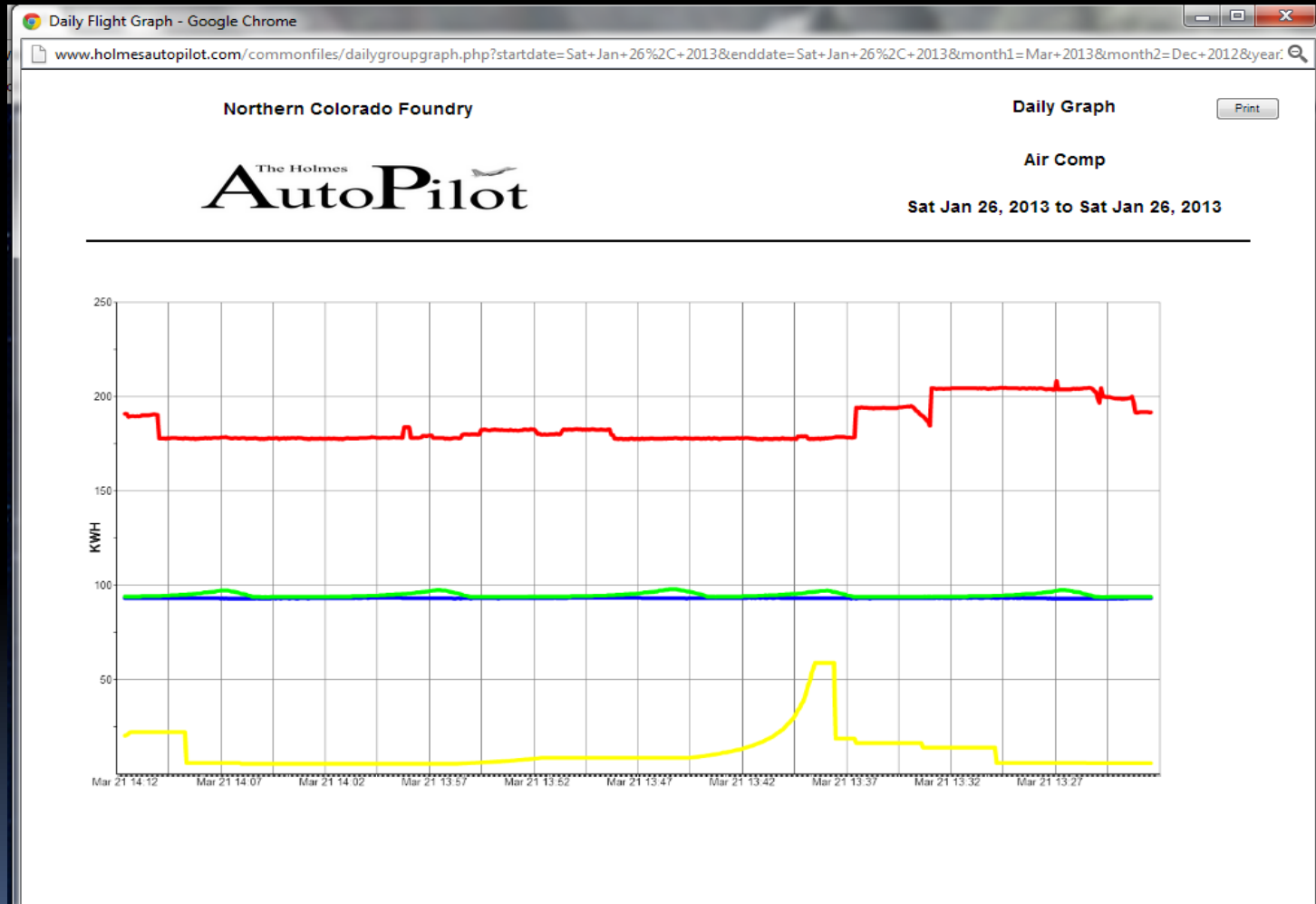
from largest to smallest

Minimize hardware by using

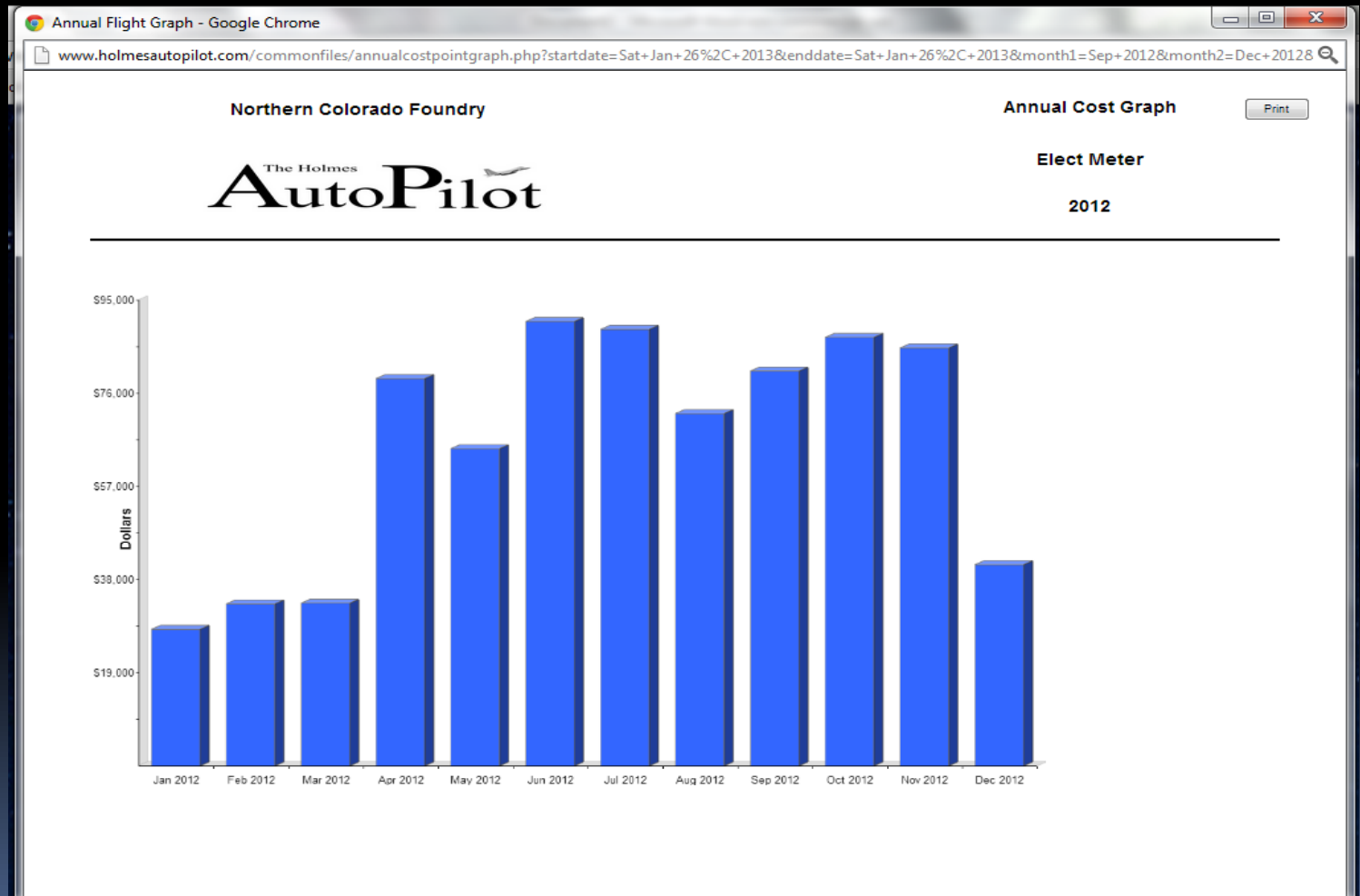
Software with Analytics

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 the total facility
and each utility meter**

**For each area,
department, system,
product and process**

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

**Assign costs to
individuals or departments.**

**Include energy costs in unit
costs, goals & bonuses.**

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

Energy Audit

**The monitored data
will provide a Continuous
Commissioning System**

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

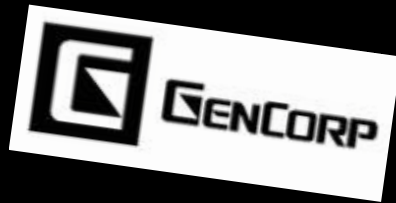
**Solutions need to be based
on actual data, not
just audits, spot checks
and estimates**

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

**“Energy monitoring and targeting is
a management approach that enables
firms to manage energy as a
controllable resource the same way
they manage finance and people”**

C. Lewis Wilson, P.E., HPAC Jan 1983

Successful Industrial Projects



Bill Holmes

www.holmesenergypartners.com

©copyright 2013 by Holmes Energy LLC

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

Questions?