

Energy Optimization Playbook

A step-by-step guide for industrial manufacturers to build the business case for energy optimization



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About Suppliers Partnership For the Environment

Suppliers Partnership for the Environment is a collaborative initiative between global automakers and their suppliers focused on advancing sustainability across the automotive value chain. SP provides a platform for companies to work together on environmental projects that deliver positive impacts on the economy, community, and the environment. Their efforts include addressing challenges related to energy optimization, carbon neutrality, chemical management, sustainable materials, and water stewardship, among others.

About RENEW Energy Partners

Founded in 2013, RENEW Energy Partners provides funding, engineering, and asset management solutions for commercial and industrial, as well as institutional clients to help them achieve their decarbonization objectives. RENEW supports clients in reducing greenhouse gas emissions through a diverse range of projects, from efficiency upgrades to advanced energy generation solutions. All projects are designed to enhance sustainability without requiring upfront capital investment.

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This resource reflects the collective experience of practitioners, researchers, and organizations committed to transforming industrial energy optimization. We are especially grateful for the publicly available resources, tools, and case studies that informed this guide- and for the many leaders across industry, government, and academia who continue to shape the path forward.

ENERGY OPTIMIZATION PLAYBOOK

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NAVIGATING THE ENERGY OPTIMIZATION PLAYBOOK

The Energy Optimization Playbook is a comprehensive resource created to empower manufacturing entities in enhancing their built environments. Our goal is to equip industrial manufacturers with a detailed guide and helpful tools to lay the foundation for energy optimization projects. Supporting them in building a compelling business case for making these initiatives an organizational priority. This Playbook draws on the successes of industrial sustainability leaders and compiles a wealth of resources to support you at every step of the process.

This Playbook can be used as a step-by-step guide for kickstarting the energy optimization process. Depending on the maturity of your energy program, you can begin at any stage—from defining sustainability targets to implementing energy optimization measures. By following the steps of the Energy Optimization Playbook, businesses can anticipate what is needed to execute such projects, pinpointing priorities, and sidestepping potential obstacles during project planning.

Throughout the Playbook, we have incorporated insights, tools, and case studies from members of the Supplier Partnership for the Environment. These individuals have made significant strides in their decarbonization strategies and have successfully implemented various energy optimization projects.



SECTION 01

Building the Foundation

1.1 Identifying Organizational Goals

Detail the Organization's Strategic Goals and Outlook: Clearly review and note the long-term goals and the overall strategic outlook of the organization.

Detail Strategic Plans for Achieving Goals:

Identify and outline plans in place to reach the primary strategic goals.

1.2 Identifying Sustainability Targets

Identify Sustainability Drivers:

Identify internal and external factors that are influencing the organization's sustainability commitments (corporate values, regulatory demands, market trends, etc.)

Understand the Organization's Sustainability Program Level of Maturity:

● **Detail Existing Sustainability Targets:** Review and document the organization's sustainability goals.

or

● **Set Sustainability Targets:** Establish realistic goals and targets following best-practice guidance from industry leaders and government organizations.

Document the Strategies for Meeting the Targets:

Outline current action plans and resources allocated to sustainability goals, noting involved personnel.

EPA's Center for Corporate Climate Leadership:

Offers comprehensive resources and guidance for businesses committed to setting ambitious climate targets. This initiative empowers organizations to align their sustainability efforts with science-based practices and contribute to global climate action



1.3 Historical Challenges of Energy Optimization

Identify Historical Projects: Pinpoint specific energy optimization projects that have been considered historically and discuss why they were proposed.

Assess Project Challenges: Detail the challenges faced in each of these projects, providing insights into recurring or unique obstacles.

Examine Leadership Support: Evaluate the level of support from leadership for these projects. If support was lacking, note the reasons why.

Current Status of Projects: Determine and document the status of these projects, noting any progress, ongoing issues, and what (if anything) worked to get these projects over the finish line.



SECTION 02

Organizing and Aligning

2.1 Identify an Energy Team

Define the Team's Mission and Objectives:

- **If the team is established:** Clearly state the team's purpose, goals, and objectives. Skip to section 3 if items below have been completed.
- **If the team is not yet established:** Develop the team's purpose, goals, and objectives. Align with findings from Section 1.

Identify Team Members and Roles:

- Identify the energy team members, consider whether existing personnel can fill these roles or if new hires are necessary.
- Understand each energy team member's current responsibilities, and clearly define any additional duties.
- Recruit champions from various departments. These champions will serve as key advocates, ensuring that when a project aligns with their area of expertise, they can effectively communicate its value to their department.

Communication Channels:

- **Internal Communications-** Develop a schedule for regular updates (e.g., project milestones, performance metrics) to keep everyone informed. Use multiple channels such as emails, team meetings, and internal newsletters to share progress.
- **External Communications-** Develop a plan to communicate the program's success through press releases, website updates, engagement with industry forums to build early credibility and transparency about the program's status to manage stakeholder expectations.

2.2 Identify External Support

In this phase, it is important to recognize not only the internal team available to support your energy optimization efforts, but also the network of partners available to support various components of your initiatives.

Utility Providers

Your utility company can be an invaluable partner, offering insight into your facility's energy profile, rate structures, and available incentive programs. Many utilities offer technical assistance, rebates, energy audits, and even co-funding for energy efficiency and renewable projects.

Consultants and Advisors

Consultants and advisory firms can help you evaluate your current energy usage, identify potential energy-saving opportunities, and compare options across technologies and vendors. They provide unbiased assessments, support cost-benefit analysis, and advise on available incentives. While they typically don't implement projects directly, their guidance can help you make informed decisions before engaging engineering firms, or financing partners.

Industry Peers or Trade Associations

Other companies in your industry, especially those who've completed energy optimization projects, can share lessons learned and offer recommendations. Trade associations may also have resources, case studies, or working groups focused on energy or sustainability improvements in your industry.

Government and Regional Program Representatives

Local, state, and federal agencies often offer grant funding, tax credits, and incentive programs. Reaching out to a regional or government energy office early helps you understand what's available and how to apply. These partners may also be able to connect you with technical resources or additional funding sources.



Organizations can receive valuable support through the DOE's Better Plants Program where they are assigned a Technical Account Manager (TAM), who serves as a powerful extension of their existing energy teams. TAMs assist in

developing energy metrics and baselines, helping organizations track and improve performance over time. Participants also benefit from industry recognition, networking opportunities, and access to cutting-edge innovations

2.3 Creating Internal Incentives and Recognition Programs

To motivate and maintain momentum, consider building an internal program to reward progress on energy projects. This could include financial incentives for sites that reduce energy intensity, recognition for staff who surface new project ideas, or awards tied to sustainability goals. These programs foster ownership and help embed energy performance into everyday decision-making, making the case for optimization a shared priority across teams.

2.4 Strategic Alignment with Leadership

Identify Key Leadership: Understand who drives strategic decisions within the organization.

Assess Leadership's Role in Energy Optimization: Determine how leadership influences energy project decisions and how high energy ranks as a current priority.

Clarify Leadership Priorities: Identify what matters most to leadership—financial performance, operational resilience, sustainability metrics—and align accordingly.

Tailor the Energy Team's Messaging: Frame the value of energy optimization in terms of leadership's top priorities. Communicate progress regularly and clearly.



To illustrate how leading organizations structure their internal energy and sustainability efforts, we've included an overview of Magna International's decarbonization governance model. Their approach demonstrates how cross-functional collaboration, executive engagement, and clear role definition can drive accountability and accelerate progress on energy goals.

Sustainability Governance Highlights

- **Energy Management Champions:** About 95% of manufacturing divisions have an energy management champion collaborating with the Global Energy Team.
- **Best Practices Sharing:** The Global Energy Team disseminates energy efficiency case studies and best practices across all divisions and operating groups.
- **Regular Interactions:** Operating Group sustainability leads regularly interact with the Global Director, Sustainability & Energy, who oversees key sustainability metrics and goals.



SECTION 03

Financial Support



Before diving into project planning, it's critical to understand what financial resources are available. This section outlines how to assess your organization's internal capacity to fund energy optimization efforts and introduces third-party options that can expand your scope. By establishing a clear funding strategy up front, you can prioritize the right projects and streamline decision-making in later stages.

3.1 Evaluate Internal Capacity to Fund

It is important to understand how your organization evaluates capital investments. Internal funding is often limited and highly competitive—knowing your company's financial thresholds and approval criteria early will help shape your funding strategy later.

Work with your finance team champion (see [Section 2.1](#)) to get clarity on how proposals are typically reviewed. Common benchmarks include:

Capital Budget Availability: Are funds typically allocated for energy projects, or would they compete with other priorities?

Return on Investment (ROI): What ROI threshold is required for internal approval?

Payback Period: Is there a maximum acceptable time to recover the investment?

Net Present Value (NPV): Are future savings valued in decision-making?

Internal Rate of Return (IRR): How does the expected return of energy projects compare to other capital projects?

Project Risk Profile: How much uncertainty (cost, performance, timeline) is acceptable?

3.2 External Financing Options

When internal capital is limited—or reserved for core business priorities—external financing can help advance energy projects that might otherwise be delayed. While some organizations seek to retain asset ownership and control through loans or leases, others prefer third-party models that shift risk and reduce internal workload.

This section outlines a range of external funding options, from traditional lending to fully outsourced financing, to help you evaluate which approach best aligns with your goals, capacity, and risk tolerance.

Traditional Lending: Mid-Range Cost, Moderate Risk

- Options: Loans, leases, energy service performance contracts (ESPCs).
- Pros: Familiar structure; ownership retained by customer.
- Cons: Adds to debt load; requires internal project management; may not include performance guarantees.

Third-Party Funding: Higher Cost, Lower Risk

- Options: Energy Services Agreements (ESAs), Power Purchase Agreements (PPAs), Thermal Energy Purchase Agreements (TEPAs).
- Pros: Fully funded model—no CapEx required.
 - Typically structured to be off balance sheet.
 - Includes performance guarantees, ongoing maintenance, and project execution.
 - Transfers risk to the provider.
- Cons: Typically a higher cost of capital—but often justified by reduced risk and broader project scope.



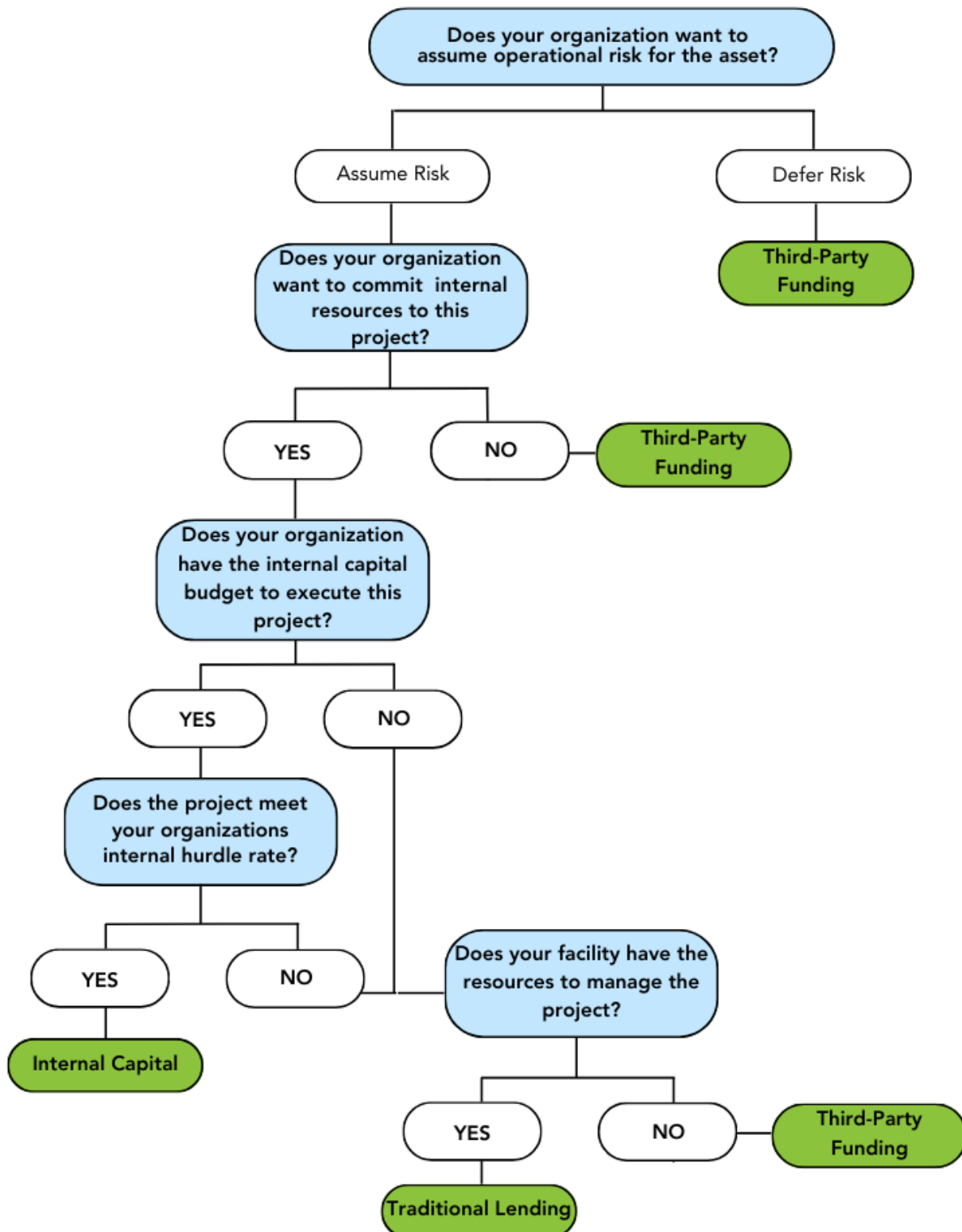
3.3 Evaluate the Full Cost of Implementation

When weighing funding options, it's important to consider more than just capital cost. Each approach, internal funding, traditional lending, and third-party financing comes with different implications for risk, ownership, internal workload, and long-term value. Use the following criteria to evaluate which model aligns best with your team's needs:

Criteria	What to Consider
Capital Availability	Do you have budget available, or would this displace other priorities?
Risk Allocation	Who will be responsible if the project underperforms or overruns budget?
Execution Capacity	Can your team handle project management, or do you need outside support?
Performance Assurance	Do you require guaranteed savings or service levels?
Asset Ownership	Is it important for your organization to own the asset, or keep it off balance-sheet?
Ongoing Optimization	Will there be support post-installation to maximize long-term performance?

3.4 The Financial Decision Tree

The decision tree below summarizes the key factors discussed in Sections 3.1 through 3.3 - beginning with your organization's appetite for risk and level of available internal resources, and expanding to include whether project execution support is needed. Use this guide to help determine which funding path is the best fit for your organization's needs.





SECTION 04

Planning for Optimization

With funding strategies in place, your team can now turn to the detailed planning required to identify and implement impactful projects. This section provides a step-by-step approach to analyzing energy use—starting at the portfolio level and narrowing down to specific sites and equipment—so you can align your investments with your operational goals and sustainability targets.

4.1 Portfolio Analysis

Gather Data Across Facilities:

Start by collecting energy consumption data for each facility using:

- Utility Bills & Submetering Data - Focus on electricity and natural gas over the last 12 months.
- Production-Adjusted Metrics - Energy use per unit of output (e.g., kWh per part produced).
- Operational Hours - Identify facilities running at full capacity vs. intermittently.

Compare Facility Performance:

Rank facilities based on:

- Total energy consumption (electricity + gas).
- Energy intensity (kWh per square foot or per production unit).
- Historical Trends - Note any major increases in energy use.

Identify the Facility with the Greatest Opportunity:









Prioritize facilities that:

- Have the highest absolute energy use (biggest savings potential).
- Show significant inefficiencies (e.g., higher energy use per production unit than similar sites).
- Are strategically important (e.g., a core manufacturing site vs. a secondary warehouse).





4.2 Aligning Energy Optimization Projects with Facility

In addition to advancing sustainability targets, energy optimization projects offer measurable benefits across cost, operations, and resilience. By aligning with a facility's operational and capital goals, you can drive progress on energy optimization while also supporting the broader priorities of the site's operations team.

Engage On-Site Teams: Involve on-site teams at the hotspots across your portfolio to identify necessary facility upgrades. By engaging these teams, you can gain insights into the specific enhancements needed to increase operational efficiency. Utilize the WECO Toolbox, step 1 in General Motors Energy Treasure Maps tool, to ask each facility detailed questions about the following conservation topics:

-  Metric Tracking
-  Compressed Air
-  Building Space
-  Controls
-  Unoccupied Times
-  Best Practices
-  Automated Start/Stop
-  Water

Align Needs with Goals: Strategically align the identified conservation topics with how they could support broader organizational objectives. Examples of potential benefits include:

-  Cost Savings
-  Compliance
-  Competitive Advantage
-  Resilience



4.3 General Motors Energy Treasure Maps: Identifying and Prioritizing Energy Conservation Measures

Once you've selected the best-fit facility to begin with, the next step is to identify energy conservation measures within that site, using the Energy Treasure Maps Tool created by General Motors. This tool allows teams to identify, organize, quantify, and prioritize cost-saving and carbon reduction measures based on real data.

Input Site-Specific Information

To begin, your facility team should input key site data into the Energy Treasure Maps Tool:

- Facility name, type and location details.
- Total energy consumption (electricity, natural gas, and other fuels)
- Site water data

Tip: Data input fields are highlighted in light red to guide you through the process. You can also hover over column headers for additional details.

Identify Applicable Equipment and Systems

Once the facility baseline is established, users will systematically assess equipment and operational systems using dedicated worksheets within the tool. The analysis includes:

- Building Envelope Leaks (windows, doors, insulation)
- Compressed Air System (leaks, pressure reduction)
- HVAC Optimization (temperature setbacks, VFDs)
- Lighting Systems (LED retrofits, occupancy sensors)
- Process Equipment Efficiency (machine sleep modes, panel coolers)
- Water Conservation Measures (leak detection, ice machine efficiency)

Tip: Before walking the facility, review the project worksheets to ensure you gather the correct data safely and efficiently.

Conduct the Walkthrough & Gather Data

During the walkthrough, teams should:

- Observe equipment operation and note inefficiencies
- Use thermal cameras for heat loss detection (e.g., HVAC leaks)
- Measure compressed air leaks using ultrasonic detectors
- Assess lighting levels to determine excess wattage or unnecessary fixtures
- Engage with facility staff to understand pain points and maintenance challenges.

Generate Savings Estimates

Once all applicable equipment data is inputted, the Energy Treasure Maps Tool will calculate:

- Projected energy cost savings (based on local utility rates)
- Carbon emissions reductions (in metric tons of CO₂ equivalent)
- Payback periods for each proposed energy measure

Tip: Results are automatically summarized in the Treasure Maps Summary Tab, providing a high-level view of the facility's energy-saving potential.

Prioritize Energy Conservation Measures

Utilize what you've learned in Section 3 about funding to evaluate and organize the identified measures. Prioritize those that align with your internal criteria, such as payback period, ROI, or available capital, or those that are strong candidates for external financing, whether through traditional lending or third-party funding mechanisms. This strategic filtering ensures that your optimization roadmap is both impactful and financially executable.

Tip: The Project Summary Dashboard visualizes key findings and provides actionable insights when prioritizing measures.

everybody in.





SECTION 05

Implementation & Evaluation

Once your team has identified energy optimization measures, the next step is ensuring the project can be successfully implemented, measured, and communicated. At this stage, leadership will expect clarity on how progress will be tracked, who is responsible for each part of the rollout, and how the organization will maintain momentum after launch.

To support your team in this phase, we've outlined best practices drawn from the U.S. Department of Energy's 50001 Ready Navigator, a recognized framework built specifically for industrial and commercial facilities. The Navigator provides clear, step-by-step guidance on post-approval execution, from operational planning to performance reviews.

The selected resources below align with this phase of the process and can be used as reference points or templates as your team moves toward implementation.

Focus	Relevant 50001 Task(s)	How It Supports This Phase
Clarify ownership and accountability	Task 06: Energy Team and Resources	Clarify who's responsible for execution and what resources are available.
Define performance metrics and set baselines	Task 11: EnPIs and EnBs (Energy Performance Indicators and Energy Baselines)	Helps establish the KPIs and baselines needed to track success and show measurable returns.
Plan for system performance and commissioning	Task 17: Operational Controls	Ensures systems are set up to operate efficiently and stay within performance expectations.
Monitor results and build a reporting cadence	Task 20: Monitoring and Measurement of the EnMS Task 21: Monitoring and Measurement of Energy Performance Improvement	Helps define what gets measured, how often, and by whom – supporting ongoing reviews.
Keep teams informed and engaged	Task 15: Awareness and Communication	Provides guidance on building internal communication and keeping stakeholders aligned.
Review, improve, and plan for scaling	Task 23: Management Review Task 25: Continual Improvement	Offers structure for post-project reviews, identifying lessons learned, and preparing to expand the approach.

CONCLUSION

By completing the steps outlined in the Energy Optimization Playbook, you now have all the essential elements to create a boardroom-ready deliverable. This will convey the critical role of energy optimization in meeting your sustainability goals, the personnel and partners required for execution, the funding strategies best aligned with your goals, and the projects to be planned and implemented. By following this approach, you've set a clear path for tracking reductions and efficiency gains, enabling your organization to move decisively from the commitment to sustainability into measurable, impactful action.

DISCLAIMER

This document sets forth various findings based on information available to working group members at the time of issuance. These findings are not intended to set forth any industry rule, requirement or standard. Each Member should independently determine its own processes and practices, including, without limitation, levels, measurements, vendors, materials, equipment, energy sources, energy use, emissions, and recyclability. This document should not be considered to contain legal advice. SP and its member companies make no warranty, expressed or implied, regarding the accuracy or completeness of the information contained in this document, and they will not be liable for any errors or omissions in this information nor for the availability of this information. The authors of this document reserve the right to change it at any time, as they deem appropriate within their sole discretion. SP and its member companies will not be liable for any losses, injuries or damages that may result from the use of the information contained in this document.