Watt You Don’t See

Is Costing You

The First Step to Efficiency — Real Time Energy Monitoring

TerraViva ENERGY


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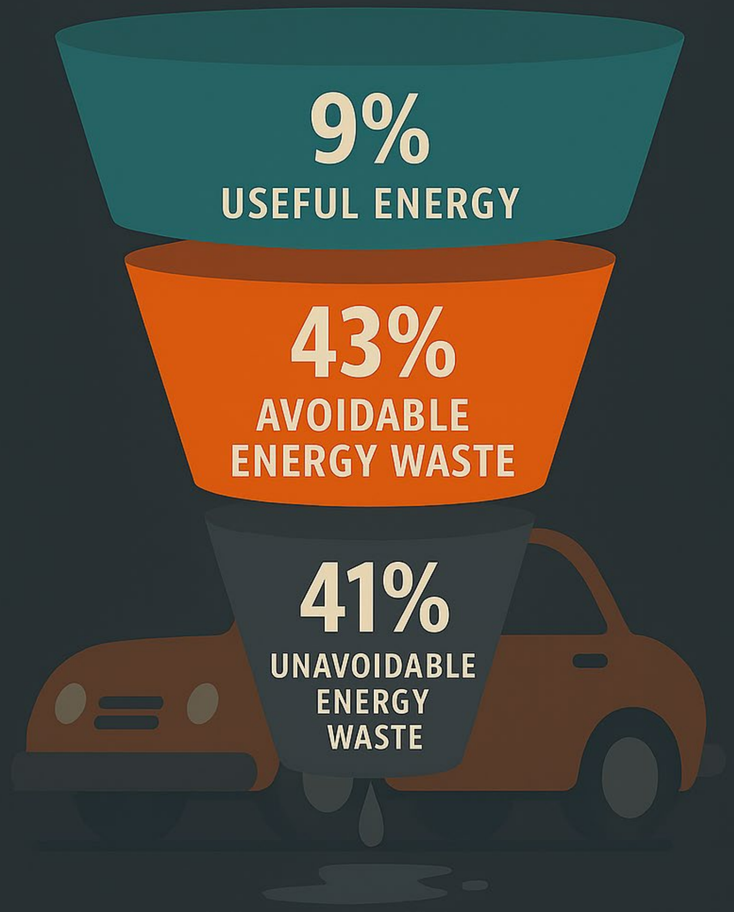
ENERGY INPUTS VS OUTPUTS



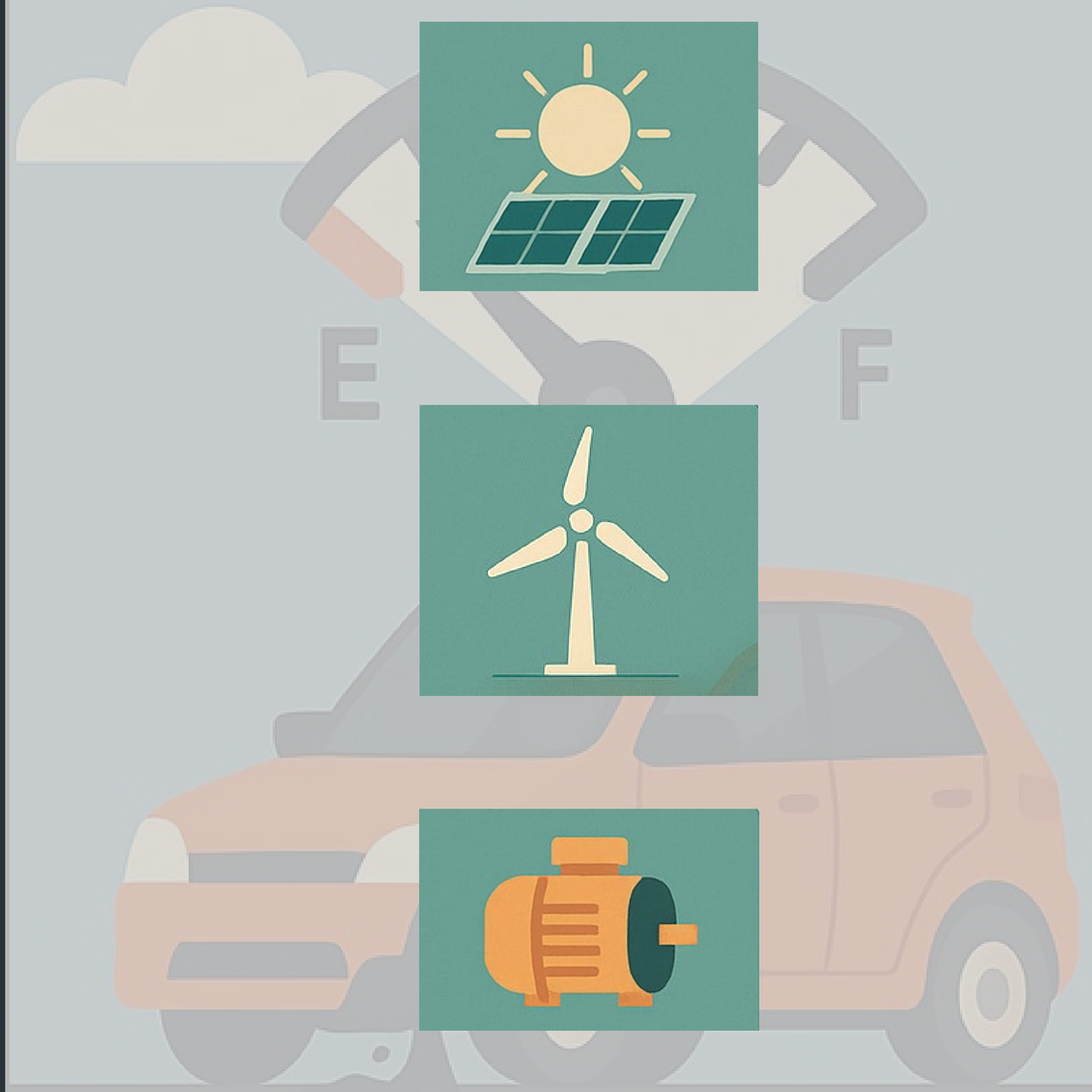
BOMA International – Building Energy Efficiency Program (BEEP); 10.5-43.2 % avoidable energy use from O&M + behavior changes (cited in Smart Energy Decisions, “The Blind Spot in Efficiency Management,” May 31 2019).

Companies lose up to 43% of energy to avoidable waste.

How does your building compare? Do you know what are you wasting?

Out of Gas…..

You need a bigger tank!



WHEN THE ‘BIGGER TANK’ DISAPPOINTS

Solar: soiling, string mismatch & inverter faults

- kWh Analytics, Solar Generation Index 2022

Wind: yaw mis-align, wake loss

- Fitch Ratings portfolio review (quoted in Pivotal180, "The State of P50 Forecasting," 2023)

Retrofits: bypassed VFDs, idle hours

- ABB Press Release, 22 Nov 2023

A bigger "tank" pours into the same leak!

Even your renewable investments depend on efficiency

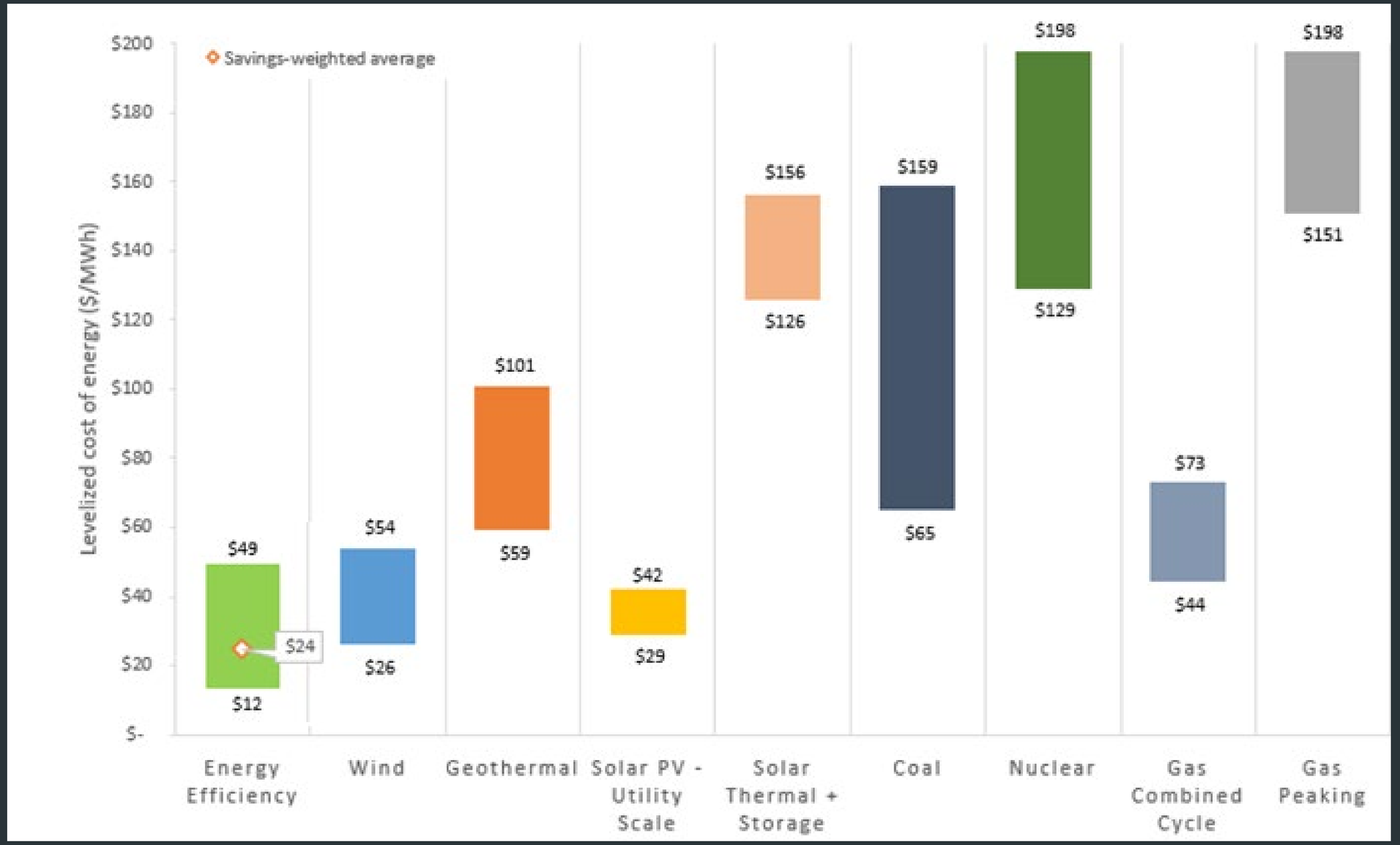
“Energy efficiency is the first fuel– the only fuel that grows when you measure it.”

– Dr. Fatih Birol, Executive Director, International Energy Agency

40% of the CO_2 cuts in the IEA Net-Zero pathway come solely from efficienc

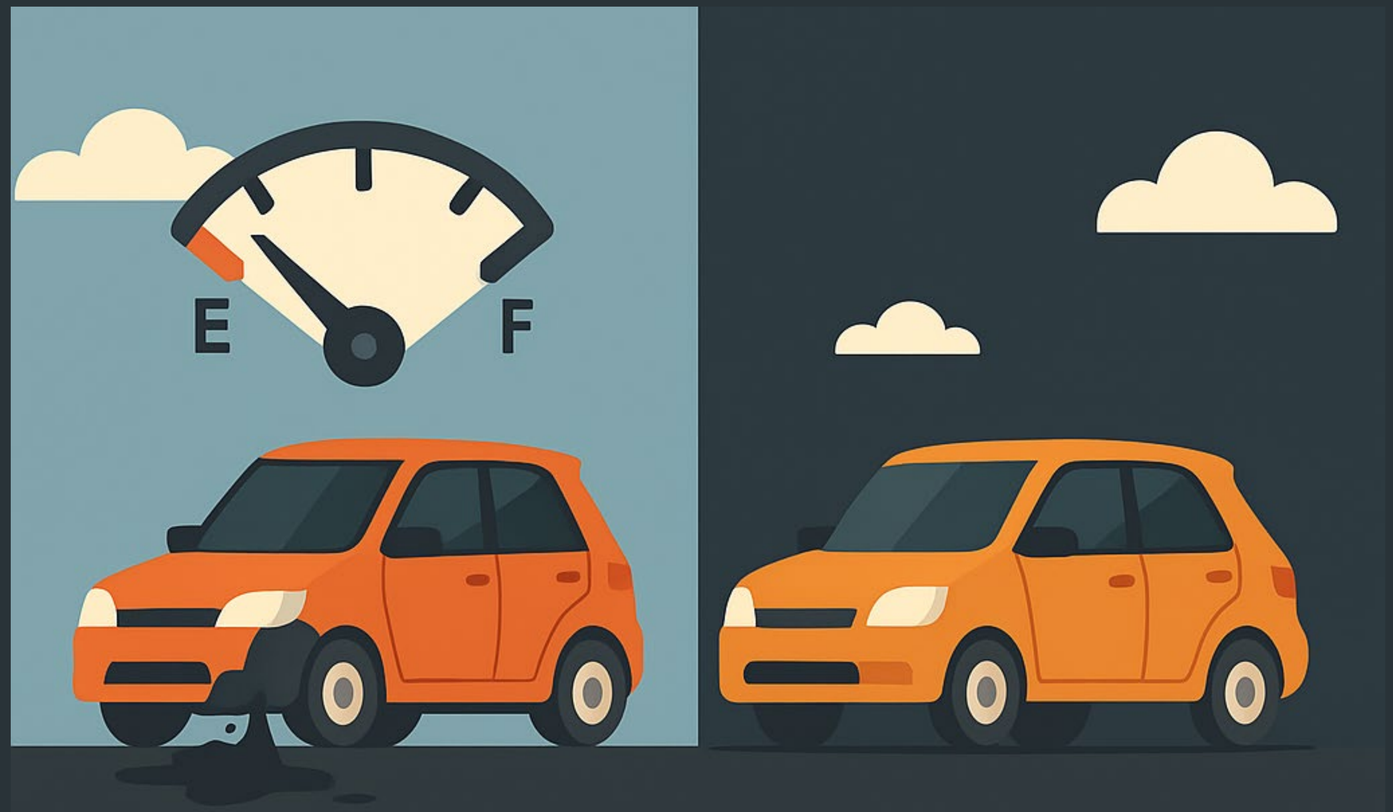
Average cost to *save* a kWh: < $.03

Average cost to *generate* a new renewable kWh: $.04 - .06(Lazard LCOE 2024)



…typically the lowest-cost system resource compared to supply-side investments. Saving energy via customer energy efficiency programs generally can be achieved at ***one-third to one-fourth*** *the cost of fossil-fuel based supply-side alternatives.*

Every watt we rescue from the funnel is a watt we don’t have to buy, burn, or finance. That is Birol’s ‘first fuel’.



Why Produce More When You're Wasting What You Have

Energy Efficiency is not about going without. Its about using the energy we already pay for, smarter.

- **See the leaks**
- **Fix the schedule**
- **Keep it comfortable**

SIEMENS

Ingenuity for life

"An effective monitoring system is typically the most important element of any energy management program and will deliver the fastest payback"

Siemens Report
Top 10 Energy Saving Options

Energy Saving Technology to Deliver the Fastest Returns

1	**Monitoring & Targeting**	**(1-3 months)**
2	Low Energy Lamps	(1-12 months)
3	Variable Speed Drives	(3-12 months)
4	High Efficiency Motors	(3-12 months)
5	Building Controls	(3 months - 4 years)
6	Intelligent Lighting Solutions	(1-4 years)
7	Increased Factory or Process Controls	(1-4 years)
8	Power Management Solutions	(1-4 years)
9	Supply Voltage Optimisation	(2-5 years)
10	Combined Heat & Power	(2-7 years)

Eyes on Every Kilowatt

Why SCADA Misses Them

Reads mains every 15 mins - aux lines fade into noise

Alarms roll up to a single “kWh” tag; no one knows which asset spiked.

NO asset IDs, no timestamps, no clear indicators “something went up”

Monitoring Catches

Compressed Air: 3 mm leak at 100 psi - $3000/yr lost

Steam Trap: failed open - $6000+/yr per trap

Pump Wear: 10% draw creep flags seal failure weeks early

SCADA shows the process. Monitoring reveals the hidden current and the hidden cost.

- 🕹️ Control vs Accountability
- 🚧 Stops at the PLC
- ⏱️ Second-by-Second Sampling
- 🔌 Plug-and-Play Insights
- 👀 ROI Hides in the Gaps

HARDWARE

Wireless IoT Monitoring & Control Hardware

SOFTWARE

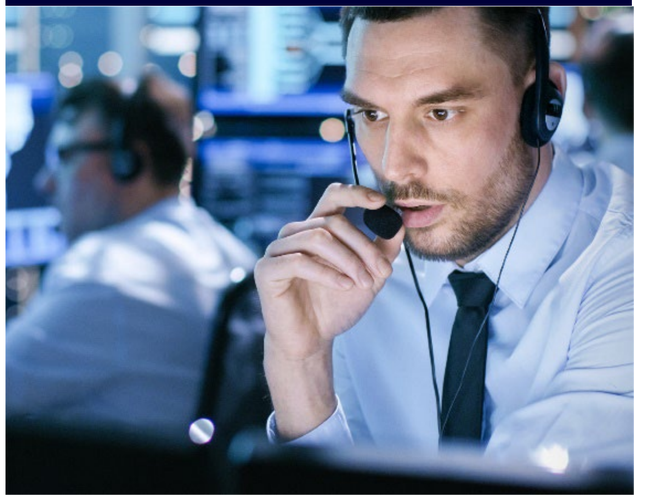
Capterra

★★★★★

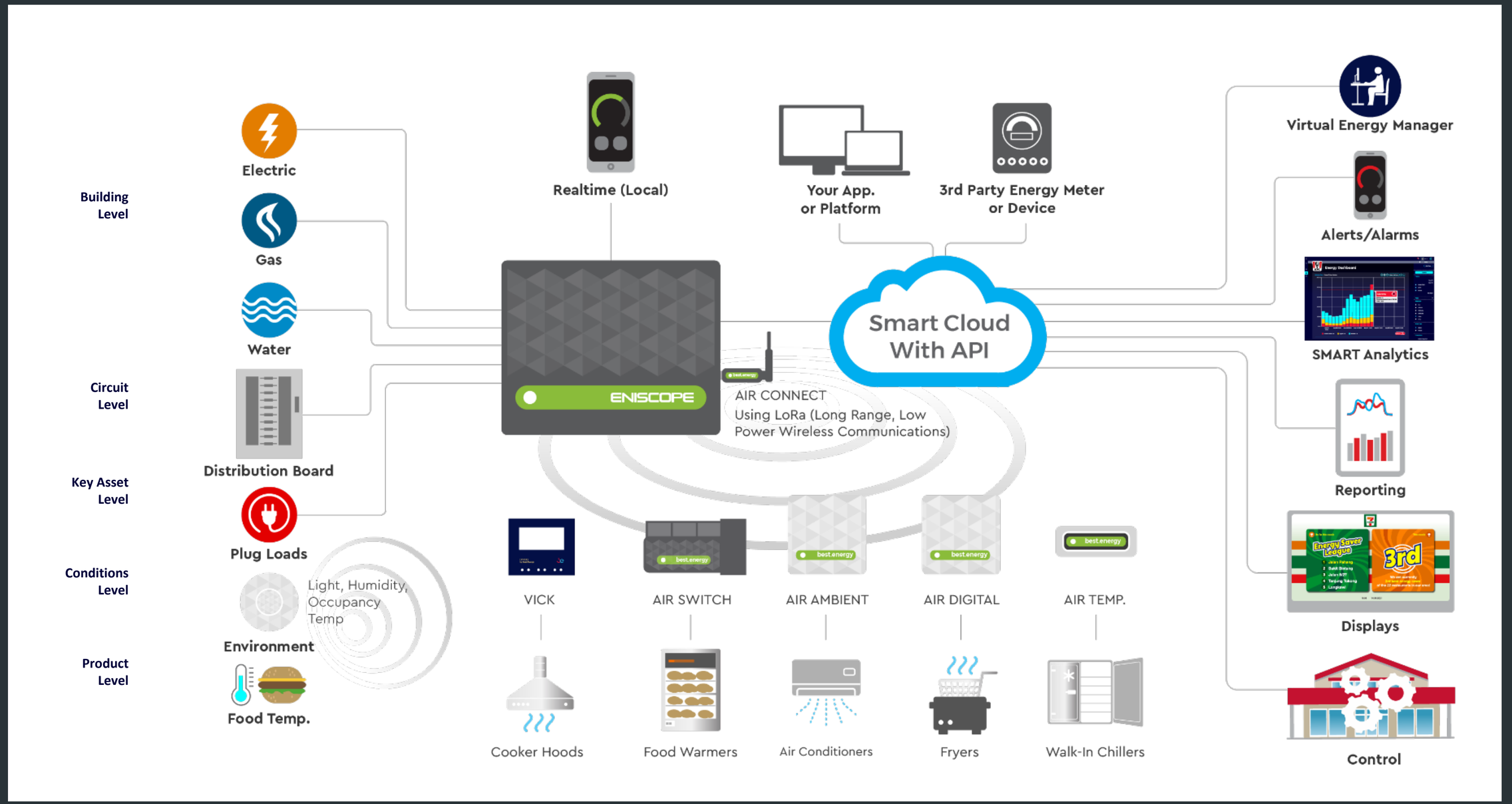
5 STAR USER REVIEWS

5-Star Cloud-based Software & Apps

SERVICE

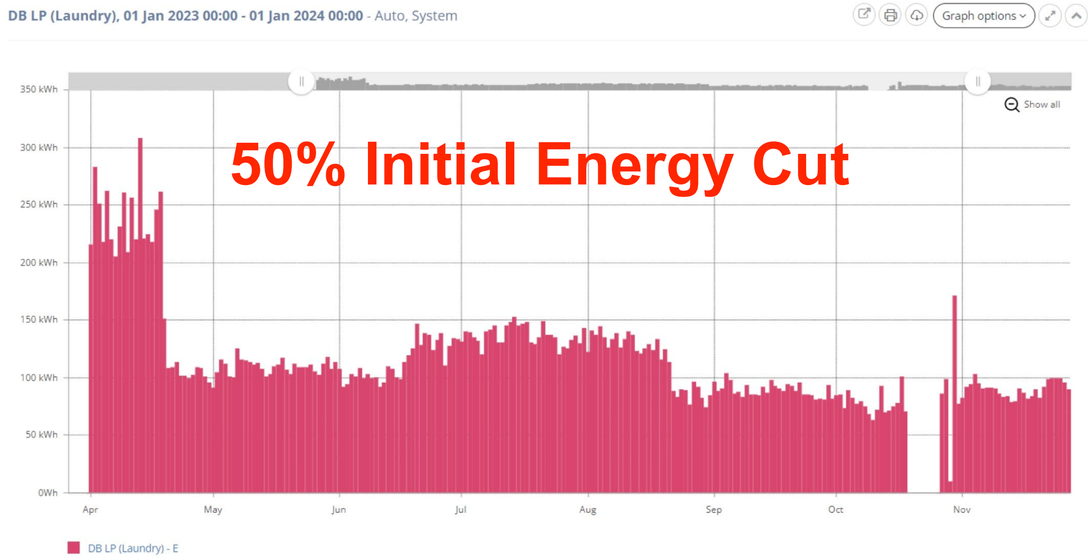


24/7 Virtual Energy Management Team


Building Level
Circuit Level
Key Asset Level
Conditions Level
Product Level
Electric
Gas
Water
Distribution Board
Plug Loads
Light, Humidity, Occupancy Temp
Environment
Food Temp.
Realtime (Local)
Your App. or Platform
3rd Party Energy Meter or Device
ENISCOPE
AIR CONNECT
Using LoRa (Long Range, Low Power Wireless Communications)
Smart Cloud With API
VICK
AIR SWITCH
AIR AMBIENT
AIR DIGITAL
AIR TEMP.
Cooker Hoods
Food Warmers
Air Conditioners
Fryers
Walk-In Chillers
Virtual Energy Manager
Alerts/Alarms
SMART Analytics
Reporting
Displays
Control

Hidden current = Hidden cost

Laundry – Sankara



50% Initial Energy Cut

- **Equipment left ON outside of hours**
- **Machines running at 10% capacity drawing full power**
- **Zombie circuits - live wires feeding de-commissioned gear, buried behind walls**

- **Whole panel monitoring captured the laundry pulse**
- **Modeled min/max load and compared to live trace**
- **Flagged off-hour & under-utilized loads instantly**
- **Implemented duty-cycle schedule with staff**
- **Continuous alerts caught creep when new assets appeared**

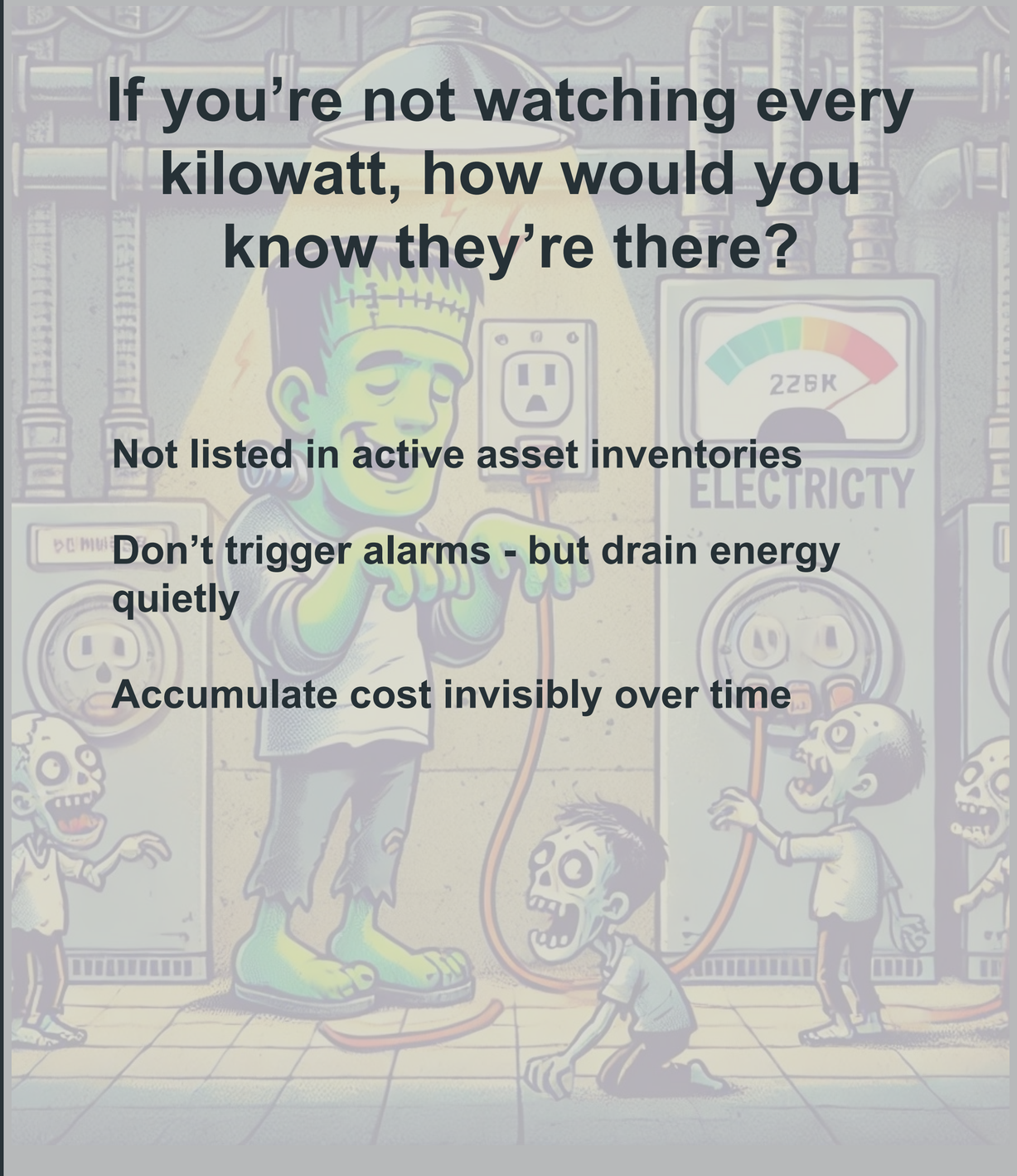
VISIBILITY → ACCOUNTABILITY → SUSTAINED SAVINGS

Hidden current = Hidden cost

Zombie loads are *power drains* that are *invisible* until you measure them.

- Lighting ballasts left energized after LED upgrades : $30 - $50/yr
- HVAC controls disconnected but still powered : up $120/yr
- Bypassed VFDs or decommissioned motors still wired
- Idle panels and junction boxes still live
- Empty server racks or switches drawing standby power : $150/yr

If you’re not watching every kilowatt, how would you know they’re there?

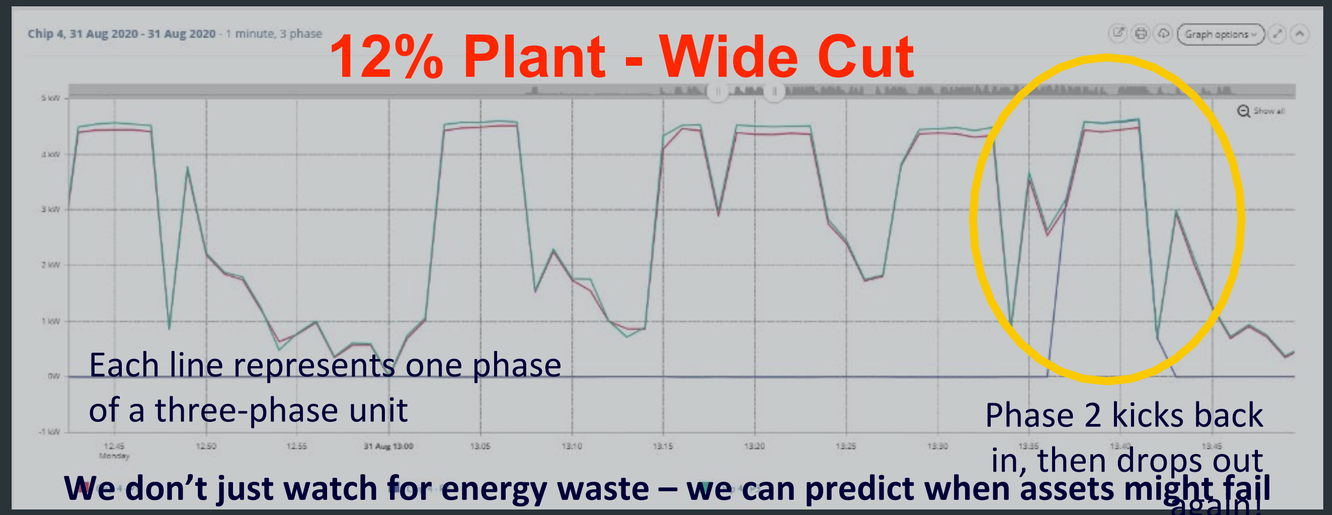


Not listed in active asset inventories

Don’t trigger alarms - but drain energy quietly

Accumulate cost invisibly over time

Hidden current = Hidden cost



We don't just watch for energy waste – we can predict when assets might fail signatures.

- **150+ Motors / No visibility**
- **Escalating Energy Bills**
- **1.2 M CAPEX under review**

- **Targeted monitoring based on layout survey**
- **Detected scheduling errors, phase imbalance & interconnect issues**
- **Prevented unnecessary CAPEX**
- **Real-time alerts enabled preventative maintenance**

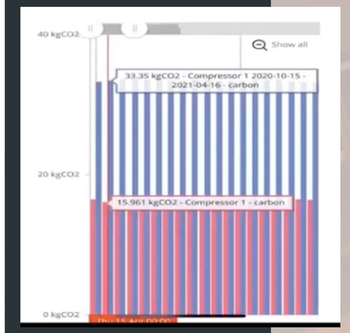
Hidden current = Hidden cost

- Hydraulic Drive Always Set to Full Power for every crush
- Max - amperage spikes with every cycle

- Real-time monitoring exposed unnecessary runtime
- Adjusted operation to match actual usage needs
- Maintained productivity while cutting waste

- $75k saved annually
- Equipment lifespan extended
- Payback in just 8 hours

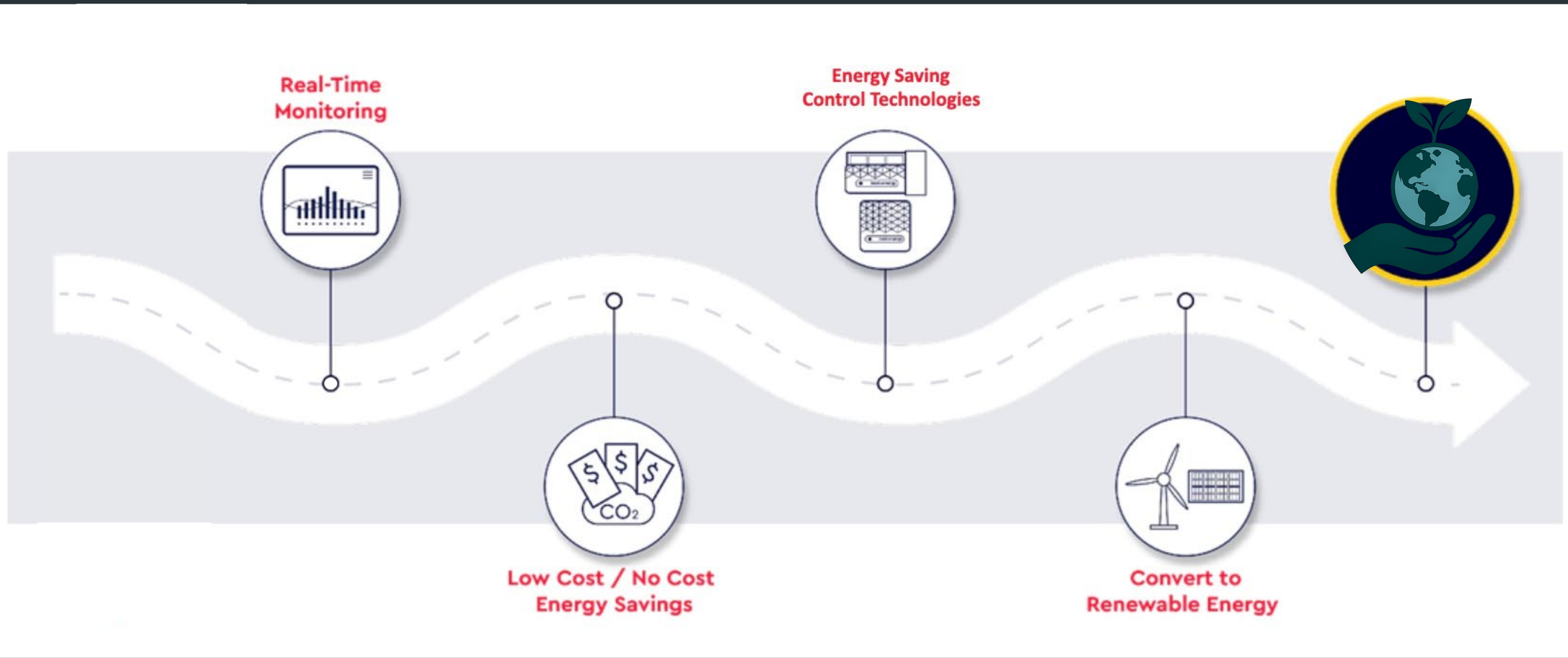
Hidden current = Hidden cost



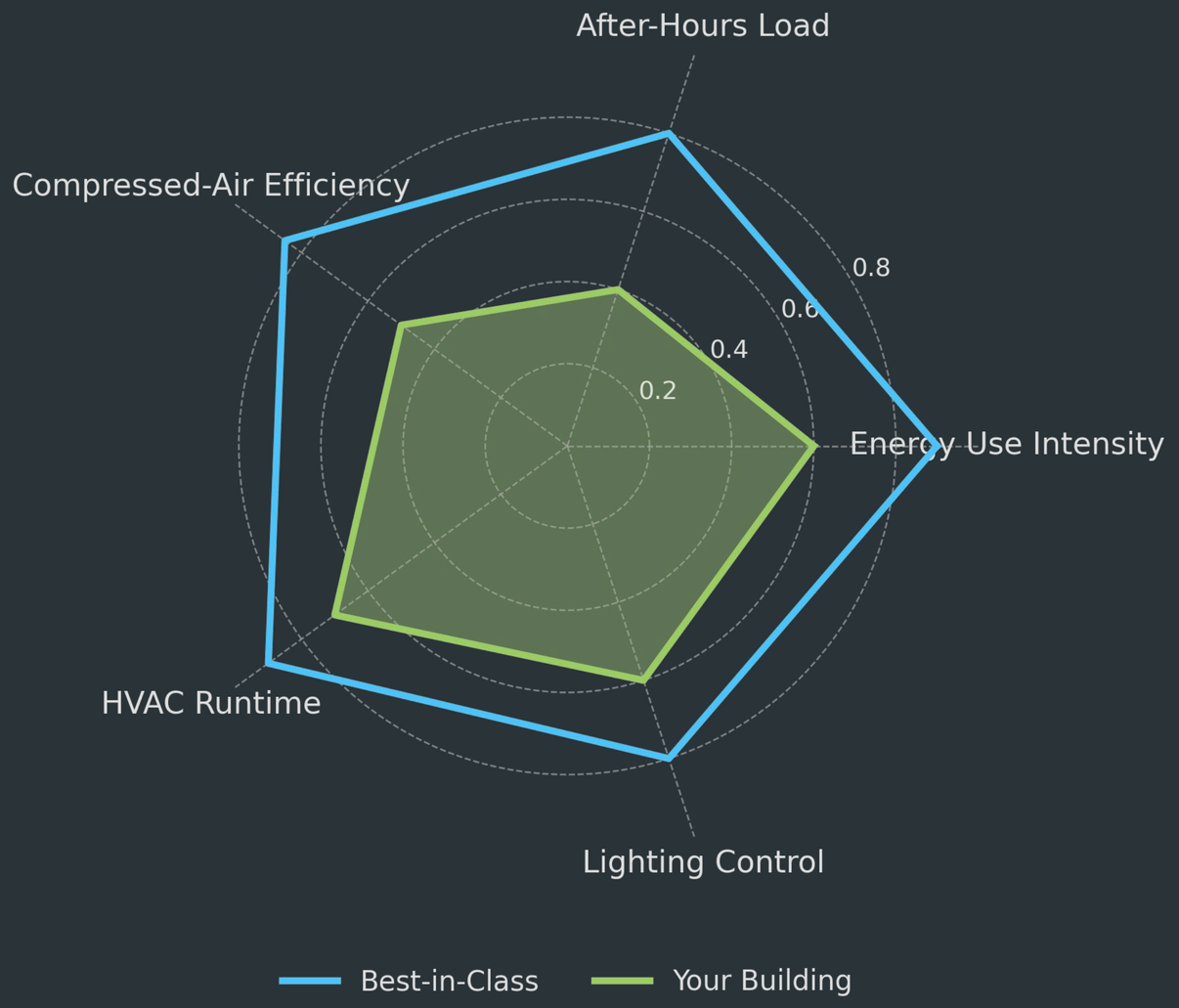
- 5 large air - compressors running near continuous
- No insight into actual demand profile
- Hidden air leaks inflating load
- kWh costs & CO_2 emissions climbing

- Panel - level monitoring on each compressor bank
- Live trace showed demand never topped 2 machines
- Leak - detection routine tagged loss points
- Three compressors shut down; duty cycle automated

- 42.5% compressor energy cut in 5 months
- $67k saved: ROI < 1yr
- 50% CO_2 drop
- Greenlit Phase 2: additional monitoring for motors, lighting and ovens


Real-Time Monitoring
Energy Saving Control Technologies
Low Cost / No Cost Energy Savings
Convert to Renewable Energy

Benchmarked against 5.7 billion data points collected daily in 70+ countries



Where do you stand today?

Desktop review of your bills & floor area vs peers.

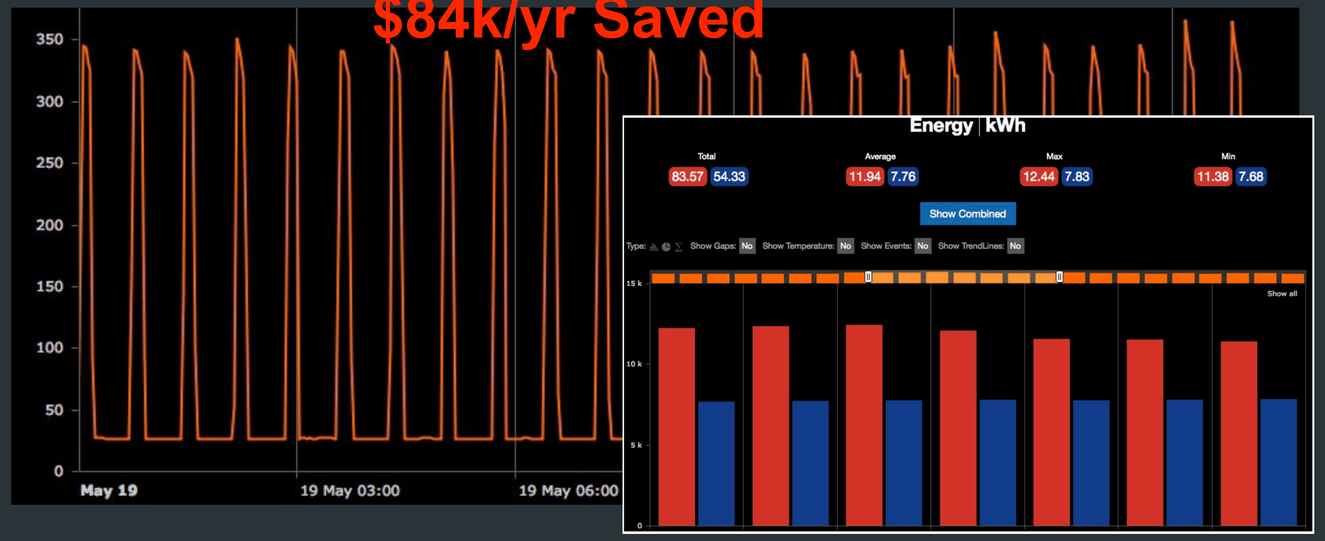
Estimated % waste and $ saving potential.

Personalized roadmap to the *first* 20% reduction.

TerraViva
ENERGY

Hidden current = Hidden cost

$84k/yr Saved

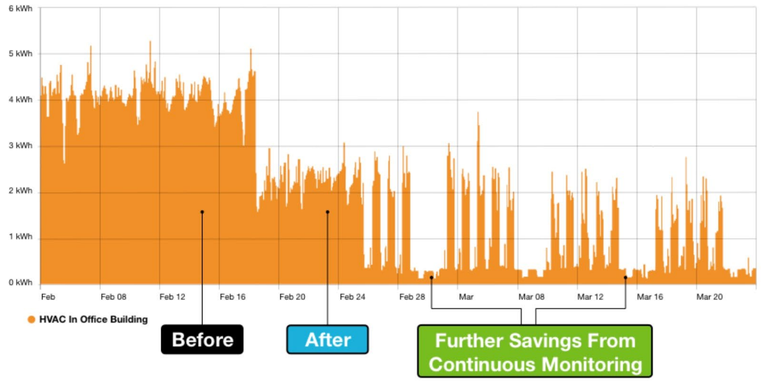


- Inefficient industrial refrigeration practices
- Doors left open up to 5 hours daily
- No insight into energy use
- Energy use not aligned with production behavior

- Identified refrigeration inefficiency as key energy drain
- Engaged every level of staff
- Proposed stack & shift method to minimize open door time
- Reduced door open time from 5 hours to 30 minutes
- **$7k saved monthly**
- **$84k saved annually**
- **36% energy reduction**
- **2-3 month payback**

Hidden current = Hidden cost

Case Study: HVAC in Office Building, 7-Month Payback



- HVAC running heavily outside of hours
- Demand not aligned with occupancy
- Load pattern changes detected later

- Adjusted set points + rescheduled runtime
- Matched HVAC operation to office hours
- Alerts to catch consumption creep

- 50% energy use reduction
- 7 - month payback achieved
- Further savings maintained long term