

Inventory to Action

*Moving beyond
greenhouse gas
inventories to energy
efficiency and
renewable energy
strategies*

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Leverage your inventory efforts

Every year more and more organizations collect and report energy and greenhouse gas (GHG) data through avenues such as CDP and corporate social responsibility (CSR) reports. However, far fewer companies fully leverage this work to achieve environmental benefits, reduce costs, enhance brand equity and mitigate risks beyond business as usual. This paper provides suggestions on how to accomplish this through the development of a comprehensive energy management program.

A growing population of organizations are using their GHG inventories to set ambitious targets to reduce emissions. Target setting is an important step to move from developing an inventory to becoming a carbon-resilient organization. Targets can help to engage all levels of the organization and to focus efforts on a common objective. Targets also establish a level of ambition that can overcome barriers, such as financial hurdle rates required for implementing projects.

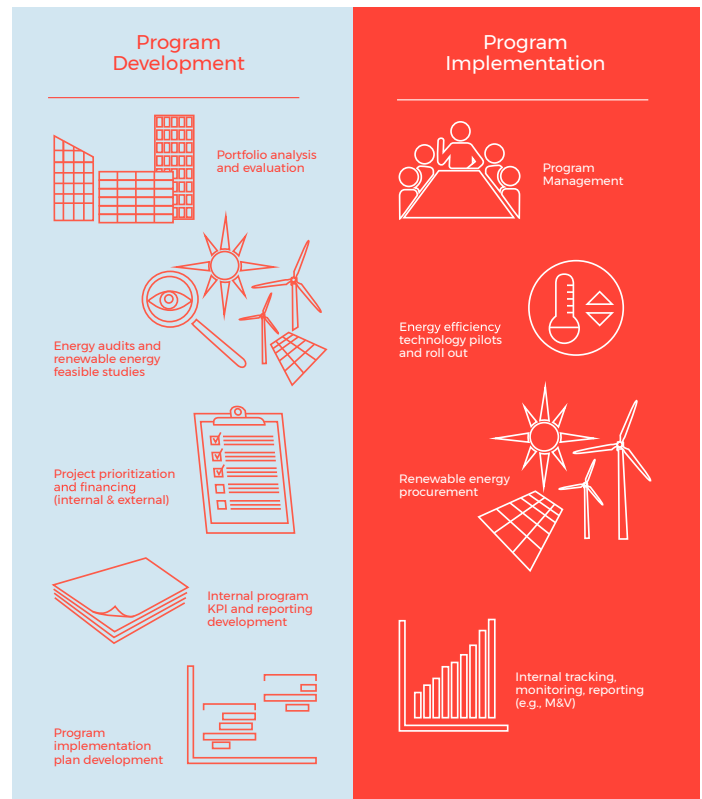
For any organization aspiring to reach the full potential of its sustainability performance, completion of annual GHG inventories and target setting are important milestones, but are not the destination. These efforts are steps in a longer journey toward continual improvement in energy performance and organizational sustainability.

By using data collected through annual inventory and reporting efforts for benchmarking, technical and financial assessments and project prioritization, an organization will be well equipped to make informed decisions about energy efficiency and renewable energy investments as well as developing a successful energy management program.

Start where you are (but know where to go)

The GHG inventory process yields a significant amount of useful information. The process of collecting data builds relationships and intra-organizational connections that lay a foundation for further work. The data outline an organization's emissions, identify the sources of those emissions and highlight year-on-year trends in organization-wide performance. For most reporting frameworks, data are reported at a high level both in terms of energy and emission types and geography. A deeper dive reveals the type and amount of energy consumed by every property and asset in the organization's portfolio, including important metrics such as GHG intensity, utility costs and energy intensity.

Those who have conducted GHG inventories understand this information is often difficult to obtain and considerable work goes into building a robust inventory. Yet, without taking important next steps to develop actionable insights on the operations within the organization's portfolio, the information that took so much time to collect may not deliver value beyond its use in annual reporting.



Key steps in a comprehensive energy management program.

Value-added activities that are a sample of potential outcomes from leveraging the work done for a GHG inventory include:

- developing optimized GHG and energy use reduction targets or contextualizing previously established targets,
- diagnostics on the performance of the building portfolio,
- identifying outliers in energy and GHG intensity,
- achieving operational efficiencies while enhancing employee comfort,
- minimizing energy supply risks, and
- procuring renewable energy to meet financial and sustainability targets.

Determining which outcomes are most valuable is an important first step in moving from measuring to actively managing an organization's energy use and GHG emissions. This will help determine the data analysis approach. An organization's data are only as good as the insights drawn from the information, and a clear strategy is needed to plan the analysis.

While some of these objectives may be managed by different functions within the organization, the work done through the GHG inventory – which by nature is comprehensive – offers the opportunity to manage these objectives holistically and create synergies that would otherwise be unavailable.

Identify opportunities through portfolio analysis

While a detailed assessment of each facility is one way to identify energy efficiency and renewable energy opportunities, for organizations with an extensive portfolio or limited resources, a portfolio analysis and accompanying assessments are important stepping stones. It helps to identify where to initially invest limited resources to achieve the best results.

Benchmarking

Peer and internal benchmark comparative analyses are a good first step to determine overall building portfolio performance and identify where the greatest opportunities lie. Well-planned benchmarking cuts through the noise and demonstrates the performance of each building in a context specific to its unique characteristics. This allows the organization to estimate the opportunity at large, which can form the basis of a business case for a comprehensive energy management program.

To provide accurate comparisons of buildings across a national or international portfolio, energy performance of buildings should be compared against other buildings of the same type and normalized in a way that makes the most sense based on the organization's business and the function of the building. This will provide the most accurate conclusions about energy, cost and emission savings opportunities.

For example, normalizing office building energy use to square footage and sorting by climate zone enables comparisons between buildings and against publicly available datasets such as the **Commercial Buildings Energy Consumption Survey (CBECS)** and **Energy Star for Buildings** — both compile an extensive collection of building performance data. Energy use for other building types may be more appropriately normalized to process throughput, occupants or sales. Industry-specific metrics such as power usage effectiveness (PUE), performance per watt or ASHRAE 90.4 for data centers can also serve as valuable benchmarks.

By comparing against internal and external benchmark data, an organization can better understand the relative performance of each building in its portfolio and identify buildings with the greatest potential for savings through energy efficiency measures.

Screening Level Assessments

A screening level assessment builds upon data already compiled during the inventory and benchmarking analyses. It adds in variables such as ownership or lease terms, facility and equipment age, grid electricity emission factors, local utility rates and energy efficiency incentive opportunities. For organizations also interested in renewable energy, additional data could include regional solar resources, utility regulatory restrictions and renewable energy incentives to

help identify which **renewable energy options** are best suited for each facility. By incorporating those variables relevant to the organization, the screening level assessments make it easier to identify facilities with the best opportunities for improvement and strategically select which to prioritize for further action, such as conducting energy audits.

Energy Audits and Detailed Assessments

While energy audits can be conducted to different levels of rigor, as outlined by organizations like **ASHRAE**, audit results typically serve two primary purposes. First, they improve the granularity of energy information available to the organization. Rather than simply knowing the monthly energy consumption of an entire building, an on-site audit or detailed interval data assessment in conjunction with remote audits leaves the organization and/or building owner with a comprehensive view of energy consumption by end-use (e.g., lighting, heating, cooling, plug loads). Second, energy audits identify energy efficiency measures and include financial assessments of associated cost and savings. Energy audits can be coupled with an on-site renewable energy assessment, thereby providing a complete package of options for reducing the building's energy and GHG footprint.

Strategic Planning and Systems Thinking

Too often, energy efficiency efforts are approached through ad-hoc projects that result in excess cost and sub-optimal savings. The solution is strategic planning and systems thinking. By compiling and thoroughly analyzing data about the portfolio's existing conditions and potential energy improvements prior to the roll-out of individual measures, the organization can better ensure the right investments are made at the appropriate times and reap the benefits of synergistic effects between measures. Because the best solution is not always apparent, a holistic approach should be taken to ensure that investments yield the greatest returns across the organization.

Project prioritization & KPI development

Utilizing the portfolio assessment in combination with the audit insights, the organization now has the requisite information to prioritize applicable energy efficiency and renewable energy projects. At this stage, it is critical to lean on the relationships built throughout the inventory process for prioritization and funding. Several mechanisms are available for financing efficiency investments, such as providing a dedicated budget for projects, implementing an **internal carbon fee**, lowering internal financial hurdle rates, bundling projects and third-party funding through

performance contracting and savings guarantees. For example, by strategically bundling together multiple projects with varying ROIs, an average ROI can be achieved that meets an organization's internal requirements while getting more projects approved than if considered independently of one another.

Project prioritization will likely incorporate aspects beyond strictly financial performance, such as how sustainability and energy efforts tie into larger business strategies and goals. For example, some projects may tie into other corporate initiatives, such as employee and community engagement, or there may be an opportunity to add energy management and renewable energy into remodels or new construction plans. Once the projects have been prioritized, funding mechanisms have been identified and opportunities to intertwine with other corporate initiatives have been socialized, the organization is now ready to develop reporting mechanisms and associated Key Performance Indicators (KPIs).

It is important to think critically about how success of the energy management program will be measured. As highlighted above, projects may be incorporated into the plan for varying reasons. Some projects may have been prioritized due to the low investment and quick payback benefitting the bottom line, while others may have slightly longer paybacks but they bolster other important corporate initiatives. Either way, it is important to ensure organizational alignment – especially amongst key stakeholders and sponsors – on the KPIs and associated reporting cadence for important projects and overall program implementation.

Implementing a successful energy management program

Armed with the results of a portfolio analysis, project prioritization and KPI development process, an energy management program can be developed and implemented. Common components of successful energy management programs include oversight, engagement, securing early wins and being sure to tell the story internally and, often, externally.

Achieving success on cross-functional initiatives often means creating a team responsible for oversight of the program consisting of the right members meeting at the right cadence with the right information. This same approach should be taken when developing an energy management program. One approach is to create an oversight team or roundtable, with key stakeholders from across the organization. The principal functional areas include those with accountability over sustainability, facilities, employee engagement and finance. Another key participant is the executive sponsor who will help lead accountability and empowerment aspects of the program. Many of these key members will likely have been involved throughout the process.

With the right people at the table, each of the key leaders can determine how best to further engage their respective teams. It may be important to design a program to harness the collective best practice knowledge of plant managers in an industrial setting and to empower those same in-house experts to deploy pilots. The employee engagement team may want to design an internal communications program that highlights the organization's sustainability efforts as part of their broader talent acquisition and retention efforts. The representative from the finance team can manage the funding of worthy projects including securing financing mechanisms to keep the program going, such as a carbon fee or sustainability fund.

Securing early wins is important to kick start the program. At the end of the day, action is the goal. Implementing tangible projects keeps the teams engaged and helps achieve buy-in across the organization. As momentum builds, the program eventually grows legs and can become self-sustaining.

Finally, consistent and transparent reporting on how the program is performing is paramount to continual improvement. There will be setbacks and it is important to not let those bumps in the journey discourage future progress. Internal reporting to executives and key stakeholders should highlight the value delivered to the organization. The strategic energy management process is interactive and iterative. Technical analyses and stakeholder engagement should continue to inform the program, with course corrections being made as necessary.

Moving forward

For most organizations, especially those who have invested considerable effort into GHG reporting, an excellent opportunity exists to parlay the data collected and relationships developed into actively reducing annual energy consumption and emissions. A comprehensive energy management program provides a roadmap to help an organization set and achieve its energy and sustainability targets in a systematic manner that avoids waste, achieves the best return on investment and is aligned with broader organizational goals. Every program is as unique as the organization creating it. Nevertheless, successful deployments will follow a similar structure of identifying the best opportunities, developing a robust action plan, tracking progress and continually improving. Through this strategic approach, organizations can evolve their inventory and reporting from an annual accounting exercise to an opportunity for continual improvement in sustainability and energy performance while reducing expenses, mitigating risks and improving brand equity.

About WSP

WSP, one of the world's leading engineering and professional services consulting firms, provides services designed to transform the built environment and restore the natural one. The firm's expertise ranges from environmental remediation and urban planning, to engineering iconic buildings and designing sustainable transport networks, to developing the energy sources of the future and creating innovations that reduce environmental impact. More than 37,000 employees, including engineers, technicians, scientists, planners, surveyors, program and construction management professionals, as well as various environmental and sustainability experts, work for this dynamic organization in more than 500 offices across 40 countries worldwide. Find out more at wsp.com.

At WSP, we look closely with our clients to shape strategic and sustainable approaches to improving business performance and reporting in a carbon conscious economy. We help our clients quantify and report GHG emissions and identify, evaluate, and implement cost effective means to achieve GHG reductions. We also assist our clients in participating in voluntary GHG management programs and complying with mandatory GHG regulations. Our sustainability and energy team has a proven track record

with many organizations, several of which we have worked with for more than a decade. We have been providing these services since 1995, and have assisted over 100 clients in developing GHG inventories, including recent support on inventory changes required by the Scope 2 guidance.

WSP's energy strategy and management services are complemented by technical capability in energy, GHG and water management; sustainable energy design; climate resiliency and adaptation; product sustainability and life cycle assessment (LCA); and sustainability strategy and program development – positioning us to manage a diverse array of sustainability issues for clients across sectors.

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