

RedE

The Resource efficiency deployment Engine

Introduction

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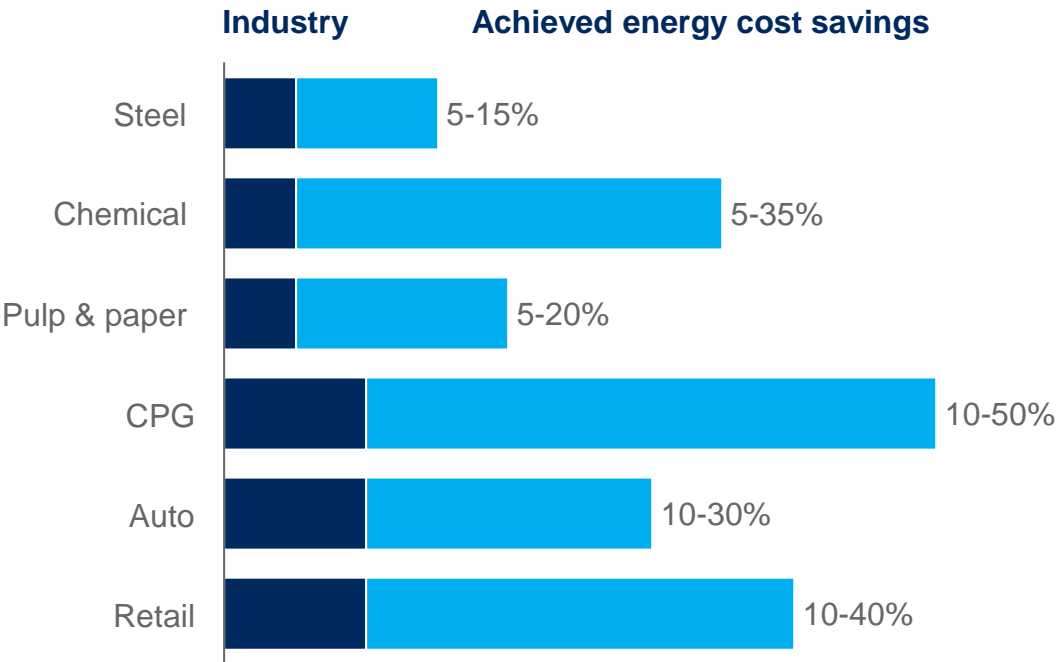


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RedE operationalizes an extensive library of resource efficiency levers, facilitating identification, implementation and performance management

Resource efficiency leads to savings

Potential savings in energy efficiency alone is substantial across industries



RedE solution

- Actionable, client-specific lever engine for resource efficiency projects
- Program management and savings dashboards included for clients

Rapidly expanding impact

10-20%

Average utility cost savings

750+

Active facilities

160+

Available levers

No

Limits on network size

RedE combines our deep knowledge of resource efficiency with an intuitive digital interface for identifying and implementing levers

	Description
Actionable levers	Levers have been developed and honed from hundreds of McKinsey energy efficiency studies over the previous 10+ years.
User-friendly digital interface	Users are guided through a methodical, intuitive digital experience as they provide information on their site's utility usage and production
Refinable business cases	Users can view detailed descriptions of the business cases behind cost savings projections, and refine them to align with their site's situation
Recommendation engine	Recommendation engine that guides clients on most relevant projects for their sites and offers savings/capex projections based on benchmark values
Implementation management	Visual management tools to steer complex projects and see savings; program owner can performance manage and understand impact

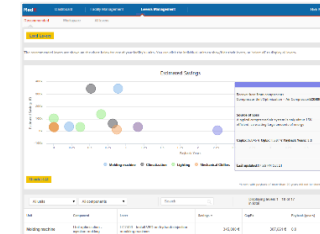
RedE provides a series of deliverables to help you identify the key levers to drive utility savings and emissions reductions

Overview

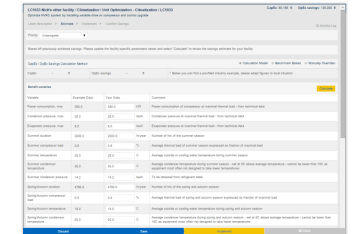
- Facilities provide utility cost and production data
- The RedE lever engine recommends specific energy efficiency improvements
- Levers are selected based upon relevance, user-refined savings, and projected costs
- Facilities visually manage execution and track performance versus peers
- Program owners track performance and drive overall network savings

Key deliverables

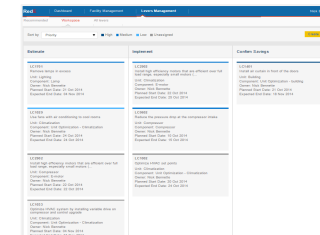
Site-specific recommendations



Dynamic project business cases



Implementation support



Performance management





How does RedE
work in practice?

For sites or suppliers, the facility setup process consists of a few main sources of information, all contained on a single intuitive page

The screenshot shows the RedE Facility Management interface. It starts with a 'Select a Template' screen where users can choose from various industry templates like 'API production plant', 'Power Plant', 'Refinery', 'Coke plant', 'Plastics processing', 'Electronics assembly', and 'Enzyme production'. A dashed line indicates the flow to the 'Configure the facility' screen. This screen is divided into sections: 'Basic Details' (Facility Name, Site, Company, Country, State or Province, Currency), 'Units Configuration' (Electricity, Water & sewage, Natural gas), 'Utilities' (table for utility consumption and cost), 'Facility Production' (Primary Product, Unit of measure, Annual production volume), and 'Other operating expenses' (Maintenance, Labour).

STEP 1: Select a template or build your own

- Existing library of 30+ industry templates available for a quick, easy start
- Option to create your own template completely from scratch

STEP 2: Configure the facility

Category

Specific inputs

1

Unit configuration (auto-filled if template chosen)

- All major resource-consuming equipment and/or processes ('unit'), and for each:
- Estimated relative consumption of each purchased utility

2

Utility consumption and spend

For each utility (e.g., electricity, gas, water):

- Annual consumption
- Annual Spend
- Marginal cost (if known)

3

Production information

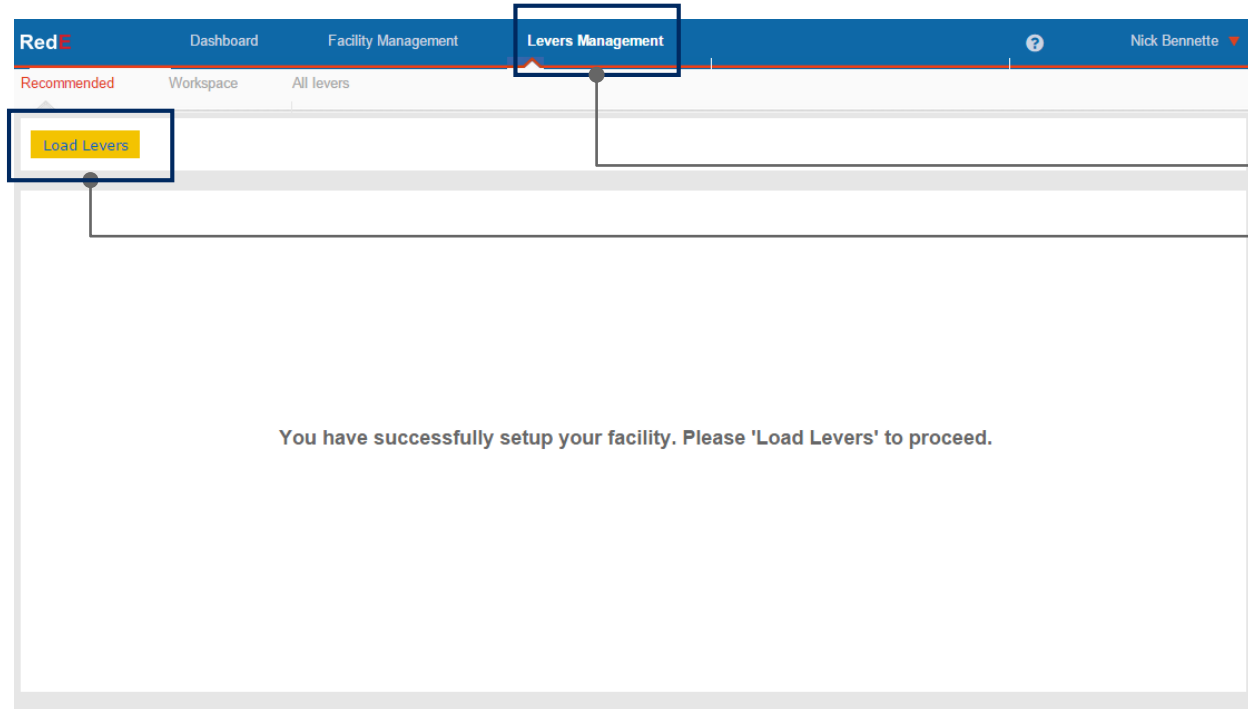
- Type and units of major product output
- Total annual production volume

4

Labor and maintenance

- Average daily maintenance cost
- Average daily labor cost (e.g., installation)

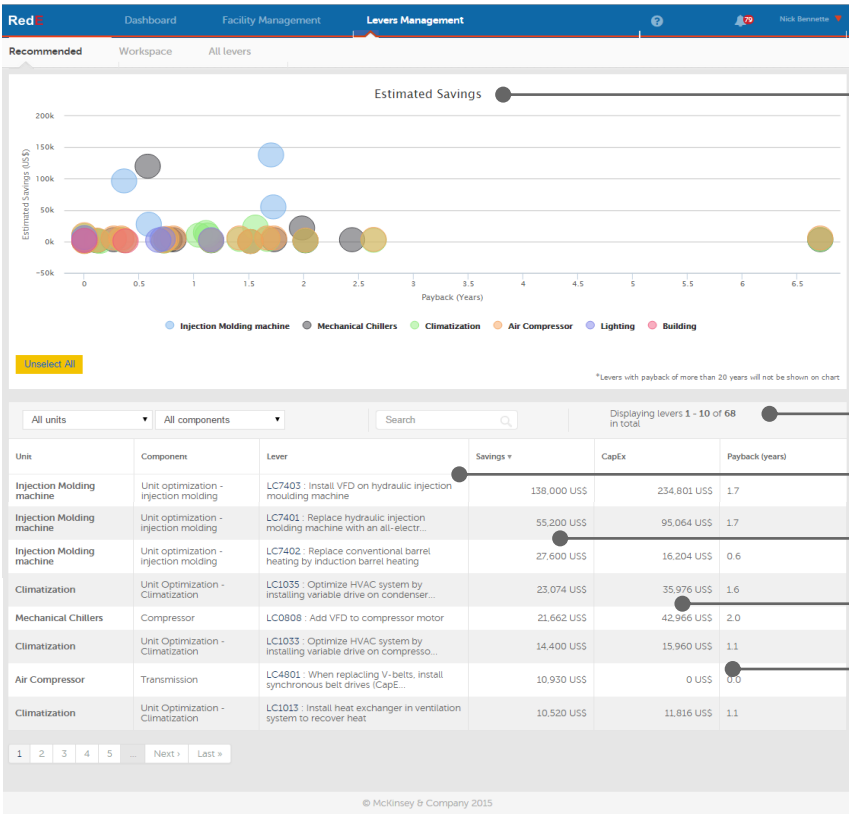
Once facility setup is complete, the lever recommendation engine is run to identify a targeted set of projects from the RedE database



The screenshot shows the RedE web application interface. The top navigation bar includes 'RedE', 'Dashboard', 'Facility Management', and 'Levers Management' (which is highlighted with a blue box). Below the navigation bar, there are tabs for 'Recommended', 'Workspace', and 'All levers'. A yellow 'Load Levers' button is highlighted with a blue box. A message in the center of the page reads: 'You have successfully setup your facility. Please 'Load Levers' to proceed.' Two lines with dots at the end point from the 'Levers Management' tab and the 'Load Levers' button to the 'Description' table on the right.

Description
Go to Levers Management
Select Load levers
Load levers takes the facility setup information, identifies the relevant levers, and estimates the projected savings and cost This process typically takes several minutes to complete

RedE generates a list of recommended “levers,” each with benchmark-based savings, capex, and payback estimates



Description

Visual display of savings vs. payback, grouped by unit

Total lever count

Project (lever) title

Savings (sortable)

Capex

Payback

Description

Extensive summary of the nature and key identifiers of the loss, plus improvement approach

Overview of the savings calculation methodology

Dynamic technical model to determine the facility-specific business case

Lever description allows the user to review details on the source of loss, improvement details, and calculation approach

LC1036 nick's facility - active / Climatization / Unit Optimization - Climatization / LC1036

CapEx: 31,966 US\$ OpEx savings: 36,000 US\$

Optimize HVAC system by installing respective control (timer, coordination of heating and cooling, temperature ranges, outside temperature, set points)

Lever description > Estimate > Implement > Confirm Savings

Activity Log

Identify Step CapEx: 31,966 US\$ / Identify Step OpEx Savings: 36,000 US\$

Source of Loss

Temperature levels are set higher or lower than needed, and so wasting energy

Detailed Loss Description

Air conditioners are one of the biggest users of power for modern assembly like businesses. In many cases representing about 30-60% of the energy bill. Because HVAC systems account for so much electric energy use, almost every facility has the potential to achieve significant savings by improving its control of HVAC operations and improving the efficiency of the system it uses through proper design, installation and scheduled maintenance.

Suboptimal control of HVAC equipment leads to waste energy consumption, e.g., if

- Heating and cooling are applied to the same zone

- Heating and cooling are applied frequently one after another (e.g., to achieve exact temperature point vs. having a temperature range)

- Not reducing HVAC in times when it is not required (e.g., reduced heating/ cooling at night)

Key Loss Indicators

1. Heating buildings higher than 19°C (18°C when physical work is done)

2. Cooling buildings lower than 23°C (25°C if accepted by employees)

Description

The energy consumption of an HVAC system depends not only on its performance and operational parameters, but also on the characteristics of the heating and cooling demand of the building. The most important factors that contribute to HVAC energy usage reduction is via proper control of the building heating and cooling demand.

First one has to assess an estimate an appropriate temperature. By law in the UK for instance, limits are very low, 16°C, or 13°C if much of the work is physical. But this is not always preferred.

Close

Description

The **Lever description** tab contains detailed information on the lever

Simple summary of the loss

More elaborate description of the loss and explanation on how to identify

Description how to “observe” the loss

Additional description and explanation on how to fix losses

CapEx and OpEx savings estimates at this step are based on benchmark data for industry and equipment

Individual parameters affecting a lever are all adjustable, allowing the user to dynamically update the business case

LC1036 nick's facility - active / Climatization / Unit Optimization - Climatization / LC1036

CapEx: 31,966 US\$ OpEx savings: 36,000 US\$

Optimize HVAC system by installing respective control (timer, coordination of heating and cooling, temperature ranges, outside temperature, set points)

Lever description > **Estimate** > Implement > Confirm Savings

Activity Log

Priority: Unassigned

Based off previously achieved savings. Please update the facility-specific parameters below and select "Calculate" to revise the savings estimate for your facility

CapEx / OpEx Savings Calculation Method

☒ Calculation Model ☐ Benchmark Based ☐ Manually Overriden

CapEx: - US\$ OpEx savings: - US\$

* Below you can find a pre-filled industry example, please adapt figures to local situation

Benefit variables

Variable	Example Data	Your Data	Comment
Heating hours per year	2920.0	2920.0 hr/year	Time that the building must be heated
Cooling hours per year	2920.0	2920.0 hr/year	Time that the building must be cooled
Room length	50.0	50.0 m	Room property
Room width	100.0	100.0 m	Room property
Room Height	5.0	5.0 m	Room property
Total Window area	600.0	600.0 m2	Room property

- Description
- Selected lever card is in the **Estimate** step

Each lever should be assigned a **Priority** in order for users to better assess which levers to focus on

Savings and capex will update based on site-specific data once the calculation engine is run

Calculate updates the cost and savings estimates based on **Your data**

All data in the Benefit variables fields should be updated to represent actual facility and equipment parameters
- RedE

By McKinsey

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RedE contains an implementation interface to track your projects from estimation through completion

RedE Dashboard Facility Management Levers Management Nick Bennette		
Recommended Workspace All levers		
Sort by Due Date Status On time Almost due Past due Create lever		
Estimate	Implement	Confirm Savings
<div>LC7404</div> <div>Install barrel insulation blankets on heating elements</div> <div>Unit: Injection Molding machine</div> <div>Component: Unit optimization - injection molding</div> <div>Owner: Nick Bennette</div> <div>Planned Start Date: 12 Dec 2014</div> <div>Expected End Date: 02 Jan 2015</div>	<div>LC7403</div> <div>Install VFD on hydraulic injection moulding machine</div> <div>Unit: Injection Molding machine</div> <div>Component: Unit optimization - injection molding</div> <div>Owner: Nick Bennette</div> <div>Planned Start Date: 22 Dec 2014</div> <div>Expected End Date: 26 Dec 2014</div>	<div>LC1712</div> <div>Replace inefficient exit lighting</div> <div>Unit: Lighting</div> <div>Component: Unit Optimization - Lighting</div> <div>Owner: Nick Bennette</div> <div>Planned Start Date: 22 Dec 2014</div> <div>Expected End Date: 22 Dec 2014</div>
	<div>LC1036</div> <div>Optimize HVAC system by installing respective control (timer, coordination of heating and cooling...</div> <div>Unit: Climatization</div> <div>Component: Unit Optimization - Climatization</div> <div>Owner: Nick Bennette</div> <div>Planned Start Date: 07 Jan 2015</div> <div>Expected End Date: 30 Jan 2015</div>	

Description

Selected lever card is in the **Implement** step

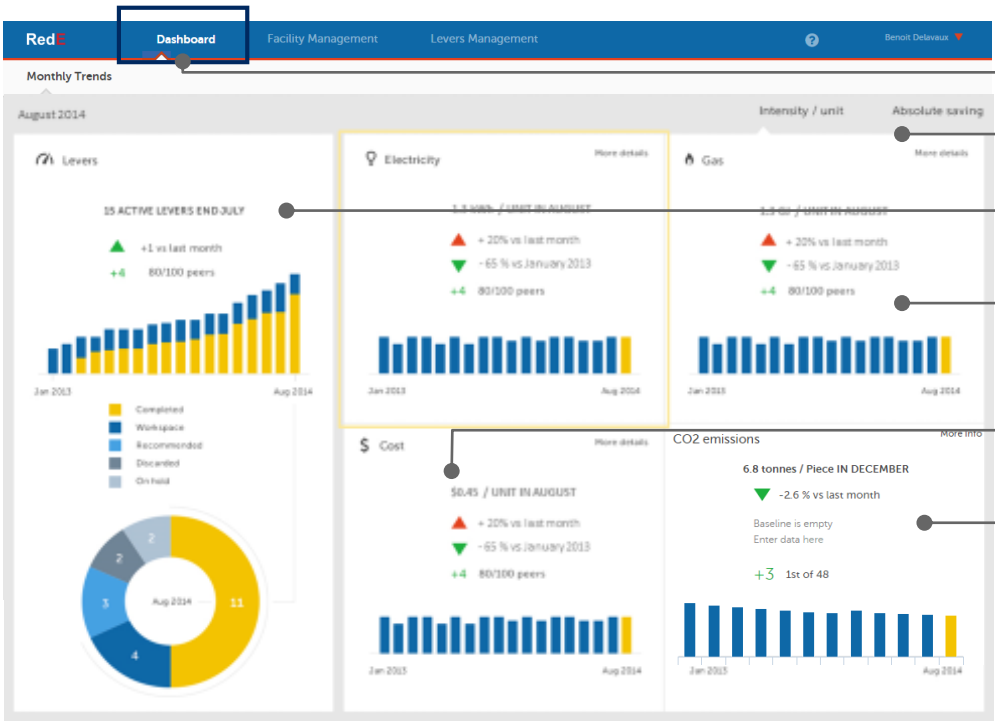
Levers can either be viewed by **Priority** or **Due Date Status**

Go to **Implement** to update lever capex and project timing

Lever **Priority** is assigned at the Estimate step

Lever **Due Date** is based on the time in a given step; fixed timing for **Estimate** and **Confirm Savings** steps and the end date in **Implement**

The Dashboard is composed of tiles, each one is tracking improvement on one dimension across time and peers



Description

- Go to **Dashboard**
- Intensity / absolute saving display toggle**
- Levers** tile shows implementation of levers over time
- Utility** tiles show performance over time, either per unit or savings
- Cost saving** tile shows utility improvement converted to cost
- CO₂ saving** tile is utility savings converted in CO₂ savings
- “Intensity / unit” gives you a view on use for producing one unit, giving consistent context across time and peers
- “Absolute saving” is your saving compare to your baseline



How can you
contact our team?

Want more information?

Please reach out to us at **RedE@mckinsey.com**