The Virtuous Cycle

A Framework for Strategic Energy Management

Executive Overview

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

MIT Sloan MANAGEMENT

BOSTON Green Ribbon COMMISSION

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- Why use a strategic energy management framework?
- Understanding the Virtuous Cycle
- Considering best practices
- Implementing the Virtuous Cycle

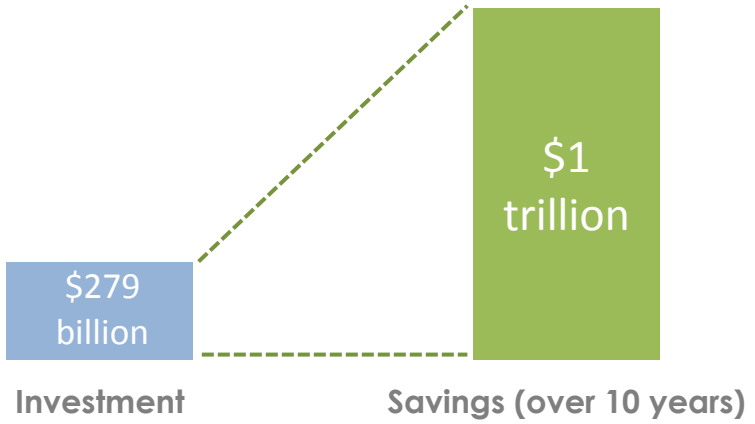
Why use a strategic energy management framework?

The Opportunity

Save money

Building energy efficiency retrofits offers an estimated **$279 billion investment opportunity**.

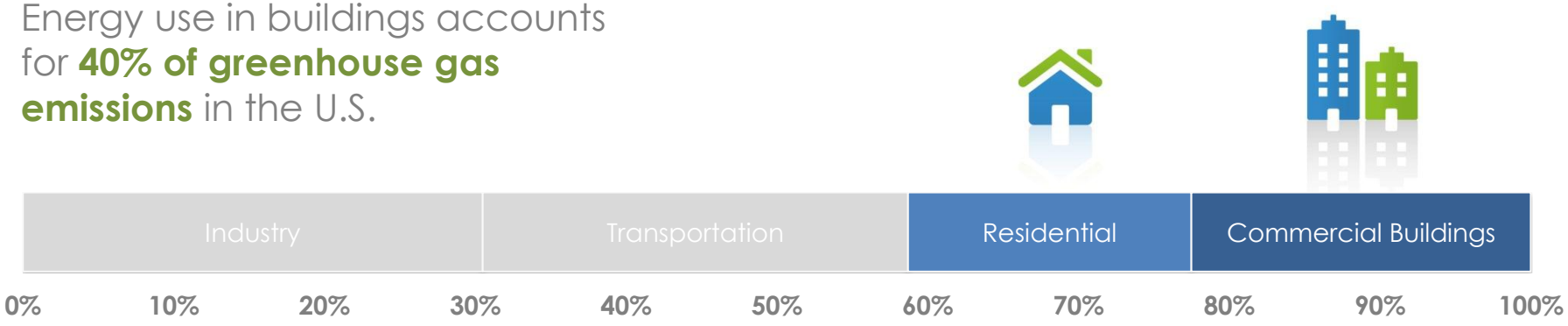
This investment would yield an estimated **$1 trillion in energy savings** over 10 years.



Source: Rockefeller Foundation

Reduce emissions

Energy use in buildings accounts for **40% of greenhouse gas emissions** in the U.S.

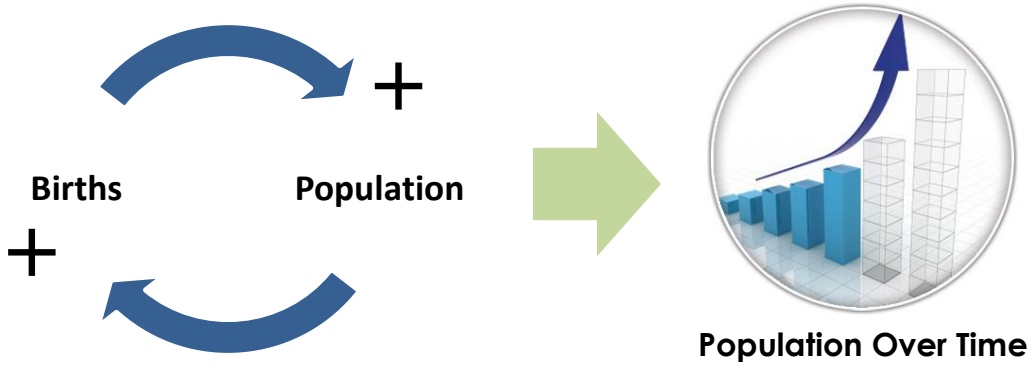


Source: U.S. DOE, Buildings Energy Databook

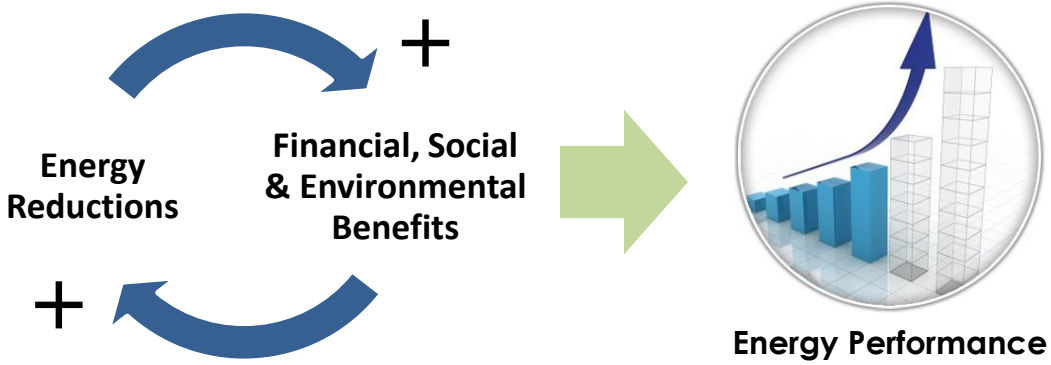
The Opportunity

To fully realize the benefits of energy management, organizations need to **drive exponential growth through positive feedback loops.**

Example of a feedback loop: Births drive exponential population growth



A feedback loop for energy management: Realizing the benefits drives further reductions



The Challenge

Many organizations have taken initial steps to manage energy, but efforts are often piecemeal, uncoordinated, and limited in scope.

As a result, deep cuts in energy consumption are often elusive.

Common Practices

One-time upgrades…

Organizations typically implement one-off projects (e.g. lighting upgrades) with little monitoring of actual performance improvements.

Facility-level management…

Facility managers work independently with little information- or resource-sharing. Projects are not selected or funded through a centrally-managed process.

Short-term focus…

Projects are often selected based on potential for quick payback rather than long-term savings or continuous improvement.

Single-application or single-technology…

Activities often focus heavily on a single application (e.g. HVAC or lighting) or technology (e.g. natural gas boilers), ignoring other potential options or areas of opportunity.

The Challenge

More effective energy management is often hindered by underlying organizational issues that create bottlenecks or barriers.

1. Organizations are not always structured to respond to efficiency opportunities.

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2. Mandates and responsibilities are not always clearly established or communicated.

3. Resources may be insufficient, misallocated, or difficult to access.

The Solution

Overcoming underlying organizational challenges requires a multidimensional and systematic approach.

By using **Strategic Energy Management**, organizations can focus on:

- Continuous improvement
- Setting & achieving organization-wide goals
- Long-term savings
- Tracking & reporting performance
- Efficient allocation of resources

The ***Virtuous Cycle of Strategic Energy Management*** provides a framework for continuous improvement that focuses on overcoming challenges in five key areas:

Understanding the Virtuous Cycle

Origins of the Virtuous Cycle

Research

- Two decades of **field research and system modeling** by scholars at MIT Sloan School of Management.

Practice

- **500+ EDF Climate Corps engagements** with companies and institutions.
- **Reflection and peer learning** through network events led jointly by EDF and MIT Sloan.

Virtuous Cycle Framework

Virtuous Cycle Tools & Resources

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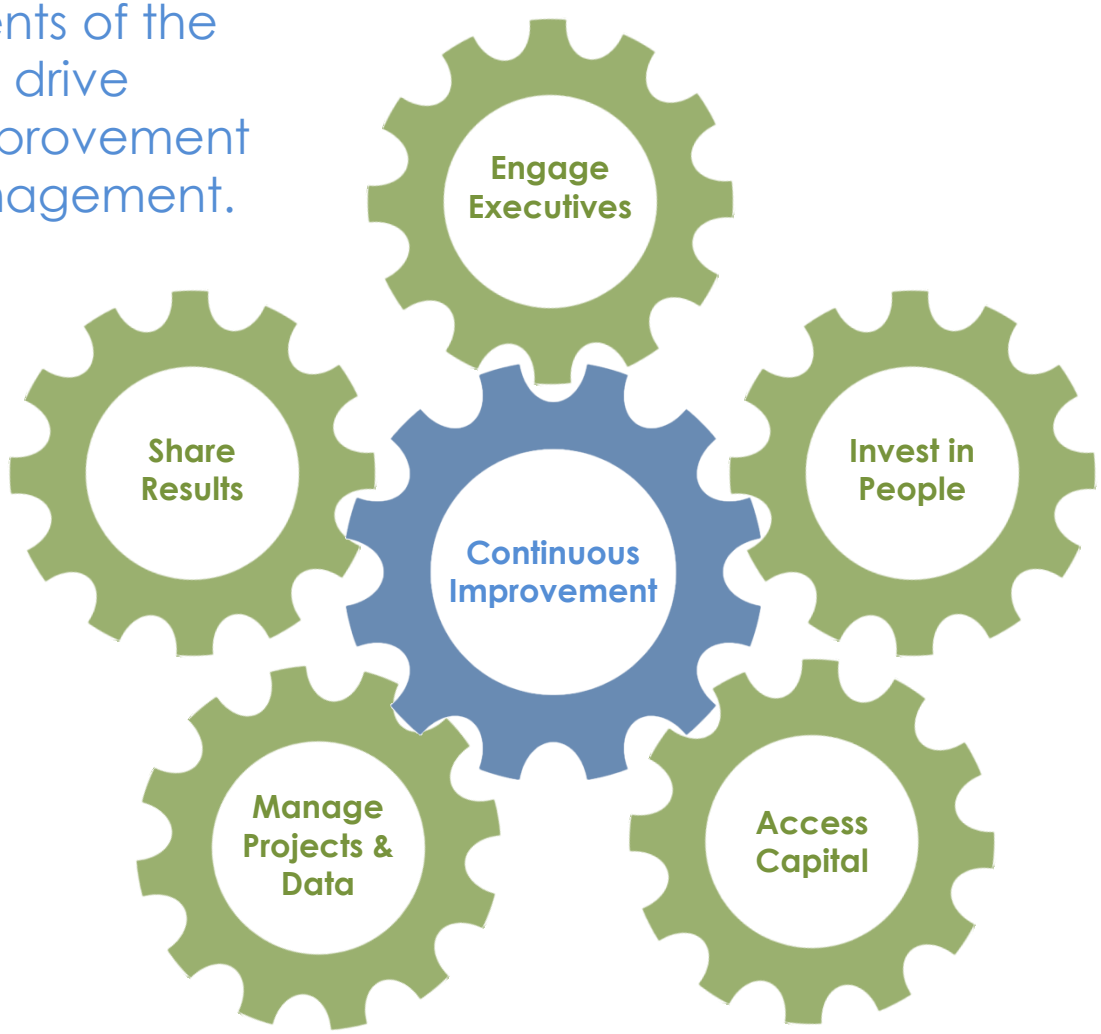
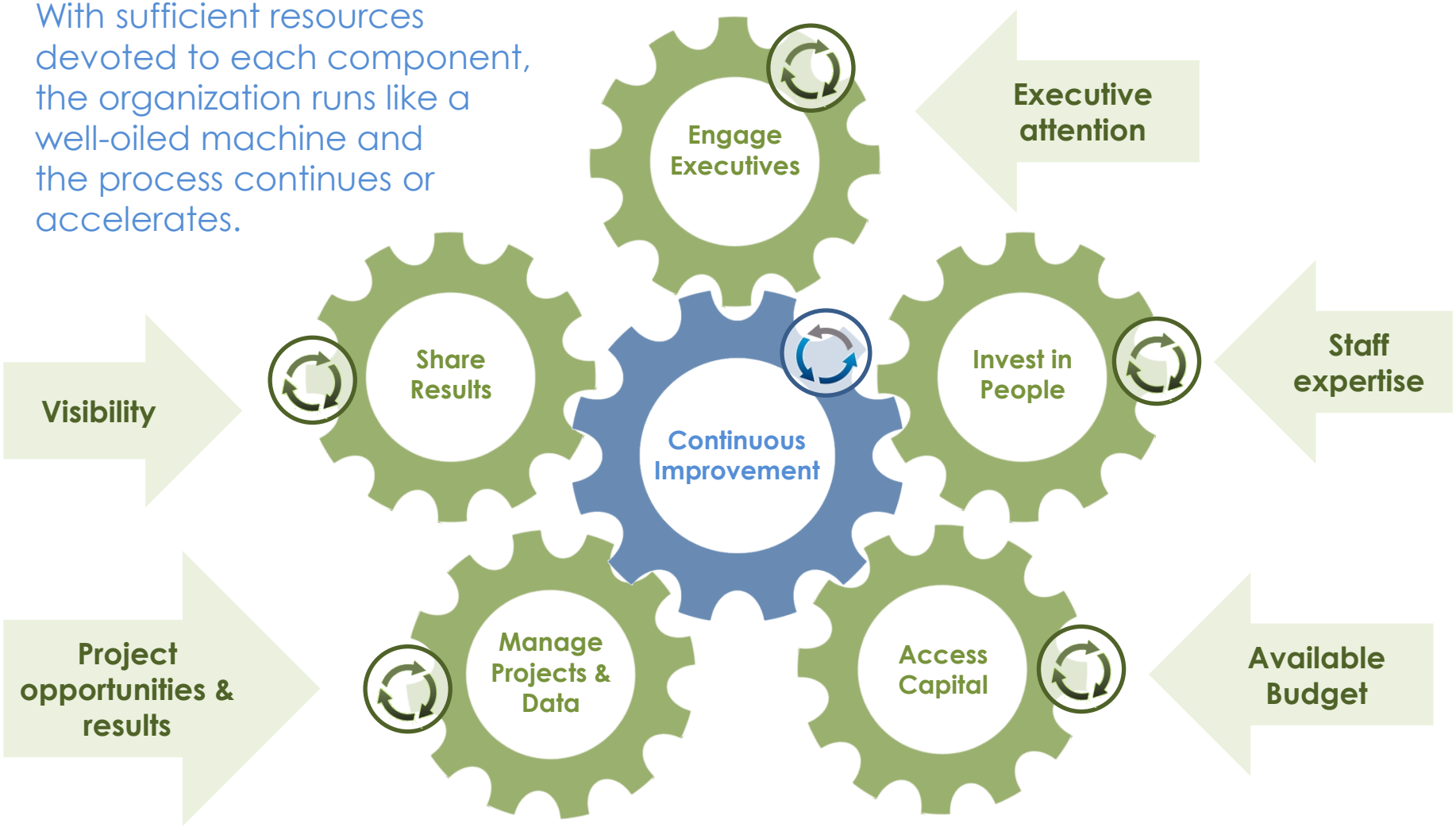
Components of the Virtuous Cycle

Five components of the Virtuous Cycle drive continuous improvement in energy management.



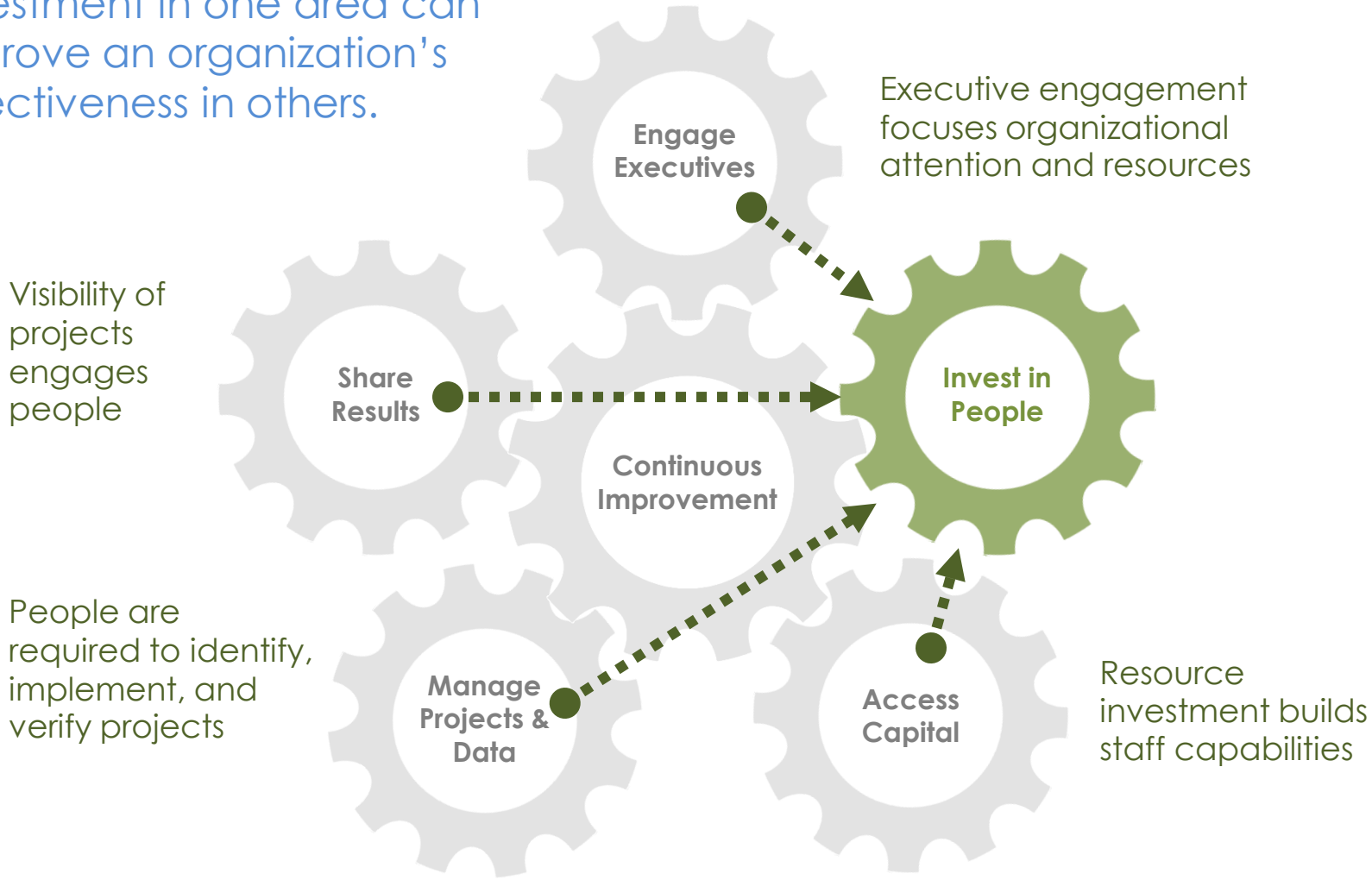
Key Resources

With sufficient resources devoted to each component, the organization runs like a well-oiled machine and the process continues or accelerates.



Inter-dependencies

Investment in one area can improve an organization's effectiveness in others.



Constraints & Barriers

When activity in any one area slows or stops, the whole system's performance is affected.

Solutions

The Virtuous Cycle framework provides a range of **best practices** to help remove constraints and keep the system going.

Considering best practices

1 Engage Executives

Goal: Leadership recognizes energy management as a key strategic priority for cutting costs, reducing emissions, and building long-term value.

Key Resources: Leaders' time & attention

Core Strategy: Set aggressive, absolute goals and link them to implementation plans.

Best Practices

Create a mandate…

Develop a long-term plan for strategic energy management

Set GHG or energy reduction goals
- ★ Absolute (not relative to growth)
- ★ Organization-wide
- ★ Goals linked to implementation plans

Establish responsibilities…

Designate executive team members with responsibility for energy management
- ★ Tie energy management to compensation & performance reviews.

Routinely review energy investment opportunities
- ★ Formally factor in non-financial co-benefits

Monitor progress…

Establish metrics for measuring progress

Benchmark performance against leaders or standards

★ Leading practice

2 Invest in People

Goal: Staff is mobilized, equipped, and accountable for realizing efficiency opportunities and energy management is part of the organizational culture.

Key Resources: Staff capabilities, motivation, time and attention.

Core Strategy: Establish accountability for energy management in multiple, company-wide FTEs and cross-functioning teams.

Best Practices

Create accountability…

Employees have clear and formal responsibility for managing EM

- ★ Multiple FTEs
- ★ Organization-wide responsibilities

Engage employees…

A majority of employees are regularly engaged in improving EM

- ★ Awareness is imbedded in the organizational culture
- ★ Incentives are aligned with desired actions

Encourage collaboration…

Cross-functional teams are used as standard practice for implementing EM

Build expertise…

Multiple learning opportunities are available to all employees

★ Leading practice

3 Access Capital

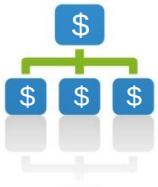
Goal: Executives make strategic, capacity-building investments of financial resources to make action possible.

Key Resource: Available budget

Core Strategy: Create an ample funding source that is consistently available through a transparent and formalized process.

Best Practices

Ensure funding is accessible…



Employees know how to obtain funding

- ★ The process is formalized
- ★ The process is transparent

Ensure funding is dependable…

Employees can usually count on funding being available

- ★ Dedicated capital and operating budgets is available for energy-related improvements

Ensure funding is sufficient…

Ample funding is available for energy projects

- ★ Utility incentives are leveraged
- ★ External funding is explored

★ Leading practice

4 Manage Projects & Data

Goal: Processes and tools are developed and refined over time to make sure increasingly ambitious projects are identified, implemented, measured, and verified.

Key Resources: Project opportunities, energy data and data management systems.

Core Strategy: Identify, implement, and track projects proactively. Ensure that energy data is readily available to set priorities, select projects and verify results.

Best Practices

Identify projects…

Cost-effective project opportunities are identified proactively and continuously

★ New or innovative projects or approaches are explored

Select projects…

Potential energy savings is modeled and used to select investments

★ Projects are chosen based on long-term payback

Implement projects…

An evolving pipeline of promising projects are consistently implemented

★ New or innovative technologies or approaches are integrated

Track progress…

Energy data is used to make decisions about efficiency investments

★ Real-time energy data is collected and available to decision-makers

Energy savings are verified after projects are implemented

★ Leading practice

5 Share Results

Goal: To maintain momentum, successes are leveraged into stories and shared directly back with executives and internal and external stakeholders.

Key Resource: Visibility

Core Strategy: Communicate results to key internal and external stakeholders who can drive further progress.

Best Practices

Communicate results internally…

Routine communications to employees organization-wide about energy or GHG performance

★ Employee exposure to internal communications is tracked

Communicate results externally…

Energy or GHG data is made public

★ Reporting follows a recognized standard (e.g. GRI, SASB)

★ Reports are communicated through a transparent & accessible channel

★ Reports are verified by an independent third party

Communicate results at a high level…

Executives are involved in monitoring energy performance and communicating the results

★ Executives periodically revisit and expand goals in light of achievements

★ Leading practice

Implementing the Virtuous Cycle

Implementing the Virtuous Cycle

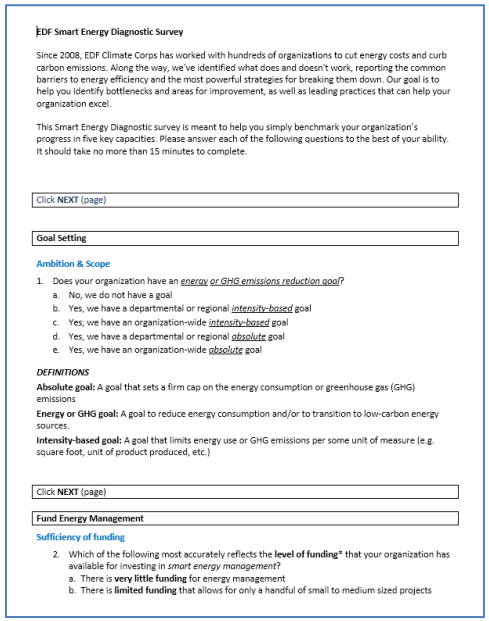
1. Benchmark current energy management practices against best practices and leading organizations.
2. Prioritize Virtuous Cycle components for initial focus.
3. Pinpoint specific barriers and bottlenecks in the target areas.
4. Identify and implement strategies, drawing from industry best practices.

Next Steps: The *Smart Energy Diagnostic* assessment

The EDF *Smart Energy Diagnostic* tool can help organizations benchmark energy management practices and prioritize improvements.

- assess performance against best practices,
- benchmark against leaders, and
- identify an initial menu of opportunities for improvement.

A 14-question survey collects data



EDF Smart Energy Diagnostic Survey

Since 2008, EDF Climate Corps has worked with hundreds of organizations to cut energy costs and curb carbon emissions. Along the way, we've identified what does and doesn't work, reporting the common barriers to energy efficiency and the most powerful strategies for breaking them down. Our goal is to help you identify bottlenecks and areas for improvement, as well as leading practices that can help your organization excel.

This Smart Energy Diagnostic survey is meant to help you simply benchmark your organization's progress in five key capacities. Please answer each of the following questions to the best of your ability. It should take no more than 15 minutes to complete.

Click **NEXT** (page)

Goal Setting

Ambition & Scope

1. Does your organization have an *energy or GHG emissions reduction goal*?
   a. No, we do not have a goal
   b. Yes, we have a departmental or regional *intensity-based* goal
   c. Yes, we have an organization-wide *intensity-based* goal
   d. Yes, we have a departmental or regional *absolute* goal
   e. Yes, we have an organization-wide *absolute* goal

DEFINITIONS

Absolute goal: A goal that sets a firm cap on the energy consumption or greenhouse gas (GHG) emissions

Energy or GHG goal: A goal to reduce energy consumption and/or to transition to low-carbon energy sources.

Intensity-based goal: A goal that limits energy use or GHG emissions per some unit of measure (e.g. square foot, unit of product produced, etc.)

Click **NEXT** (page)

Fund Energy Management

Sufficiency of funding

2. Which of the following most accurately reflects the **level of funding*** that your organization has available for investing in *smart energy management*?
   a. There is **very little funding** for energy management
   b. There is **limited funding** that allows for only a handful of small to medium sized projects

A 1-page scorecard summarizes results

EDF ENVIRONMENTAL DEFENSE FUND — Finding the ways that work

EDF SMART ENERGY DIAGNOSTIC SNAPSHOT

NATIONAL COMPANY INC

April 21, 2014

Overall Score

Your Score 1.6

0.0 None or Minimal · 1.0 Emerging · 2.0 Developing · 3.0 Progressing · 4.0 Leading

Score Breakdown

	0.0 None or Minimal	1.0 Emerging	2.0 Developing	3.0 Progressing	4.0 Leading	Best Practices
SET GOALS				◆		Aggressive organization-wide goals that are communicated
FUND ENERGY MANAGEMENT					◆	Consistent and ample funding that is accessible
INVEST IN PEOPLE			◆			Experts and employees organization-wide work towards continuous energy performance
IDENTIFY, IMPLEMENT & TRACK PROJECTS				◆		Proactively identify and implement projects and track progress to inform future investments
SHARE RESULTS					◆	Externally report results to make progress transparent

◆ 2014 Climate Corps Cohort, 90th percentile

Opportunities for Improvement

1. Fund Energy Management
Employees in different departments can benefit from diverse interventions that aim to increase access to funding. Consider formalizing the process for project and facilities managers so that they understand how to obtain funding for energy management. Also, consider broadening your organization's financial criteria to account for total cost of ownership, a move that could allow for more energy efficiency investments to effectively compete for funding based on long-term earnings potential.

2. Identify, Implement & Track Projects
Making energy data visible and accessible can provide your organization with the information it needs to make thoughtful energy efficiency improvements. Consider the use of dashboards, scorecards, and other software solutions to put useful data in the hands of your organization's decision-makers.

3. Share Results
Publicizing successful energy efficiency stories can bring additional types of value to your organization beyond direct cost-savings. Consider using your organization's website and other media channels to make clear your commitment to sustainability among your customers, peers and competitors.

EDF CLIMATE CORPS

The *Smart Energy Diagnostic* was developed by assessing energy management practices among over 300 organizations that have participated in EDF Climate Corps (edfclimatecorps.org).

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