Energy, Data Management, Reporting
Agenda

- About Schneider Electric
- Enterprise wide Data Management
- Outputs
- Foundation and results
- Part of a complete energy management solution
Schneider Electric – the global specialist in energy management

22.4 billion € sales (last twelve months)

39% of sales in new economies (last twelve months)

130 000+ people in 100+ countries

4–5% of sales devoted to R&D

Balanced geographies – FY 2011 sales

Diversified end markets – FY 2011 sales
Enterprise-wide Facility Management

Demographics

- 72 buildings
- 55 locations
- 12 M ft²
- 105 people
- 7 Regional managers
- 26 facility managers
- 79 techs
- Across North America
- Across all Businesses
How are you currently managing your energy data?

- Is your energy data collected manually, and stored in a spreadsheet?
- Is your data hard to scale, error prone, stored in a reliable and secure location?
- Is your data stored on one server, is it accessible to other locations?
- Can you easily share and integrate your data with other sites, users?
- Do you need skilled resources to analyze your data? Are you outsourcing this function?
Too much energy data?
Enterprise-wide Facility Management
Data from 55 sites

- 2600 Utility invoices/year, Managed by Resource Advisor
- 1320 Production data points
- 1320 Weather Data Points
- 1320 Utility Data Points
- Main Meter and Sub Meter data from 290 meters, @ 15 minute intervals – more than 10,000,000 data points / year
- All data points are stored in Energy Operation.
Schneider Electric North America
Monthly Outputs

- Schneider Internal Reporting – Monthly Model
- SEP / ISO 50001 Data Reporting
- M & V for Demand Management And Improvement
- Utility invoice Verification
- Active Energy Management of individual sites
- Invoice Processing and Payment
- Internal and External Sustainability Reporting

SchneiderElectric Sustained Services 2014
Monthly data is just the tip of the iceberg

- Supplier Choice
- Consumption during unoccupied hours (nights, weekends)
- Under optimized scheduling of equipment (HVAC, Chillers, lighting)
- Tariff Optimization
- Risk Management
- Peak/off peak consumption analysis
- Equipment consumption not correlated with influencing factors (weather, production volume...)

Interval data

Monthly data
Manage our data in three components
Data is worthless if you don’t use it,
If you don’t understand it,
Can’t find it or organize it.

Energy Performance

Metered Data

Invoice Data

Modeled Data
## Modeled Performance EnPi Tool

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Schneider Electric – Sustainability Services – 2014
## Modeled Performance EnPi Tool
### Past Tense

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**Future Tense**

Reduced energy consumption modeled and projected performance.
### Modeled and Project Performance

**Future Tense**

| Location                | Region       | 2012 Projected Savings (kWh) | 2012 Total Energy Usage (kWh) | Projected % Difference (Model) | 2013 Projected Savings (kWh) | 2013 Total Energy Usage (kWh) | Projected % Difference (Model) | 2014 Projected Savings (kWh) | 2014 Total Energy Usage (kWh) | Projected % Difference (Model) | 3-year total
|------------------------|--------------|-------------------------------|------------------------------|--------------------------------|-----------------------------|-------------------------------|--------------------------------|-----------------------------|-------------------------------|-------------------------------|-----------------------------
| Columbia               | Southeast    | 1,073,765                     | 649,517                      | -7.9%                          | -5.5%                       | 12,867,554                    | 13,571,923                     | -7.2%                          | -12.7%                        | 2,875,793                     | -21.1%
| Greensboro             | Southeast    | 559,886                       | 7,985                        | -0.5%                          | -3.0%                       | 1,486,695                     | 1,534,710                      | -3.7%                          | -8.1%                         | -11.5%
| LaVergne LifeSpace    | Southeast    | 737,744                       | 907                          | -0.1%                          | -3.1%                       | 775,063                       | 861,028                        | 0.0%                          | -10.7%                        | -0.1%
| LaVergne PMO          | Southeast    | 950,107                       | 3,487                        | -0.1%                          | -16.5%                      | 2,394,750                     | 2,302,164                      | 0.0%                          | 10.8%                         | -0.1%
| Nashville              | Southeast    | 575,840                       | 21,283                       | -1.4%                          | 1.4%                        | 1,548,562                     | 1,587,509                      | 0.0%                          | -14.1%                        | -1.4%
| Raleigh                | Southeast    | 974,763                       | 834,079                      | -16.7%                         | -1.4%                       | 5,663,471                     | 5,511,077                      | -0.9%                          | -20.3%                        | -20.2%
| Salisbury              | Southeast    | 206,095                       | 252,991                      | -16.4%                         | -6.6%                       | 1,074,221                     | 1,316,392                      | -6.6%                          | -6.6%                         | -20.2%
| Seneca                 | Southeast    | 2,044,116                     | 536,193                      | -11.8%                         | -11.0%                      | 15,172,337                    | 14,957,818                     | -15.6%                         | 3,581,390                     | -20.4%
| Smyrna                 | Southeast    | 2,088,783                     | 668,729                      | -26.0%                         | -25.7%                      | 8,802,758                     | 8,007,993                     | -13.2%                         | -15.8%                        | 3,880,222                     | -41.2%
| **Southeast Total**    |              | **6,861,184**                 | **7,550,087**                | **-12.5%**                     | **-9.1%**                   | **49,683,411**                | **49,650,613**                 | **-4.9%**                      | **-4.3%**                      | **12,076,090**                | **-22.1%
| West                   |              | **2,636,626**                 | **724,409**                  | **-4.7%**                      | **-7.5%**                   | **49,724,099**                | **51,018,044**                | **-4.2%**                      | **1.9%**                       | **5,894,931**                 | **-10.2%
| **Grand Total**        |              | **18,595,435**                | **818,810**                  | **-5.3%**                      | **-7.1%**                   | **12,217,762**                | **42,755,663**                | **-4.4%**                      | **-7.7%**                      | **45,916,171**                | **-13.1%

**Note:** The data includes projected savings, total energy usage, and projected percentage differences for each location and region, with a focus on energy efficiency and performance over a 3-year period. The values reflect the projected savings in kilowatt-hours (kWh) and the percentage difference compared to the 2011 baseline.
Invoice Analysis – Meter Data vs Invoice Data

- Inv. Gas
- Paintline Meter
- Space Heat

Meter Data

- 01-Jan
- 01-Feb
- 01-Mar
- 01-Apr
- 01-May
- 01-Jun
- 01-July
- 01-Aug
- 01-Sep
- 01-Oct
- 01-Nov
- 01-Dec
- 01-Jan
- 01-Feb
- 01-Mar
Weekend Analysis – Plugs Vs HVAC & Lighting

> Plug load best way to show occupancy
> When lighting and HVAC are added, shows HVAC and Lighting not correlated to occupancy, this requires further investigation
Schneider Electric North America

Results

Enterprise wide energy management information system that aggregates energy and resource data from multiple systems for reporting, analysis and communication.

NAM Regional Energy Performance

2014 YTD vs. 2013

- Energy Performance (%)
-14% -12% -10% -8% -6% -4% -2% 0% 2% 4%
- Central 1
- Central 2
- Northeast
- South
- Southeast
- West

NAM Regional Energy Performance [2013 vs. 2011]

2013 YTD vs. 2011

- Energy Performance (%)
-14% -12% -10% -8% -6% -4% -2% 0% 2% 4%
- Central 1
- Central 2
- Northeast
- South
- Southeast
- West
Schneider Electric North America Results

Enterprise wide energy management information system that aggregates energy and resource data from multiple systems for reporting, analysis and communication.

NAM Regional Energy Performance

2014 Projected Savings vs. 2011

-25% -20% -15% -10% -5% 0%

Central 1
Central 2
Northeast
South
Southeast
West
Schneider Electric North America

Results

Enterprise wide energy management information system that **aggregates** energy and resource data from **multiple systems** for **reporting**, **analysis** and **communication**.

- **Foundation of Energy Program**
- **Information for Annual Energy Reviews** required by ISO50001
- **Reconciles invoice and utility data**
- **Tool to use with our Management for Capital and Expense Planning**
- **Provides Baseline Data For SEP, i.e. Smyrna, TN is performing At a -20% vs the 2011 baseline**
- **Internal energy savings Reporting. The 55 sites Are at a -7% vs. 2014 and -8% (goal 7%) against our Company program**
- **Provides data for Better Buildings / Better Plants Schneider Electric performance is 17.8%**
- **Project planning and predicative tools to anticipate current and future savings. In 2014 we plan about 4.5% savings to bring our three year savings to over 13%**
- **Internal and External Sustainability Reporting**
Energy Operation

Enterprise wide energy management information system that aggregates energy and resource data from multiple systems for reporting, analysis and communication.

The Customer Dilemma

> Companies are increasingly challenged to aggregate disparate pieces of information in a heterogeneous environment across the entire enterprise.

> Automates the data collection process through the use of an open, scalable and secure Energy Management Information System.

> Collects large volumes of device data from control systems or meters and enables analytics to find hidden inefficiency opportunities.

> Serves as a tool to communicate the results and performance in a meaningful manner for a shared understanding across your organization.
Schneider Electric understands both sustainability and energy management, and delivers on three parts of a successful program:

1. **Design a Strategy**
   A strategy ensures projects get buy-in, provides process to measure success, and ensures goals are met.

2. **Deliver Efficiency**
   From delivering sustainability services, energy procurement, demand response programs and reducing your resource consumption - we do it all.

3. **Sustain Results**
   We don’t walk away after we deploy a solution, we stay on the project to continuously improve and communicate success.

An energy plan isn’t complete unless it optimizes how you buy energy and how you use it. Sustainability measures far more than just energy, and can be a powerful tool to broaden positive perception and long-term impact.