



**Making the Most of Your Energy –
Converting Energy Expenses into Capital**

IACC 2013 Conference - Wenatchee
S34 – Gala 3

Presented by:
David Palmer, PMP, LEED AP
Program Manager – Northwest Region, Schneider Electric Energy Solutions
(offices in Spokane, Seattle, and Battle Ground)
David.palmer@schneider-electric.com
360-823-3040



Energy...



Schneider Electric: IACC Annual Conference, October 23, 2013

Photo credit:
http://upload.wikimedia.org/wikipedia/commons/2/23/Lightning_over_Crofton_Ro_manta_2008.jpg

Energy...



Schneider Electric: IACC Annual Conference, October 23, 2013

Energy!



Schneider Electric: IACC Annual Conference, October 23, 2013

Our Journey Today

- Energy from your perspective
- Making an expense a resource
- Energy conservation conversations
- The energy grants (don't worry, just a few words on them)
- A logical energy action plan
- Leave you feeling ENERGIZED about saving energy



Schneider Electric: IACC Annual Conference, October 23, 2013

Energy in your world

- What's happening around you related to energy?
 - Grants (and the hoards of salespeople)
 - Costs are volatile (and trending upward)
 - Necessary expense
 - Can be controllable without negative impact on operations
 - Scarcity, security, sensibility

Schneider Electric: IACC Annual Conference, October 23, 2013

Huh?

- Your current energy expenses are an asset

as- set/ 'aset/
 A useful or valuable thing, person, or quality: "quick reflexes were his chief asset".
 Property owned by a person or company, regarded as having value and available to meet debts, commitments, or legacies.

Schneider Electric IACC Annual Conference, October 23, 2013 9

Budget Reallocation

Before project
 Current Utility Costs

After project
 Savings Realized
 Additional savings - CASH
 Annual debt service - ASSET
 New (Reduced) Utility Costs

Schneider Electric IACC Annual Conference, October 23, 2013 6

Construction costs get a lot of attention (low-bid) for a little of the overall impact

3-5 years
 Development Period

25-30 years
 Operating Period

UP TO **25%**
 of a building's life cycle cost is financing & construction

UP TO **75%**
 of a building's life cycle cost is operational

Schneider Electric IACC Annual Conference, October 23, 2013 8

Ok. I see. So, how do I find out what my potential is?

Well, it works like a map...

Huh?

Schneider Electric IACC Annual Conference, October 23, 2013 10

What makes a map useful?

Schneider Electric IACC Annual Conference, October 23, 2013 11

Energy Assessments & Facility Improvements: The big questions

- "Where are we?" Do our facilities and infrastructure have potential to save energy?
- "Where are we trying to go?" Do any of our strategic goals or interests involve energy-using systems? If we do a stand-alone project, what will it have to achieve to be "a success"?
- "How will we get there?" Are any of these items something we have plans to address? If so, how can we make sure we make the most of our capital investment?
- "Can anyone help me get there?" These types of studies can be contracted to auditors, or the entity could partner with an ESCO to perform this analysis as part of the qualification for an ESPC
- But, what are ESCOs and ESPCs? Are they contagious?

Schneider Electric IACC Annual Conference, October 23, 2013 12

Definitions

ESCO – Energy Services Company – A specialty contractor that develops, installs and arranges financing for projects to improve energy efficiency and reduce operation and maintenance costs

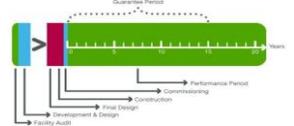
ESPC – Energy Saving Performance Contract – A partnership between a building/system owner and an ESCO to accomplish energy savings projects with minimal capital costs and specific outcomes (guaranteed performance) for the life of the contract




Schwabler Electric IACC Annual Conference, October 23, 2013

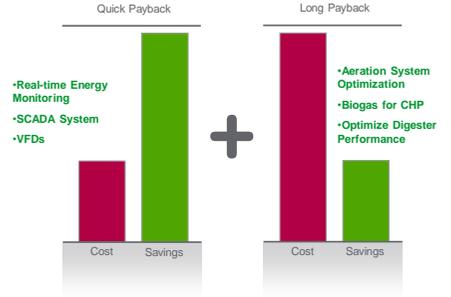
What does an ESCO provide in an ESPC?

- Develop, design, and arrange financing (and grants) for energy efficiency projects
- Install (using local contractors!!) and maintain the energy efficient equipment involved
- Measure, monitor, and verify the project's energy savings
- Guarantees both the maximum project cost and the projected energy savings



Schwabler Electric IACC Annual Conference, October 23, 2013

Opportunity: a portfolio of improvements



Quick Payback

- Real-time Energy Monitoring
- SCADA System
- VFDs

Long Payback

- Aeration System Optimization
- Biogas for CHP
- Optimize Digester Performance

Schwabler Electric IACC Annual Conference, October 23, 2013

Why do my peers utilize ESPC?

- Aging energy-related infrastructure and equipment
- Recurring maintenance problems or high maintenance costs
- Scarce budget resources
- Too little energy management expertise
- Too many demands on operations staff
- CONVERTS ENERGY EXPENSES INTO CAPITAL
- Conservation and efficiency are 'just plain smart'



Schwabler Electric IACC Annual Conference, October 23, 2013

A Conservation Conversation

- Efficiency
- Conservation
- Sustainability

Don't these all mean the same thing?

NO

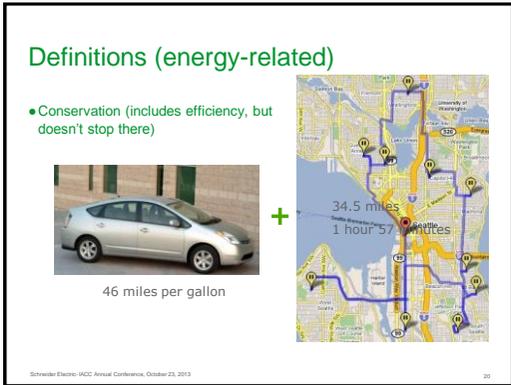
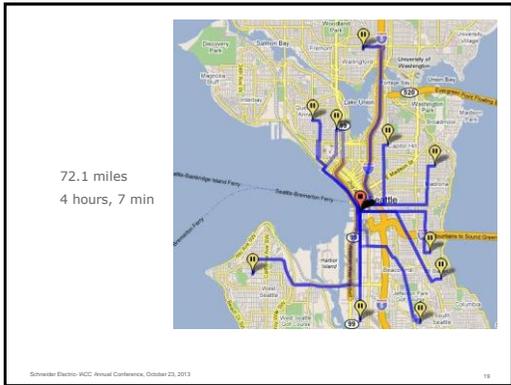
Schwabler Electric IACC Annual Conference, October 23, 2013

Definitions (energy-related)

- Example: A courier who works in Seattle...
- Efficiency



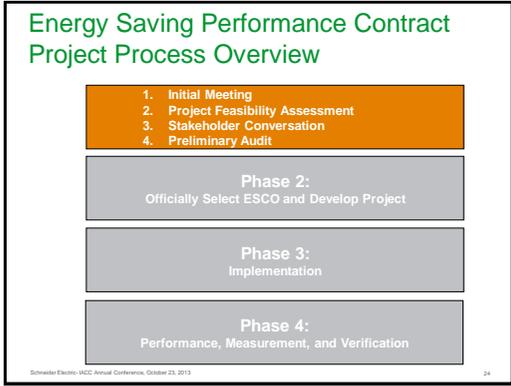
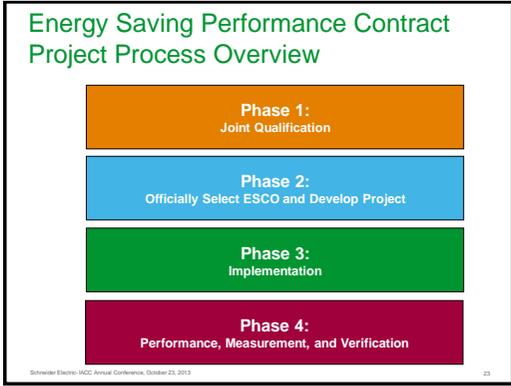
Schwabler Electric IACC Annual Conference, October 23, 2013



Renewable Energy

- It makes sense to do energy efficiency/conservation first
- More effective energy usage can deliver the greatest cost savings
- Optimizing energy consumption lowers the amount of renewable energy generation necessary
- Then renewable energy systems can be sized and analyzed long term and effectively evaluated
- Most ESCOs can provide renewable energy project development, financing, and delivery
 - Very similar to a traditional ESPC...

Schneider Electric IACC Annual Conference, October 23, 2013 22



Energy Saving Performance Contract Project Process Overview

1. Initial Meeting
2. Project Feasibility Assessment
3. Stakeholder Conversation
4. Preliminary Audit

5. RFQ or IAA with DES' Energy Team
6. Select ESCO / Execute IGA Contract
7. Project Development
8. Approve Scope, Price, Savings, Financing

Phase 3:
Implementation

Phase 4:
Performance, Measurement, and Verification

Schneider Electric IACC Annual Conference, October 23, 2013

Required Energy Audits (DWSRF, etc)

- New laws require investment-grade audits ("IGEAs") as part of many funding programs
- This is an effort to take a proven approach – ESPC – and use the audit/development portion to apply energy efficiency across Washington's infrastructure systems
- This is, in effect, requiring a sort of long term energy management plan to be developed alongside the capital plan
- Your energy can be a strategic resource, as when your energy consumption is reduced (obviously without impacting your permits), it is savings directly to your budget and you didn't give anything up to save it (like you would if you had to cut staff, take systems offline, etc)
- **KEY FACT:** You, the entity, have to direct whomever performs the audit to think about long-term planning, NOT just the "low hanging fruit"

Schneider Electric IACC Annual Conference, October 23, 2013

Energy Saving Performance Contract Project Process Overview

1. Initial Meeting
2. Project Feasibility Assessment
3. Stakeholder Conversation
4. Preliminary Audit

5. RFQ or IAA with DES' Energy Team
6. Select ESCO / Execute IGA Contract
7. Project Development
8. Approve Scope, Price, Savings, Financing

9. Project Installation

Phase 4:
Performance, Measurement, and Verification

Schneider Electric IACC Annual Conference, October 23, 2013

Energy Saving Performance Contract Project Process Overview

1. Initial Meeting
2. Project Feasibility Assessment
3. Stakeholder Conversation
4. Preliminary Audit

5. RFQ or IAA with DES' Energy Team
6. Select ESCO / Execute IGA Contract
7. Project Development
8. Approve Scope, Price, Savings, Financing

9. Project Installation

10. Ongoing project performance support (including M&V)

Schneider Electric IACC Annual Conference, October 23, 2013

Example Water ESPC Project

Water Plant – 10MGD – Surface Water

- Annual Energy Use and O&M Costs = **\$694,378**

ECMs –

- Rebuild 3 – 450HP turbine pumps
- New high efficiency motors and drives on finished water
- Upgrade of SCADA system
- Upgrade of filter valve actuators
- Upgrade of chemical feed

ECM Costs = \$2,423,918

Rebates, Incentives, and Grants = **\$270,000**

Guaranteed Annual Savings = \$150,305 – 15 Yr Contract

Schneider Electric IACC Annual Conference, October 23, 2013

ESCOs

- Come in many varieties – NOT A COMMODITY SERVICE!!!
- At a minimum, a credible ESCO should be pre-qualified by WA Dept of Enterprise Services' Energy Team (<http://www.ga.wa.gov/EAS/epc/escp.htm>)
 - However, their involvement **does not guarantee your project is completely risk-free**, you need to be involved and pay close attention!
- Some ESCOs are contractor based and prefer certain types of work their contracting arm(s) can perform (ie mechanical)
- Some ESCOs are manufacturer based and prefer projects that include their products (ie HVAC controls)
- I really can only speak to how my team works, but most of these highlights apply to most ESCOs

Schneider Electric IACC Annual Conference, October 23, 2013

Equipment Selection

Schneider Electric's ESCO Approach:
Client Has **Control**

- Type of equipment installed
- Overall system preference
- SE is a global leader in equipment, too, but our ESCO division is neutral (ask my clients – it's true!)
- The focus is total life cycle costs, not just initial price



Bid-Spec Approach with Traditional Construction:

Client Must Use

- Best economic value
- Lowest bid (ie biggest mistakes)
- This can result in losing control over what is installed



Schneider Electric IACC Annual Conference, October 23, 2013 31

Guarantees

Schneider Electric's ESCO Approach:

Long-Term Partner for Enduring Performance

- Guarantee ensures a partner with vested interest in project performance
- Accountable for results



Bid-Spec Approach with Traditional Construction:

Bid-Spec; On to Next Project

- Not responsible for savings being achieved or guaranteed
- No vested interest over the long-term



Schneider Electric IACC Annual Conference, October 23, 2013 32

Project Cost Stability

Schneider Electric's ESCO Approach:

Project Cost Known Up-Front

- Guaranteed fixed price
- No change orders



Bid-Spec Approach with Traditional Construction:

Project Cost Can Increase

- Project coordination cost
- Lower first cost with change orders later (usually 10%+)



Schneider Electric IACC Annual Conference, October 23, 2013 33

Financing & Funding Sources

Schneider Electric's ESCO Approach:

Provide Options and Support

- Schneider Electric can help procure financing packages
- State loan, municipal-lease financing, bonds, cash, and more are available
- Maximum rebates, incentives, and additional funding mechanisms
- Complete grant support



Bid-Spec Approach with Traditional Construction:

As Capital or Program Funds are Available

- Client has responsibility of researching/applying for additional funding/grants
- Financing clients' responsibility



Schneider Electric IACC Annual Conference, October 23, 2013 34

Project Management

Schneider Electric's ESCO Approach:

One Company Accountability

- ESCO is General contractor
- Construction manager at risk
- Client legally has say in selection of subcontractors – your ESCO CAN and SHOULD use local firms YOU KNOW



Bid-Spec Approach with Traditional Construction:

Multiple Accountability Sources

- Client hires general contractor as project manager
- Risky, expensive and time
- Subcontractors can be anyone



Schneider Electric IACC Annual Conference, October 23, 2013 35

Commissioned Results

Schneider Electric's ESCO Approach:

Comprehensive System Commissioning:

- Focus on fine tuning to make sure all systems work together and perform as best they can
- Not just components checked against design



Bid-Spec Approach with Traditional Construction:

Component Commissioning:

- Focus on components functioning
- Not on entire system performance



Schneider Electric IACC Annual Conference, October 23, 2013 36

Ongoing Training and Support

Schneider Electric's ESCO Approach:

- Partner for Performance
- Training is emphasized
- Goal for clients to operate systems at maximum capability
- Impact behaviors to maximize results
- Report and celebrate results!

Bid-Spec Approach with Traditional Construction:

Bidding Process

- Training is not emphasized
- Onus left solely on owner to operate at maximum capability

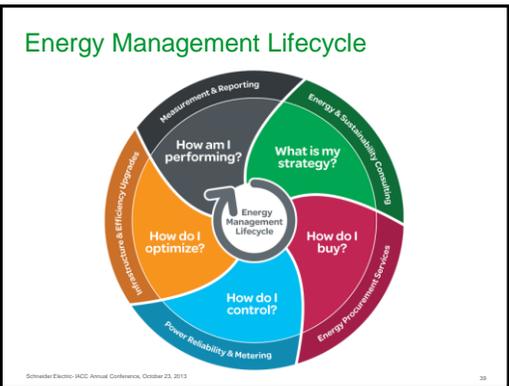


Schneider Electric IACC Annual Conference, October 23, 2013

But wait, there's more...

- And if you call in the next 29 minutes, we'll throw in a...
- Yes, an ESCO providing an ESPC is a great way to leverage your energy expenses into capital
- But 'making the most of your energy' goes beyond just a single project addressing the "low hanging fruit" – it's making energy a **natural and integral** part of all of your planning and activities
- There are many other ways to harness and optimize your energy use

Schneider Electric IACC Annual Conference, October 23, 2013



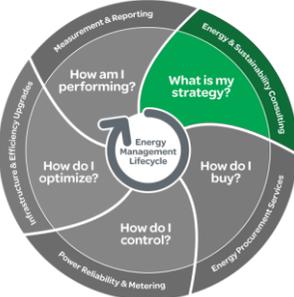
Measurement & Reporting



- Energy Auditing and Performance Assurance
- Energy & Carbon Reporting
- Operations & Maintenance Support
- Sequence of Events Reporting
- Energy Data Analysis

Schneider Electric IACC Annual Conference, October 23, 2013

Energy & Sustainability Consulting



- Strategic Energy Planning
- Sustainability Roadmaps
- Energy Star/LEED Assessments
- Energy Market Intelligence
- Energy Rebates & Incentive Support

Schneider Electric IACC Annual Conference, October 23, 2013

Energy Procurement Optimization



- Energy Sourcing
- Renewable Asset Management
- Rate & Tariff Analysis
- Demand Response
- Energy Risk Management

Schneider Electric IACC Annual Conference, October 23, 2013

Power Reliability & Metering

- Metering Design & Commissioning
- Systems Integration
- Remote Energy Monitoring
- Emergency Power Supply Systems
- Power System Control

Schneider Electric: IACC Annual Conference, October 23, 2013 46

Infrastructure & Efficiency Upgrades

- Design/Build Energy Projects
- Performance Contracting
- System, Mechanical, & HVAC Retrofits
- Systems Automation & Integration
- Renewable Energy Solutions

Schneider Electric: IACC Annual Conference, October 23, 2013 44

The whole pineapple ☺

Schneider Electric: IACC Annual Conference, October 23, 2013 45

Cha-ching!

- In addition to the capital derived from your energy expenses, utility rebates and state & federal grants can contribute a substantial portion of an energy improvement project's up-front costs
 - Utility rebates can be up to 70%
 - State grants can be 25%+
 - Federal grants vary widely, but are also available

Schneider Electric: IACC Annual Conference, October 23, 2013 46

Energy grants

- Offered by WA Department of Commerce
 - \$18M in 2014, ~\$7M in 2015
 - For energy projects in local and governments' infrastructure & facilities
 - Must use ESPC process or equivalent
 - Applications due January 30, 2014 and ~May 2013
 - \$1,800,000 for small cities and towns
 - \$3,492,000 for solar projects
 - \$3,000,000 for higher education
 - \$3,000,000 for state agencies
 - \$3,000,000 for local governments
 - \$3,168,000 in 'floating' funds

Photo credit: <http://www.psdgraphics.com/files/shiny-gold-dollar-sign.jpg>

Schneider Electric: IACC Annual Conference, October 23, 2013 47

Energy grants – the downside

Photo credit: <http://www.abramsbooks.com/uploads/images/Books/9780810996402.jpg>

Schneider Electric: IACC Annual Conference, October 23, 2013 48

Any Energy Project SHOULD

- Complement (and hopefully enhance) your long term plan
- Be developed and delivered with appropriate diligence
- Not over-extend your resources
- Be clear TO YOU in how it should work, and why
- Have a clear way to measure success
- Be comfortable and understood by your stakeholders

Energy Projects SHOULD NOT

- Ignore your long-term plans, needs, and objectives
- Be done just for the sake of doing something
- Happen in a big rush (unless you know FOR SURE it's the right fit)
- Necessarily be done with the first ESCO who calls on you
- Be disparate between what you're expecting and what you're getting
 - Especially actual performance – it's ok to consider and work with 'defensible' calculations, it's not ok to get sold a project on them that won't ever perform that way in real life
 - Not all ESCOs are the same, make sure your partner has a DEMONSTRATED ability to meet ALL of your expectations (CALL REFERENCES and ask "Did they deliver on their commitments? Would you work with them again?")

Energy calculations and results

Example Lighting Project Calculations		
Variable		Actual
Wattage Before Project (4 T-12 lamps, std ballast)		137 Watts (Measured Value)
Wattage After (2 T-8 lamps, hi pwr ballast)	-	80 Watts (Measured Value)
Power Saved per Fixture	=	57 Watts
# of Fixtures	x	1000
# of Burn Hours per Year	x	2500
% of Lamps Not Burnt Out	x	95%
Total kWh Saved	=	135,375 kWh

Energy calculations and results

Example Lighting Project Calculations			
Variable		Actual	"Book Value"
Wattage Before Project (4 T-12 lamps, std ballast)		137 Watts (Measured Value)	192 Watts (AND Value)
Wattage After (2 T-8 lamps, hi pwr ballast)	-	80 Watts (Measured Value)	82 Watts (AND Value)
Power Saved per Fixture	=	57 Watts	110 Watts
# of Fixtures	x	1000	1000
# of Burn Hours per Year	x	2500	4000
% of Lamps Not Burnt Out	x	95%	N/A
Total kWh Saved	=	135,375 kWh	440,000 kWh

325% Overstated

Energy calculations and results

Baseline HVAC Run Time: **6,200 hours**
 17 hours/day for 365 days
 24 hours/day for 258 days

Post-Retrofit HVAC Run Time: **3,380 hours**

"AGREED UPON CRITERIA"

If post-retrofit run time is the only number verified by the client, who can tell if the savings are real?

What do your peers say about successful after energy projects?

- **Collaborative**
 - Begins with objective discussions of potential opportunities
 - Partners assist clients in identifying performance goals (and building a strategy to accomplish specific "project" needs that are already identified)
- **Thorough**
 - Site audits gather data to allow for more concrete discussions of benefits
 - Analysis conducted on all potential opportunities at a high level
 - Clients can narrow focus on improvements that best align with goals
- **Complete**
 - Can address only slightly energy related work (roofing, plumbing) as part of the larger project
 - Focus is narrowed as more information is gathered to result in the right project (for that specific entity)
 - Local contractors and labor used as much as possible

The End

- Your current energy expenses are an asset, manage them accordingly

as·set/ 'aset/

A useful or **valuable thing**, person, or quality: "quick reflexes were his chief asset".

Property owned by a person or company, regarded as **having value** and available to meet debts, commitments, or legacies.

Schneider Electric IACC Annual Conference, October 23, 2013

58

The End

- COUGS WIN!!!



Schneider Electric IACC Annual Conference, October 23, 2013

59

That's all, Folks!

Thank you for choosing to join us today!

Presentation can be downloaded here:
<http://goo.gl/pYylxW>

Make the Most of Your Energy. 