Energy Efficiency: a Win-Win
A Industrial Perspective

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Schneider Electric – the global specialist in energy management

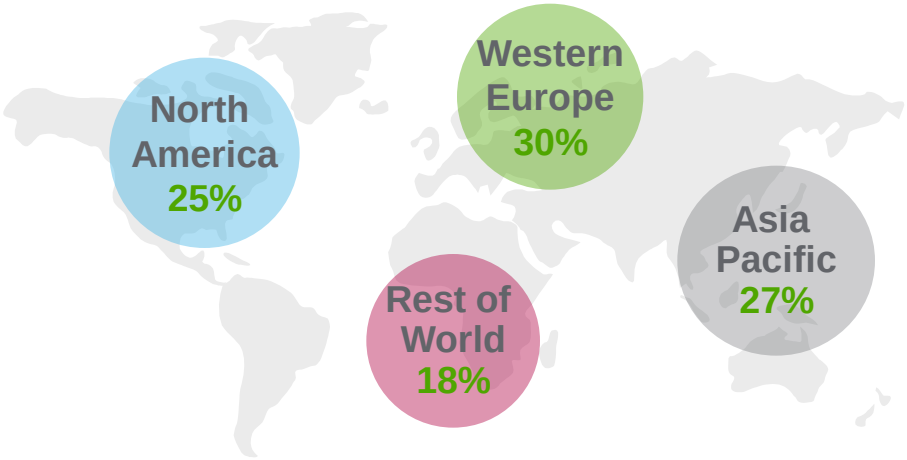
24
billion € sales in 2012

41%
of sales in new economies

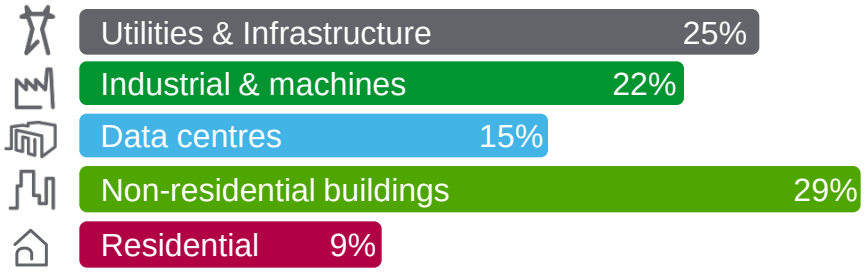
140 000
people in 100+ countries

4–5%
of sales devoted to R&D

Balanced geographies – FY 2012 sales

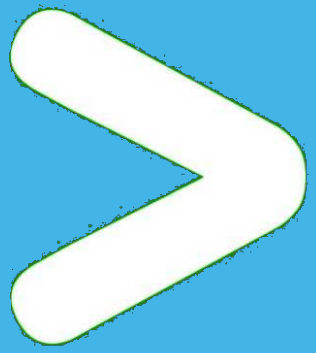


Diversified end markets – FY 2012 sales



The Opportunity

Optimizing Energy Use



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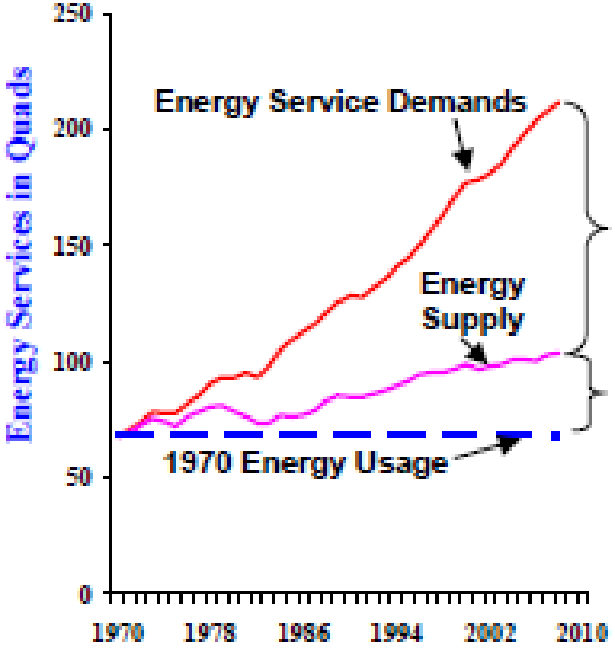
EE…. A new opportunity?

EE is not new….



- From 1970 to 2008 US EE gains met 75% of new energy demands
- New energy supply contributed only 25% demand

Source: Laitner 2008

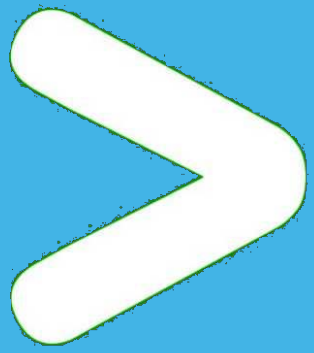
…. but it is underutilized

What is available in EE?

Studies by ACEEE and others suggest that the United States can **cost-effectively reduce energy consumption by 25-30%** or more over the course of the next 20-25 years.

The Possibility

Schneider Electric Facilities



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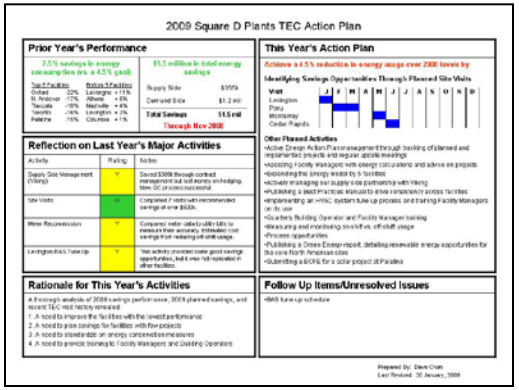
Program Set a Corporate Goal of 4% Energy Reduction per Year

- Started with 18 US sites in 2005 expanded to 51 sites in 2009

- Energy Action Plan at each Facility.


2009 Square D Plants TEC Action Plan

Prior Year's Performance

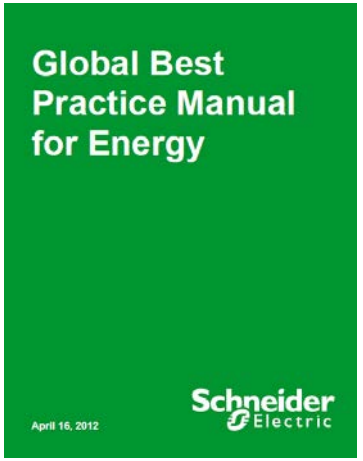
This Year's Action Plan

Reflection on Last Year's Major Activities

Rationale for This Year's Activities

Follow Up Items/Unresolved Issues

- A Standard Practice Manual published



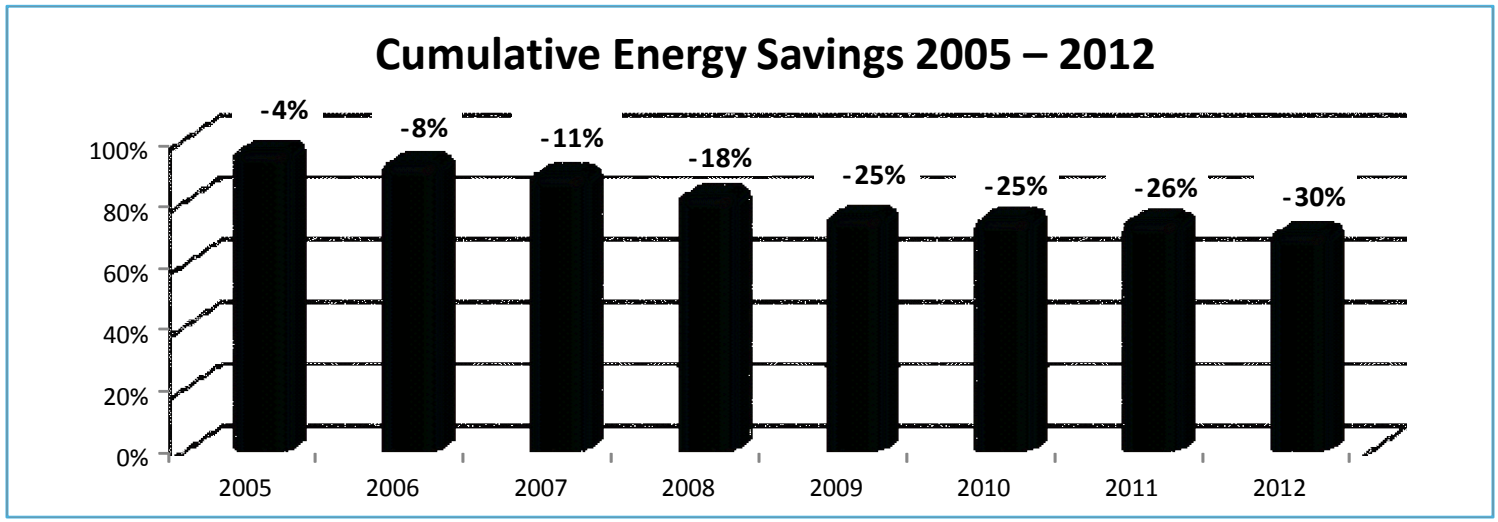
- Joined DOE Better Plants Initiative in 2009

Better Plants
U.S. DEPARTMENT OF ENERGY

- Quarterly Reviews and Annual Assessments

- Adopted as global guide to energy management in2010

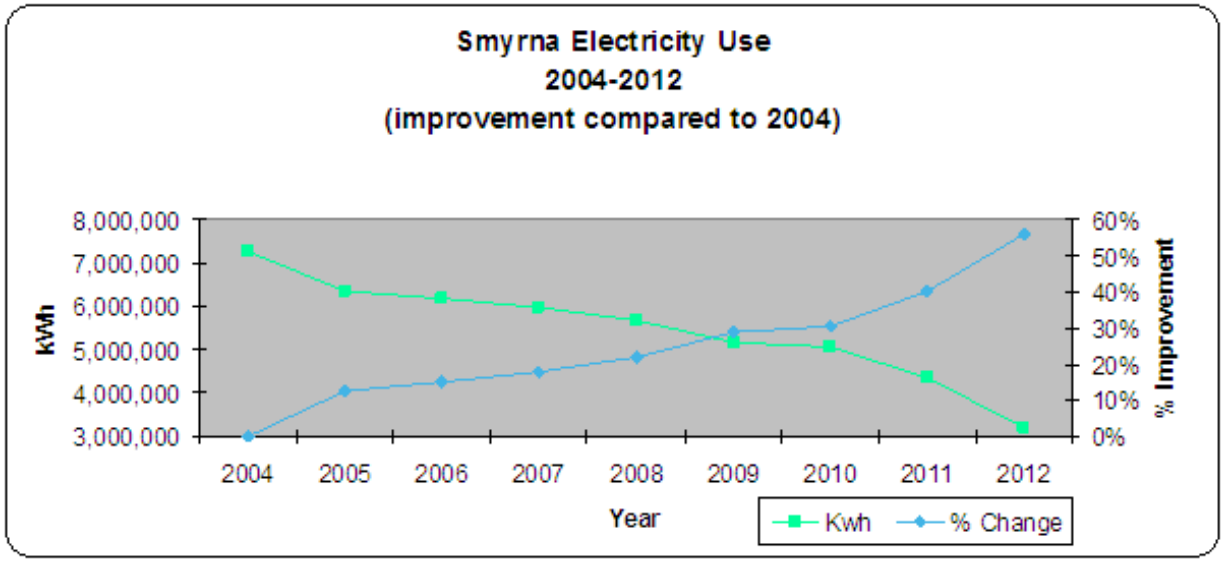
Reduction in Energy Consumption

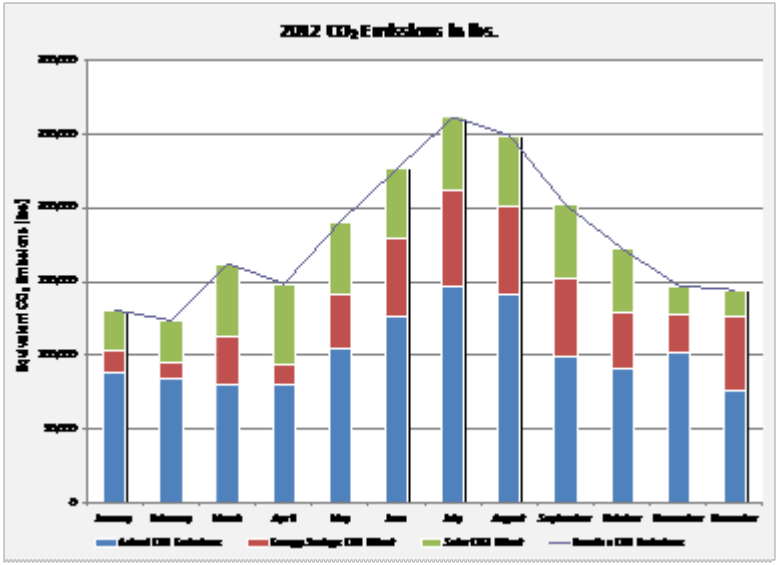


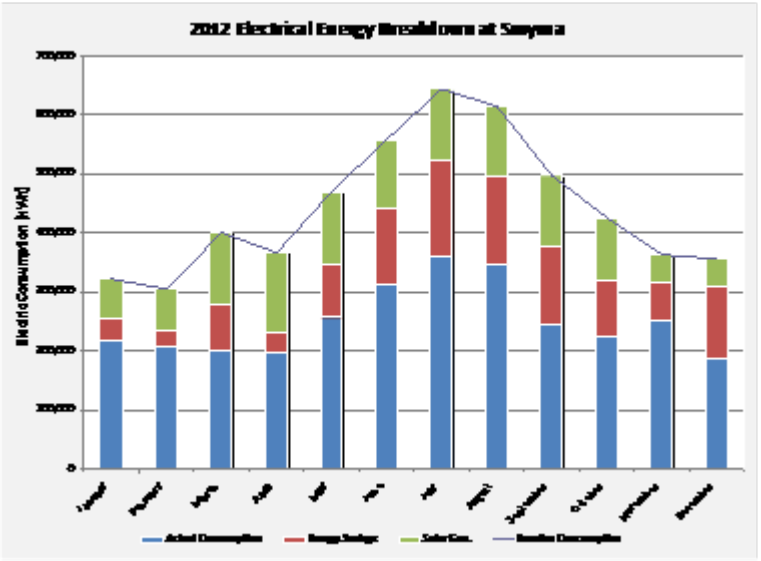
- Equivalent cost savings of more than $30 million
- More than 500 million kWh of energy (combined) saved through 2012
- Over 30% reduction in greenhouse gas emissions since 2004 - over 260,000 tons of CO2 equivalent avoided

	Electric	Gas	Supply	Total
'12 vs. '11 Actual	-12%	-20%		
'12 vs. '11 Mnf. Index	8%	16%		
'12 vs. '11 HDD	-30%	-32%		
'12 vs. '11 CDD	5%	3%		
'12 vs. '11 Baseline	-7%	-7%		-7%
Savings YTD	**$1,176,626**	**$148,837**	**$1,208,154**	**$2,533,617**

Smyrna TN Results







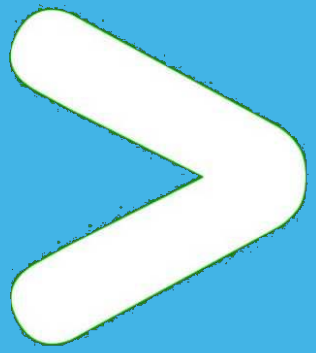
What Were Our Key Projects?

- Building Management System
  - Single most important factor over the lifecycle
- Lighting Projects
  - T12 to T8 to T5 to now moving to LED where possible
  - Included emergency lights (small but constant use)
- Energy Efficiency Compressors
- Variable Speed Drives
  - Cooling tower pumps, process water pumps
  - Fans
- Occupancy Sensors in offices
- Compressed Air Leak Detection
- Power Factor Correction

Project Name	Cost Savings	Required Budget	Simple Payback
Connect Present Economizers to Continuum and Install Economizers on the Remaining AHUs	$ 16,400	$ 40,000	2.4
Chilled Water Temperature Reset	$ 13,120	$ 100	0.0
Repair Compressed Air Leaks	$ 4,300	$ 1,700	0.4
Install Cogged-V Belts	$ 3,500	$ 360	0.1
Connect Forklift Charging to PowerLink	$ 3,300	$ 1,500	0.5
Control Operation of Task Lights	$ 2,200	$ 3,360	1.5
Install Vending Misers	$ 500	$ 600	1.2
Remove Unwanted Fixtures on the Top of AHUs	$ 380	$ 1,000	2.6
Totals	***$ 43,700***	***$ 48,620***	***1.1***

Opportunities

Typical EE Solutions



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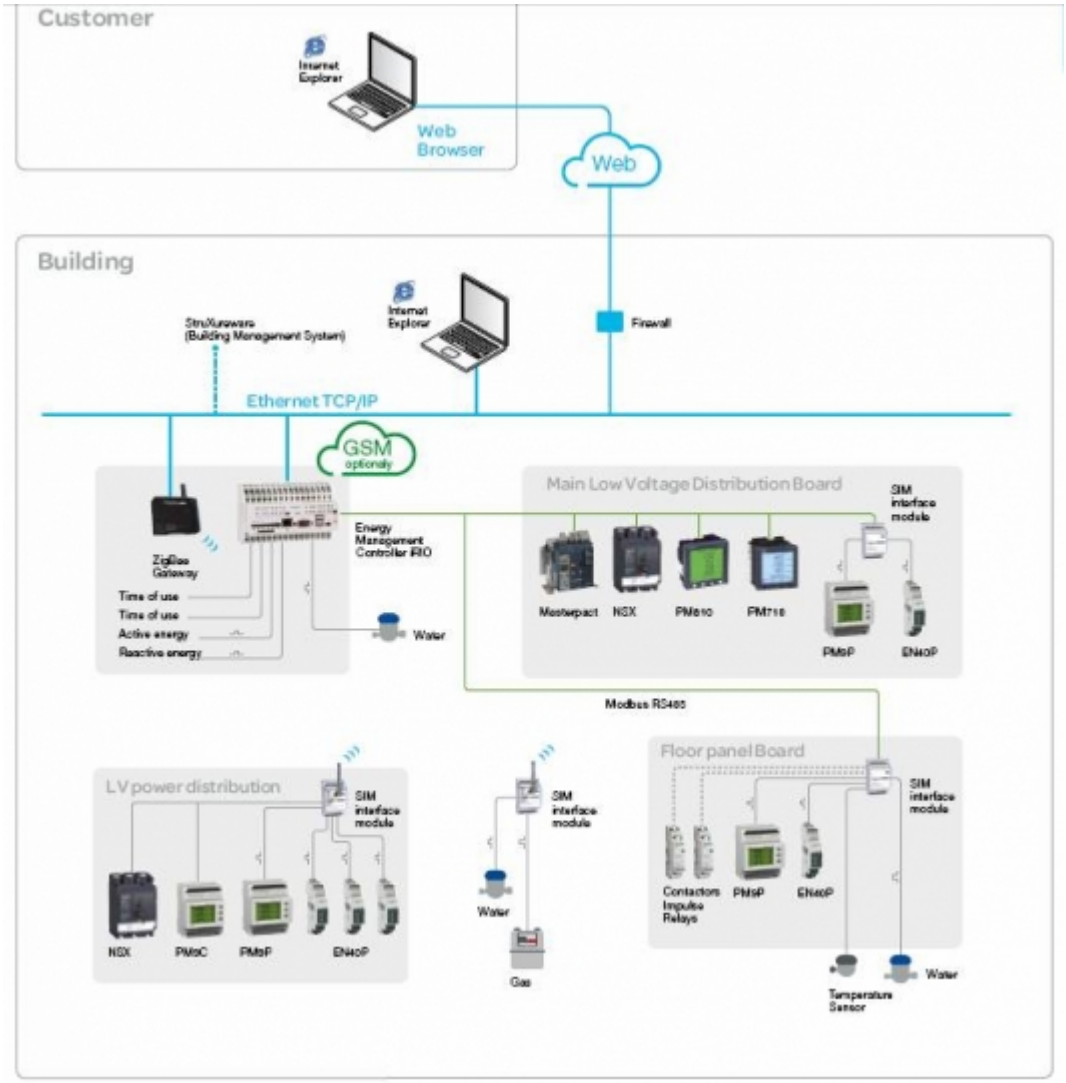
Small Building Energy Management

Energy Management Solution for small/medium buildings

- Monitoring & control solutions reduce consumption
- Energy reporting data supports compliance and certification requirements.
- improves electrical installation operation and maintenance, hence reducing OPEX.
- helps increase property value, maximize asset value and ease selling/renting.

Value Proposition

- Up to 20% energy savings thanks to a dedicated control



Chiller compressor control optimization

Solution in brief

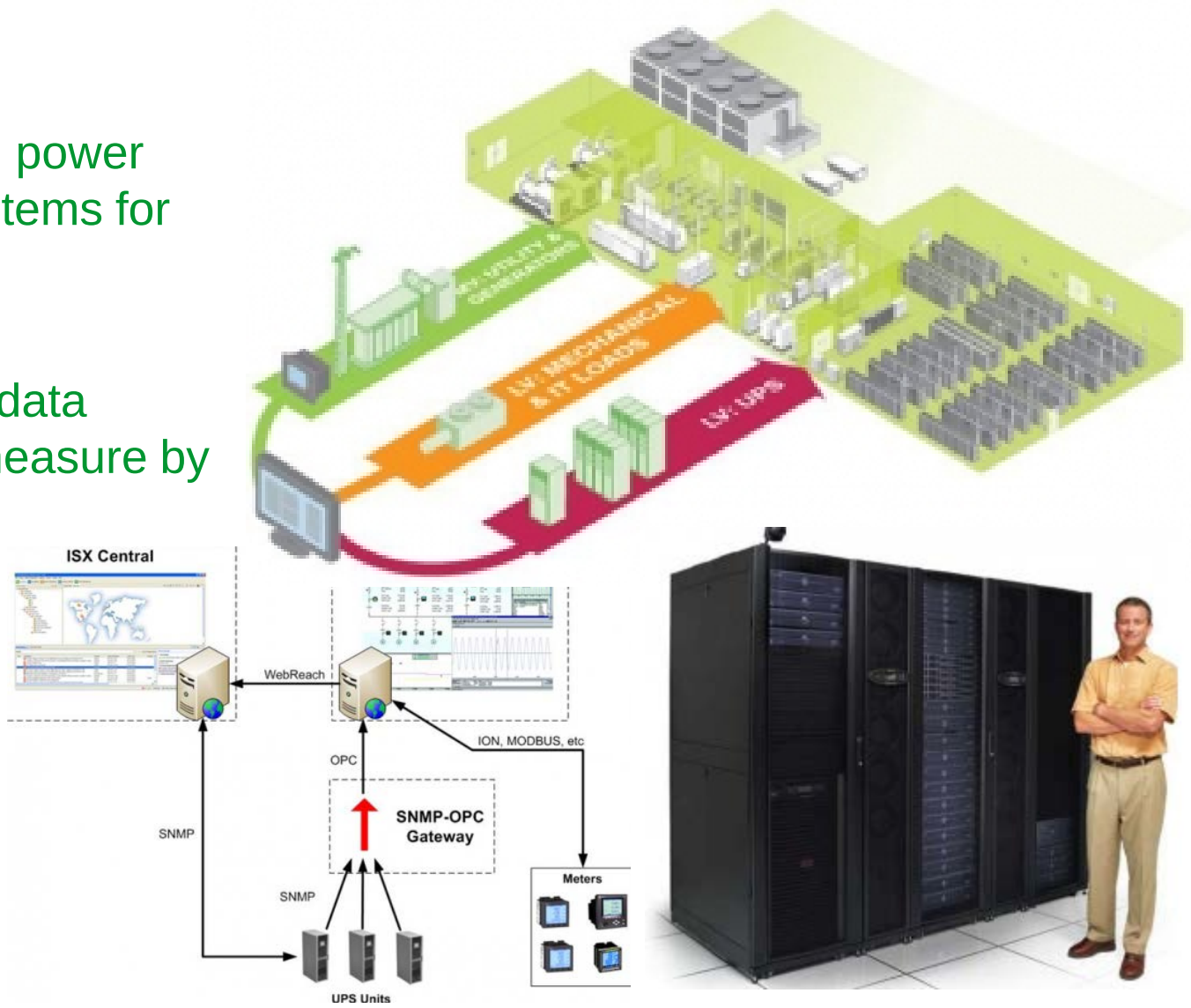
- **The chiller compressor is automatically controlled through a variable speed drive and a PLC.**

Value proposition

- ***Up to 20% energy savings*** **thanks to a dedicated control software.**

Power Usage Effectiveness for Data Centers

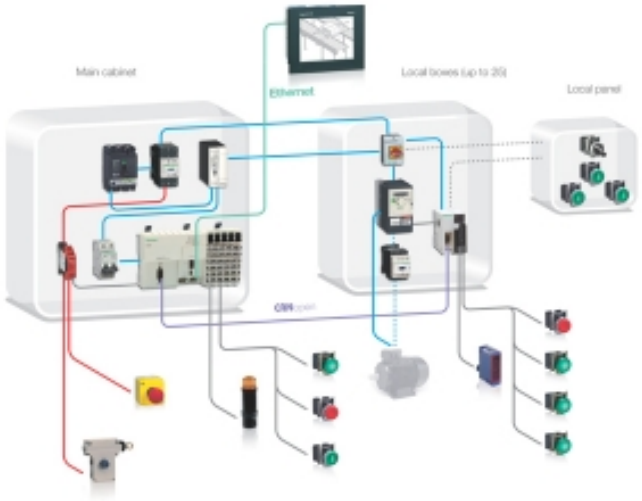
- Integrated rack, power and cooling systems for data centers
- Decrease your data center's PUE measure by up to **25%**

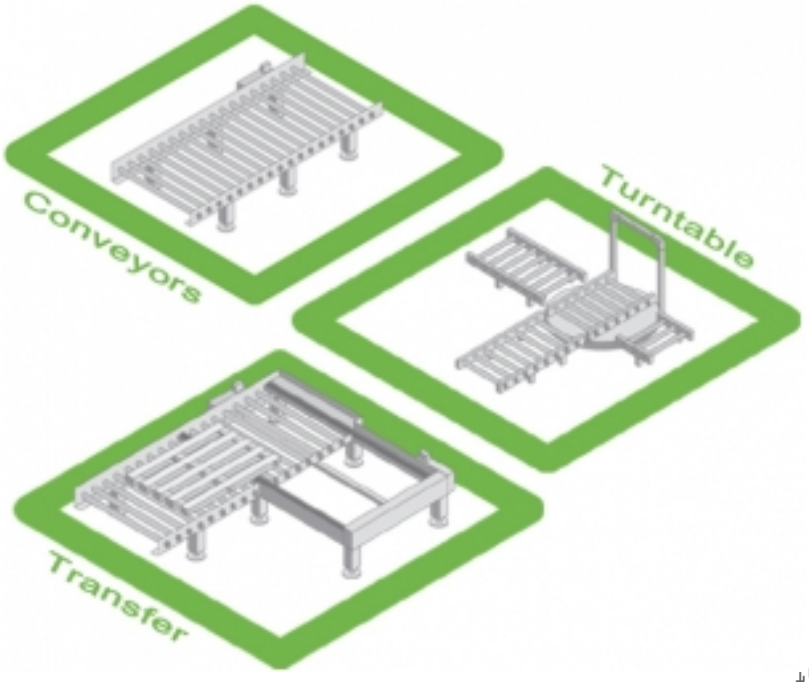


Industrial Logistic Centers
Conveyor Energy Management

- Specialized conveyer control solutions
  - Optimization of energy usage
  - No reactive energy consumed.

- Up to 50% energy savings in operating mode.





Virginia Community College

CUSTOMER BENEFITS

- Single-source for renovations and results
- Solution for funding shortfalls
- Institutional knowledge of all systems
- Holistic approach to problem resolution

PROJECT AT A GLANCE

Project Type:
Energy Performance Contract
($60 million over 4 years)

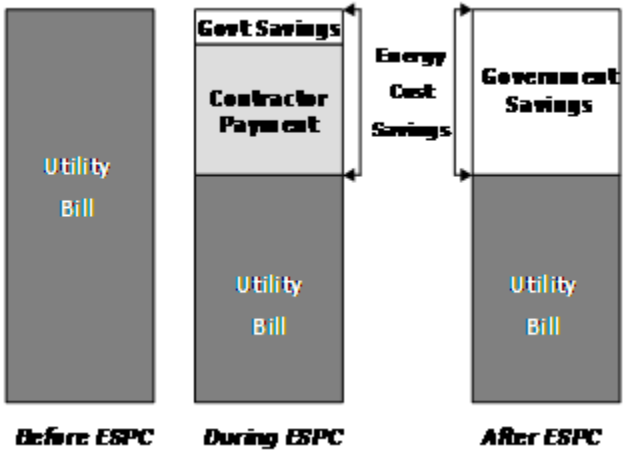
Location:
Commonwealth of Virginia, USA

Number of Buildings:
315
(total of 7 million sq.ft. on 40 campuses)

Guaranteed Annual Savings:
Estimated to exceed $2 million annually upon completion

Energy Conservation Measures:

- Major mechanical systems, including DDCs
- Water retrofits
- Thermal storage
- Lighting
- Windows and doors
- Roofing
- Retrocommissioning

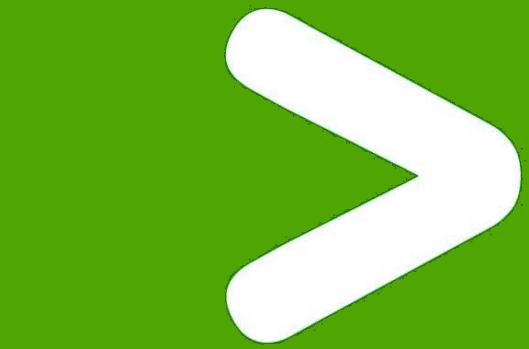


Energy Saving Performance Contract

- ESCOs use energy savings to finance, install and maintain new EE equipment.
- Savings are guaranteed
- Annual savings are used to fund up front capital investment.
- Reduces utility and O&M expenditure

The EE Industry

Where are the jobs



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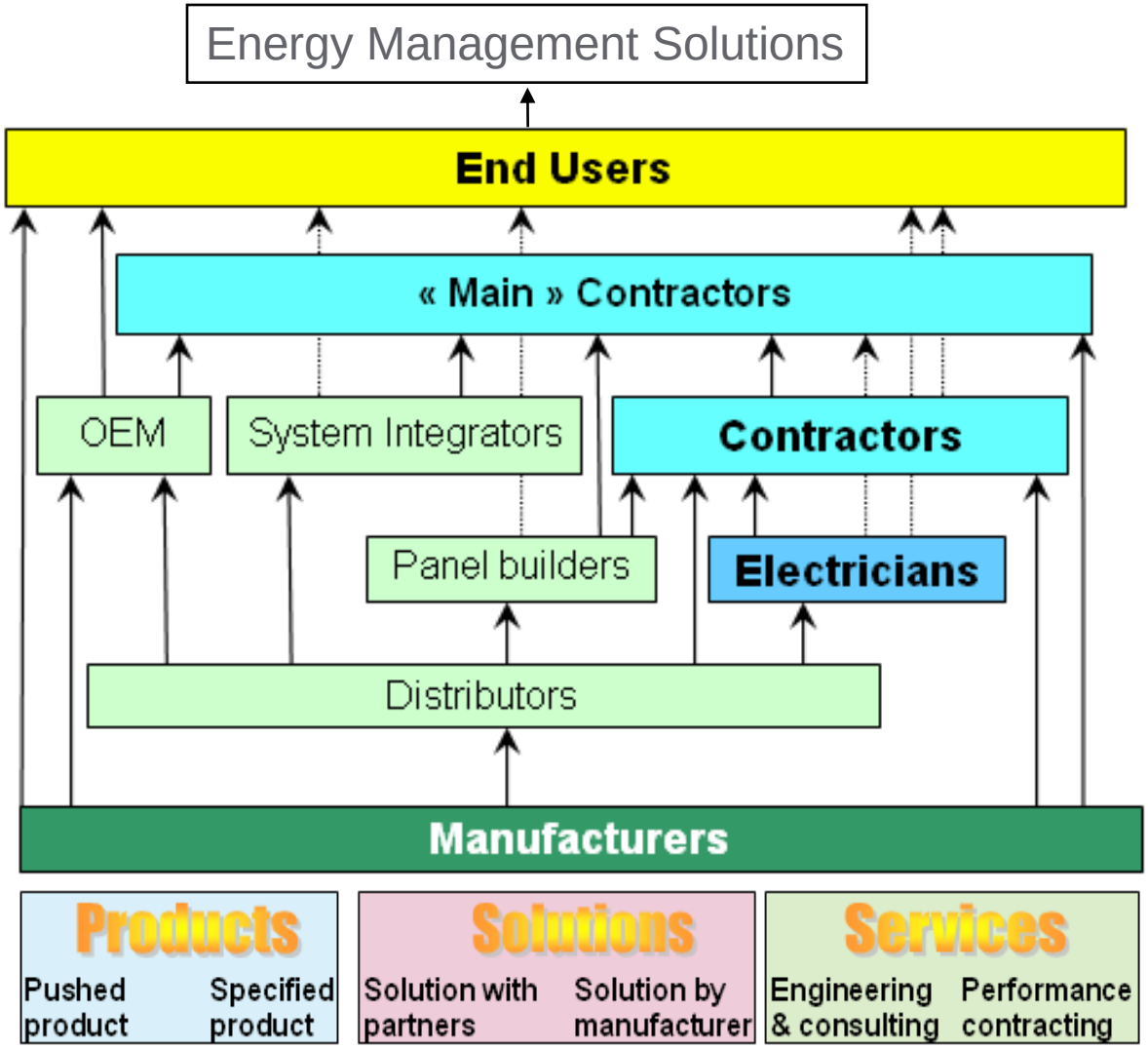
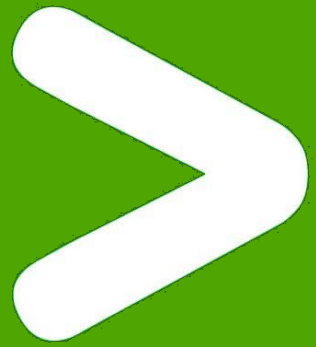
The Channel to Market for EE

- ≈ 80% of business flows through a variety of channel partners
- Solutions via partners have a multiplying effect on the # of jobs created



Perspectives & Challenges

What we see



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The Future

1. **People, people, people**
   - Skills and knowledge
   - Management, leadership, process *(50001, SEP),* ……

2. **Visibility**
   - Sub metering, performance, intensity,…

3. **Tools**
   - M&V, Diagnostics, Analytics, Benchmarking,…..

4. **Technology**
   - Pervasive data enabling, integrated systems

Our Perspective on Inhibitors

- Market Inhibitors
  - Low awareness and inadequate skills
  - Limited incentives for designers and builders
  - Comparative usage understanding
- Technology Inhibitors
  - Systems level solutions/integration
  - Measurement & verification
- Financing Inhibitors
  - Incentive misalignment
  - Limited or inadequate financing
- Regulation
  - Inconsistent implementation of compliance with codes & policies
  - Inconsistent & immature policies
  - Inconsistent utility engagement across states

What is needed?

- Policy intervention where market barriers or failures inhibit optimal investment in EE
  - Misplaced incentives such as the landlord tenant relation in buildings
  - Distorted regulations – utility engagement in distributed generation or demand response programs.
  - Unpriced costs & goods– environmental costs, education, training, research

- Assessment of the impact and effectiveness of current policies and regulations. – Many things work today but are underutilized
    - State code programs – only two states require most current codes
    - Utility programs - decoupling, EERS,
    - Equipment standards – energy star,

- Putting policy and regulation at the right place.
  - Federal, State, Local

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