From Savings to Solutions: How Non-Energy Impacts Can Transform Energy Efficiency Programs

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ABSTRACT

Utility energy efficiency programs have long prioritized quantifiable energy savings, measured in kilowatt-hours or therms, as the core metric of success. But for many customers, energy is just one input in a larger equation. Investment decisions are often driven by broader business needs: operational efficiency, financial returns, workforce satisfaction, and strategic growth. This paper challenges the traditional widget-centric model of utility program evaluation and calls for the integration of Non-Energy Impacts (NEIs) into how programs are designed, evaluated, and marketed. NEIs, such as productivity gains, reduced maintenance costs, and improved product quality, are often the true motivators behind customer action and better reflect the real value delivered by energy efficiency.

Drawing on case studies, we illustrate how NEIs can reframe utility programs as strategic solutions. One manufacturer used program incentives to secure capital for new equipment that boosted both efficiency and competitiveness. A greenhouse operator used energy-efficient technologies to improve crop yield and operational resilience. These examples show how energy programs can catalyze business transformation, not just energy savings.

To fully realize this potential, utilities must rethink incentive structures, attribution rules, and outreach strategies. To operationalize this potential, utilities do not need to wait for sweeping regulatory reform. Programs can start by better documenting customer outcomes, piloting incentive structures that reward broader impacts, and incorporating NEIs into outreach and business cases. This paper outlines practical steps to bridge the gap between regulatory logic and customer reality; reframing energy efficiency as a tool for business success, equity, and long-term system transformation.

Introduction

For decades, utility energy efficiency (EE) programs have been shaped by a singular guiding principle: savings. While other goals, such as market transformation and, more recently, equity, have also played important roles, savings have remained the dominant metric by which programs are evaluated and funded. Programs are designed, evaluated, and funded based on how much electricity or natural gas can be saved, with several cost-effectiveness frameworks placing primary emphasis on quantifiable savings as the mechanism through which benefits are counted for ratepayers. This model relies on quantifiable, attributable impacts; those that can be directly tied to a specific measure, often a discrete piece of equipment or "widget." Within this framework, only the energy savings clearly resulting from a given investment are typically considered valid for cost-effectiveness tests and program incentives. The rationale for using this limited framework for assessing program benefits rests in the need to tie all benefits directly back to the system benefits charge ratepayers pay to fund energy efficiency programs.

Though this structure may work from a regulatory perspective, it does not reflect how most businesses make investment decisions. Businesses are not optimizing decision making for the best widget; they are optimizing decision-making for the greatest operational success of their overall organization. Energy, and the specific widgets that use energy, are merely one set of many inputs in a complex equation that includes productivity, staffing, quality control, safety, supply chain resilience, and long-term strategic positioning. A narrowly focused incentive tied to a single measure may support an incremental upgrade,

but it often fails to unlock the types of comprehensive investments that businesses are actually seeking: facility redesigns, process changes, or system-level improvements that enable new products, new markets, or improved business outcomes.

For more than a decade, some states have begun to recognize the value of NEIs by allowing certain benefits beyond energy savings to count in cost-effectiveness tests, provided they can be directly attributed to the program-supported measure (NEEP 2017). However, this still assumes a widget-by-widget evaluation paradigm. It misses the bigger picture: that program dollars, when deployed strategically, can shift an entire investment decision. Rather than simply tipping the scales between widget A and widget B, incentives can enable a different class of decision entirely, one that reshapes how a facility operates or what it produces. This disconnect limits the ability to measure the full impact of energy efficiency programs. In many cases, the most transformational outcomes, the ones that make energy efficiency programs truly relevant to business customers, stem not from energy savings alone, but from a broader set of non-energy impacts (NEIs) that result from increasing the investment choices of end-users to include opportunities that would not be possible absent program support. While many NEI studies rightfully capture some of these impacts, such as productivity gains, improved equipment reliability, reduced maintenance costs, or enhanced worker satisfaction (Lazar and Colburn 2013; Stevens, Billing, and Murakami 2019; Abdou, Stevens, and Davis 2015; Stevens et al. 2018; Stevens et al. 2014; Abdou, Stevens, and Clendenning 2018; Schultz et al. 2022; Stevens, Weber, and Goldberg 2013), in this paper, we focus on additional benefits that result from the expanded choices afforded end users due to the programs' financial and engineering support. These additional resources allow facilities to use incentive dollars as leverage to consider alternative facility / process designs and can even help secure greater funds to unlock larger capital investments.

In this paper, we challenge the prevailing assumptions that underpin utility energy efficiency program design and evaluation. Rather than presenting a simplified critique, we acknowledge the diversity of program designs and the evolution of cost-effectiveness frameworks across states. Instead of proposing an immediate overhaul of cost-effectiveness frameworks, we explore how utilities can begin aligning program design and communication with the outcomes that matter most to customers. Building on insights from our earlier work (Gutierrez, Rife, and Stevens 2024), we offer practical ways to document, communicate, and support NEIs, even before they are fully recognized in regulatory tests. By treating energy efficiency as a means to solve business problems, not just reduce usage, utilities can become true partners in helping businesses grow, adapt, and thrive.

The Traditional Energy Efficiency Paradigm and Its Limits

Utility energy efficiency programs emerged within a regulatory context that rightly demanded accountability: ratepayer dollars should generate verifiable benefits for ratepayers. To meet this standard, many programs focused primarily on cost-effectiveness tests grounded in quantifiable energy savings (NESP 2020; NESP 2017). This section is not intended as a comprehensive history of energy efficiency programs across jurisdictions, but rather as a general framing of how programs have traditionally approached value, setting the stage for a broader discussion of NEIs in the next section. A kilowatt-hour not used, or a therm avoided, became the primary metric of success. This led to program models that emphasized discrete, measurable actions: replacing a motor, upgrading a light fixture, or adding controls to an HVAC system. The clearer the line between the utility incentive and the energy saved, the easier it was to justify the program.

Over time, this approach codified a "widget-centric" mindset. While custom C&I programs and Strategic Energy Management (SEM) offerings have introduced more flexible, systems-oriented approaches, much of the evaluation and incentive structure across the country continues to emphasize savings that can be tied to individual measures. Measures are typically evaluated and incentivized one at a time, and the benefits that count, are those directly tied to that specific widget's energy performance.

Any other value, such as improved worker comfort, process efficiency, or production uptime, is often excluded from the analysis or considered anecdotal. Even when non-energy benefits are recognized, they are rarely allowed to influence the core cost-effectiveness calculation unless they can be directly linked to the funded technology and rigorously quantified.

This framework, although administratively tidy, is misaligned with how businesses operate. Most commercial and industrial customers do not make decisions in terms of isolated equipment upgrades. Instead, they pursue strategic investments that optimize their operations, reduce risk, increase output, or open up new market opportunities. For example, a manufacturer may consider retrofitting an entire production line, reconfiguring floor space, or investing in automation to improve quality control. A grower might plan a greenhouse expansion that incorporates integrated climate control and irrigation systems. In these scenarios, energy efficiency may be a component, but it is not the driving factor.

The consequence is a growing disconnect between program structure and customer behavior. While this paper does not attempt to quantify that disconnect, our research and case studies provide qualitative evidence of missed opportunities where narrowly framed incentives failed to match broader customer goals. Utility programs that offer incentives only for narrowly defined widgets often fail to engage customers whose real needs are systemic. When participation requires tailoring an investment to meet program criteria, rather than aligning the program with the customer's goals, the result is friction, delay, or abandonment. Worse, it can lead to missed opportunities for transformative outcomes, where a well-timed incentive could have unlocked not just energy savings, but significant business value.

By limiting the definition of value to what is easily attributable and energy-related, the current paradigm restricts the role utility programs can play in shaping customer decisions. It reduces energy efficiency to a marginal consideration, rather than recognizing its potential as a strategic enabler. Utilities are in a unique position to address this not only because they already administer energy efficiency programs, but because these are their customers. If utilities want to shift from selling energy to enabling solutions that solve top business problems, program structures must reflect that broader value proposition. This is not merely an oversight, it is a barrier to realizing the full potential of utility programs to support operational excellence, resilience, and economic development.

Non-Energy Impacts as a Bridge to Customer Value

Non-Energy Impacts (NEIs) refer to the range of benefits that result from energy efficiency investments but are not measured in kilowatt-hours or therms. These impacts may include participant impacts (ex: reduced maintenance costs, improved indoor air quality, better control over production processes, enhanced employee comfort and retention, safety improvements), societal impacts (ex: reduced greenhouse gas emissions, improved water quality), and utility impacts (ex: reduced utility costs dues to arrearages, shut-offs, and disconnections).

In the context of commercial and industrial customers, NEIs often align directly with participant impacts that effect core business priorities, more so than energy savings alone. A manufacturer might value improved product consistency or reduced worker or equipment downtime from new process controls more than they value the actual energy savings. An agricultural operator may prioritize crop quality and yield stability enabled by advanced HVAC or irrigation technologies. For many organizations, these kinds of outcomes are not just “extras,” they are the reasons the investment makes sense in the first place.

Utilities have a role to play here not because they are responsible for solving all business problems, but because these are their customers, and helping customers achieve strategic outcomes strengthens the utility's relevance in a changing energy landscape. If utilities aim to evolve from commodity providers to solution partners, then aligning with customer-defined value is essential.

Our research was not conducted to modify cost-effectiveness frameworks directly, but to document a stream of benefits that emerge from program participation; many of which are currently

excluded from formal regulatory accounting. We are not suggesting utilities or regulators are doing it wrong, but rather that there is significant unrealized value already being delivered, which should be acknowledged, studied, and, where appropriate, integrated into planning and evaluation. We acknowledge that realizing these values will likely require a shift in thinking about cost-effectiveness.

Recognizing NEIs does not require ignoring energy, it simply reframes energy efficiency as one component of a broader value proposition (Sutter et al., 2020; Lazar & Colburn, 2013; (Stevens, Billing, and Murakami, 2019; Abdou, Stevens, and Davis, 2015; Stevens et al., 2018; Stevens et al., 2014; Abdou, Stevens, and Clendenning, 2018; Schultz et al., 2022; Stevens, Weber, and Goldberg, 2013))). When utilities and program administrators fail to account for NEIs, they risk undervaluing the very factors that motivate customers to act.

NEIs can function as a powerful diagnostic tool for understanding customer behavior. By systematically identifying the operational, financial, and organizational benefits that different customer segments prioritize, utilities can build programs that resonate more deeply. In a previous paper (Gutierrez, Rife, and Stevens, 2024), we showed how including NEIs in customer-facing business cases made energy efficiency offerings significantly more compelling. That approach provides a near-term path forward: by helping customers understand and quantify NEIs, regardless of whether they are yet fully counted in regulatory tests, utilities can better support decision-making and unlock deeper engagement.

For instance, if a food processor consistently highlights reduced spoilage as a benefit of efficient refrigeration upgrades, then that NEI can inform not just program design, but also marketing and sales strategies. If a plastics manufacturer values the reduced rework and scrap associated with better temperature and humidity control, programs that foreground those benefits in outreach will likely see greater traction.

Highlighting this diagnostic function of measures like energy management systems, allows for a shift from a one-size-fits-all model to a solution-oriented approach, where the utility positions itself as a partner in solving operational problems, not just delivering rebates for pre-approved equipment.

When energy efficiency is framed solely as a cost-saving tactic, it often competes with other priorities for limited capital. But when positioned in terms of NEIs, efficiency investments can be seen as strategic enablers, unlocking improvements in performance, resilience, and long-term competitiveness.

This shift is critical for engaging decision-makers beyond the facilities or energy management level. Chief Executive Officers (CEOs), Chief Financial Officers (CFOs), and Chief Operating Officers (COOs) are far more likely to support projects that improve product throughput, enhance safety, support Environmental, Social, and Governance (ESG) goals, or reduce compliance risks. In this context, energy savings are simply part of the return on investment, not the justification for it. The marketing of lighting technologies like LEDs provides a useful precedent: their longer lifespan and reduced maintenance costs were critical selling points, especially for high-use or hard-to-reach applications, well before their energy savings were widely accepted as a primary motivator.

Consider the difference between a utility offering a $10,000 incentive for high-efficiency equipment based on a simple payback model versus a utility helping a business secure funding for a system that improves throughput, reduces turnover, and enhances brand reputation. In the latter case, the energy program becomes a lever for strategic decision-making and potentially unlocks much greater investment and engagement than energy savings alone would justify.

Incorporating this wider set of impacts in program evaluation requires broadening our understanding of the scope of the investment decision from one widget for another to the overall benefit of one choice set that program participation affords to the choice set absent the program support. Offering technical assistance and rebated equipment can lead to substantial changes in facility or process designs that can have substantial impact on the operation efficiency, productivity, and even product quality and price. By only considering the substitution of one widget for another, we miss the full accounting of the overall gain to the facility from changes resulting from additional choices about the

facility design that would not be possible absent program support. From an economic perspective, these changes reflect a "wealth or income effect" of program participation because they result from an increase in the level of overall opportunity afforded the participant through participation as they are able to rethink their system designs, look for matching funding, and expand their overall level of operation.

Case Studies of NEI-Driven Outcomes

The case studies in this section were selected to align with high-priority commercial and industrial sectors served by Consumers Energy programs. We focused on projects with large scopes and/or sustained repeated participation, with the goal of identifying examples where NEIs played a significant role in investment decisions. These cases are exploratory and not intended to represent statistically significant samples. Data sources included direct interviews with customer sites, supplemented by secondary literature reviews. The detailed findings, including quantification of NEIs, were presented in a previous paper (Gutierrez, Rife, and Stevens, 2024); here, we focus on the broader implications of those findings. Specific energy savings and incentive amounts are withheld to protect site anonymity.

In previous research, we saw a mid-sized plastics manufacturer participating in an industrial energy efficiency program initially sought funding to replace an aging piece of process equipment (Gutierrez, Rife, and Stevens, 2024). Though the program evaluation only credited energy savings from pieces of equipment, the true business case hinged on NEIs. While the energy savings from this upgrade were modest, the utility incentive helped unlock a much larger capital project, replacing and reconfiguring an entire production line from a pole barn, to high tech facility, yielding substantial non-energy benefits that included:

- Production impacts: production time was cut by 8 seconds per unit and the company improved its ability to meet just-in-time delivery contracts, strengthening its relationships with key customers, and resulting in an additional $140,000 annual production increase in a small 30-employee plant with $7 million in annual revenue. This estimate was derived from customer interviews and plant operational data, including documented reductions in downtime and increased throughput.
- Operator comfort, productivity and safety: Internally, pairing the new system with envelope upgrades and occupancy sensors also improved operator comfort and productivity, resulting in fewer instances of employees leaving early or having to manually shut down systems, as well as improved safety, resulting in reductions in accidents and thefts, helping retain skilled workers in a competitive labor market.

This example illustrates how utility programs can be leveraged as catalysts for larger decisions and unlock new choice sets when framed and structured around the customer's broader strategic goals, not just kilowatt-hour reductions.

In the 2024 research effort, we also documented a commercial greenhouse operator that faced increasing pressure from buyers to deliver consistent, high-quality crops while contending with unpredictable weather and rising input costs. With support from a utility program, the grower adopted a set of energy-efficient technologies, including infrared (IR) heaters, IR glazing film, and LED grow lighting with daylight sensors.

While the project was primarily evaluated for energy savings, the grower's decision to proceed was driven by business-critical non-energy impacts. The new IR glazing film paired with LEDs reduced temperature fluctuations inside the greenhouse, improving plant uniformity and reducing spoilage resulting in up to 5% delivery increase of bedding crops, or $70,000 annually. The more stable growing

environment enabled the operator to reliably meet quality standards, strengthening relationships with buyers and reducing losses.

Infrared heaters extended the viable growing season and created a more comfortable working environment during cold weather. This improvement in conditions contributed to greater worker efficiency and reduced scheduling delays, resulting in a 25% tray delivery increase which the grower estimated led to over $200,000 in additional annual revenue from faster product turnaround; even outweighing the energy savings alone. Meanwhile, daylight sensors helped extend the lifespan of LED grow lights and reduced maintenance burdens, resulting in 260 fewer lights replaced per year; a key concern during ongoing supply chain disruptions. The resulting equipment cost and installation savings for this operator was nearly $85,000.

These outcomes underscore how energy efficiency measures can serve as a platform for broader operational gains. For this grower, the project's value lay not in therm or kilowatt-hour reductions alone, but in business resilience, product quality, and labor productivity.

Across both case studies, several common themes emerge. First, energy efficiency incentives often act as a gateway to broader capital planning, not just a discount on a specific product. Second, the primary motivators for investment are rarely energy savings alone; customers are looking for operational improvements, competitive advantages, and future-proofing. Third, rigid program structures that only reward narrowly-defined, widget-level savings may actually constrain innovation, discouraging the types of holistic projects that deliver the greatest customer and societal value.

These case studies were designed to be descriptive and exploratory, aimed at uncovering how NEIs influence decision-making in complex, real-world contexts. While we do not attempt to quantify cost-effectiveness with and without NEIs across all categories, the evidence suggests that for these participants, the non-traditional NEIs, such as capital access, throughput gains, and market positioning, were as influential, if not more so, than energy savings in justifying investment. These case studies demonstrate the need to expand program models that recognize NEIs as legitimate and essential components of project value, not just anecdotal side benefits. By doing so, utilities can expand their impact from incremental savings to transformative change.

Realigning Evaluation to Reflect Cumulative and Strategic Impacts

The cost-effectiveness tests used to evaluate energy efficiency programs, such as the Utility Cost Test (UCT), Total Resource Cost Test (TRC), Societal Cost Test (SCT), Resource Value Test (RVT), serve as critical tools for ensuring that programs deliver measurable value. A 2020 ACEEE survey of program evaluation policies and practices found 55% of programs used TRC, 11% used a societal test, 23% used a utility/program administrator test, and 9% used something else (ACEEE 2020). As shown in the figure below, more common cost-effectiveness tests, such as UCT and TRC, primarily focus on avoided energy and capacity as benefits, while treating administrative costs, incentives, and incremental measure costs as debits. Non-energy benefits (NEIs), when included at all, are typically limited to a select number of impacts, inconsistently applied across jurisdictions, or treated as secondary (Mass Save 2024; Ampong et al. 2024).

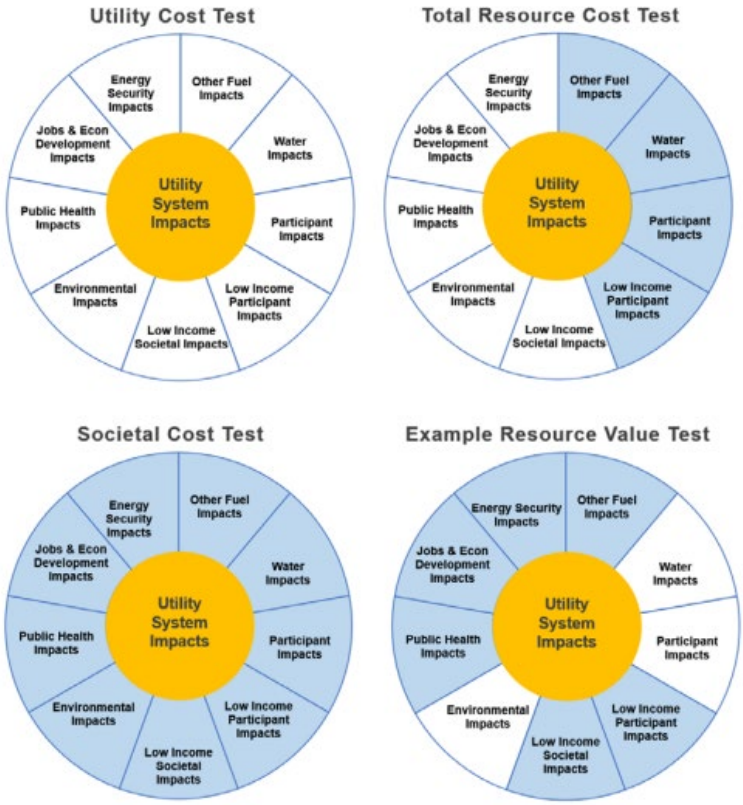

Figure 1 Examples of Cost-Effectiveness Tests (NESP 2017)

Common evaluation structures, like UCT and TRC, reflect a measure-by-measure accounting logic. It assumes value is additive, isolated, and largely confined to technical savings from individual upgrades; a framework that inherently misses how businesses actually experience and respond to efficiency interventions.

While the SCT and occasionally the UCT or TRC include NEIs, they do so in ways that are often constrained to predefined categories (e.g., comfort or public health) and tied to one-off projects. For example, a program may attribute an NEI value to a lighting upgrade in a school because of improved student performance, but a nearly identical project in a commercial office may not receive the same NEI credit due to differences in end-use application or the absence of a predefined NEI value in the Technical Reference Manual (TRM). This means the broader operational or strategic value of efficiency, particularly in the context of repeated participation, is systematically undercounted.

In reality, energy efficiency programs often function more like catalysts than isolated transactions, particularly in commercial and industrial applications. The first measure may justify engagement, but that engagement often unlocks a new choice set for customers: new process designs, capital planning strategies, or facility modernization projects that would not have been possible otherwise. In this sense, the benefits are not simply 1+1=2; they are 1+1=3. The second investment is not independent; it's a direct consequence of the first, and together they generate new, compounded forms of value for both the customer and utility.

Several states have made meaningful progress in incorporating NEIs into cost-effectiveness frameworks, but even the most advanced models still fall short of capturing this cumulative logic:

- Massachusetts includes NEIs in its TRM and applies standardized household-level values for benefits like improved comfort and health, allocated to individual measures. However, these NEIs are still treated as fixed, additive values per measure, not as enabling forces that compound over

time or unlock strategic transformation. For example, the TRM might recognize comfort improvements from insulation but not the broader organizational impacts that arise from participating in whole-building retrofits.

- Illinois reports cost-effectiveness results under its SCT with and without public health-related NEIs and includes portfolio-level benefits such as job creation and emissions reductions. Although it captures social value, it does not evaluate how utility support can lead to strategic repositioning of a business or build momentum for long-term investment cycles.
- Minnesota considers a broader range of NEIs, including productivity gains and asset value. But evaluations remain anchored to individual project years and rarely account for how participation in one program year alters a firm's capital planning or operating strategy in future years; especially for large customers, where widget-by-widget reporting obscures real value.

To move beyond this fragmented accounting and better reflect how value is created, evaluation and incentive frameworks must evolve. While long-term reforms to evaluation frameworks are needed, utilities can begin today by experimenting with alternative reporting approaches, piloting NEI documentation protocols, and segmenting projects where strategic value is evident. Specifically, we recommend:

- **Cumulative Evaluation**: Assess custom and large-scale projects across multiple years to capture the full arc of participation, including follow-on projects and strategic shifts catalyzed by initial engagement.
- **Segmented Analysis for Custom Projects**: Treat strategic, high-value custom projects as a distinct category within cost-effectiveness testing, with tailored evaluation logic that accounts for broader business impacts.
- **Outcome-Oriented Incentives**: Shift from measure-specific rebates toward incentive structures that reward comprehensive business outcomes, including resilience, flexibility, throughput, and employee satisfaction, even if these benefits are only partially attributable to energy savings. Instead of incentivizing just the widget, the idea is to incentivize the outcome that matters most to the customer; even if it stems from a bundle of measures or a strategic redesign. Such as, for manufacturers, provide a bonus for achieving process redesigns that increase throughput and reduce energy use, not just the energy part. Or, for offices, provide enhanced support or incentives for improving indoor air quality and occupant comfort; especially when these co-occur with HVAC upgrades.
- **Redesigned Reporting**: Reframe program tracking and evaluation to follow the logic of real-world project implementation, especially in multi-measure contexts. This approach allows for the crediting of compounding value from strategic investments rather than splitting impact across isolated measure entries, which underrepresents both customer benefit and program success. While this raises valid questions about what ratepayers should fund, we believe this approach does not require higher ratepayer spending; only a shift in how benefits are counted and reported. Even without revising cost-effectiveness frameworks immediately, utilities can begin reporting these compound impacts qualitatively or in side analyses to build the case for future inclusion.

This shift is not just methodological but also in policy, law, and culture. As long as program evaluation is narrowly scoped, programs will lack the incentive to pursue more holistic opportunities and position themselves as strategic partners. But with more holistic, forward-looking frameworks, utilities can help customers build new futures, not just better buildings.

Broader Implications and Industry Questions

Utility energy efficiency programs were designed for a world where accountability meant tying every ratepayer dollar to a quantifiable, attributable energy savings outcome, ideally from a single device or "widget." This paradigm prioritized precision and auditability, often at the expense of flexibility or relevance to how businesses actually make decisions.

But customer needs have evolved. Today, many business owners are not choosing between widget A and widget B; they are planning facility-wide investments, redesigning operations, or pursuing decarbonization goals. Programs that still expect decision-making to hinge on the marginal efficiency of a single measure risk becoming irrelevant. While attribution and persistence remain important, they must be balanced with a recognition that programs should help unlock better decisions, not just more efficient widgets.

How expanding NEI consideration tests the limits of current regulatory frameworks

Introducing non-energy impacts (NEIs) into program value calculations challenges regulatory frameworks that have been historically narrow and energy-centric. Even in states that allow NEIs in cost-effectiveness testing, rules often require them to be tightly linked to a specific energy efficiency measure. This logic limits the ability of programs to support more transformational upgrades, where NEIs such as productivity gains or reduced maintenance are the real drivers of investment.

To make NEIs fully actionable, regulatory frameworks need to evolve. That may mean accepting more diverse sources of evidence (e.g., qualitative research, customer testimony, or macroeconomic analysis), rethinking cost-effectiveness tests, or building new pathways for valuing outcomes that go beyond energy. Without those shifts, programs will continue to undervalue outcomes that customers care about most. We recognize such a paradigm shift would be difficult and incremental approaches, like allowing pilot efforts or qualitative NEI documentation, would be helpful. In the near term, progress can be made by encouraging evaluators to better capture customer-stated outcomes and by building internal repositories of NEI evidence and qualitative insights.

Energy efficiency programs have long struggled to reach underserved and disadvantaged communities, not because these communities lack interest in energy improvements, but because the benefits framed by programs often do not match local priorities (NEEP 2022; Amann, Tolentino, and York 2023; Said, Neuberger, and Walker 2012; Antonopoulos et al. 2022; NREL 2023). NEIs provide a mechanism for changing that narrative; and that work can begin even before formal inclusion in cost tests. Programs can start by collecting and sharing stories and metrics that show alignment between efficiency and broader business or community goals. By highlighting impacts such as reduced equipment downtime, safer indoor environments, or improved financial resilience, programs can align more directly with the values and needs of historically excluded customers.

Incorporating NEIs into program design also helps address systemic inequities. For example, a restaurant in a disadvantaged neighborhood may benefit more from a kitchen upgrade that improves employee comfort or enables a faster service model than from marginal energy savings. Valuing these benefits explicitly opens the door to delivering more equitable outcomes.

How NEIs help unlock market transformation in underserved communities or hard-to-reach sectors

Programs focused solely on quantifiable savings often exclude customers with complex barriers or lower energy use. But these same customers, including small businesses, renters, or rural communities, may stand to gain the most from improvements in reliability, control, comfort, or economic stability. NEIs make these outcomes visible, even when energy savings alone might not justify program involvement under traditional tests. This visibility, even if informal, can guide future investment and policy.

By recognizing a wider range of benefits, programs can support interventions that unlock broader market shifts. This might mean helping a business secure financing by showing collateral value, or encouraging a building retrofit that becomes feasible only when operational and customer experience benefits are counted. NEIs shift the logic of participation away from narrow savings thresholds and toward long-term community value.

What does success look like in a customer-driven, decarbonizing energy system?

The historical success metric, cost-effective, verifiable energy savings, no longer tells the full story. In a system shaped by customer preferences, carbon goals, and distributed energy technologies, success might mean enabling better investment decisions, improving resilience, or accelerating electrification in frontline communities.

If programs are to remain relevant, they will need to define new metrics that reflect these evolving outcomes. That may involve linking energy efficiency to business stability, community well-being, or emissions reductions, and finding ways to track those benefits over time.

Can programs evolve beyond widget-based logic while maintaining credibility and rigor?

Program administrators, regulators, and evaluators face a central tension: how to maintain program accountability while responding to customer realities. NEIs offer a way to connect utility investments with what actually motivates customers, but doing so may require a shift in how rigor is defined. Rather than precision at the widget level, rigor might mean defensible estimation of outcomes across a portfolio, validated through mixed methods and contextual evidence. This shift is not about abandoning measurement, it is about modernizing it to support outcomes that matter.

How do we measure progress toward societal goals (like resilience, equity, and climate mitigation)?

Many current evaluation frameworks are not built to track system-wide outcomes like decarbonization or climate adaptation. While market transformation and market effects analyses have begun to bridge this gap, they are still largely treated as separate from resource acquisition evaluation, measurement, and verification (EM&V). Yet those goals increasingly shape public policy, legislation, and utility strategy. NEIs provide a bridge: they connect program actions to broader impacts, such as reduced carbon emissions, improved public health, or economic mobility.

To fully capture these benefits, the industry will need new metrics, new tools, and new approaches to learning. That might include scenario modeling, longitudinal studies, or community-based participatory research, all aimed at building a more complete picture of how energy efficiency supports societal transformation.

Reframing the Role of Energy Efficiency From Savings to Strategic Value

Energy efficiency has long been framed as a means to an end: a mechanism to reduce kilowatt-hours, save on utility bills, and defer infrastructure investment. But this framing limits its relevance in a landscape where customers, particularly in commercial, industrial, and agricultural sectors, are driven by broader strategic imperatives. As this paper has shown, energy efficiency measures are often a gateway to solving far more pressing operational, financial, and organizational challenges. While many of the findings are drawn from exploratory case studies and customer interviews, they demonstrate how energy investments frequently deliver value well beyond energy savings alone. When viewed through the lens of Non-Energy Impacts (NEIs), energy efficiency becomes a means to enhance productivity, reduce risk,

improve workplace conditions, support environmental branding, and unlock new investment opportunities.

Reframing energy efficiency as a solution rather than a savings strategy requires a fundamental shift in how many programs are designed, evaluated, and communicated. While the examples here primarily reflect experience from Consumers Energy's programs, the insights are broadly relevant across many jurisdictions. This new model starts with customer priorities, not with kilowatt-hour baselines. It places value on impact rather than attribution alone. And it aligns utility goals with customer decision-making, recognizing that transformation happens not one widget at a time, but when entire systems, facilities, or business models are enabled to evolve.

In this future, program implementers act less like product distributors and more like strategic partners, helping customers identify key pain points, secure flexible funding, and co-design improvements with far-reaching impacts. Evaluators measure success not solely by energy saved, but by whether programs helped businesses thrive, communities grow more resilient, and emissions decline. Regulators move from gatekeepers of technical precision to stewards of outcomes that matter in the real economy. Although these recommendations share conceptual overlap with Strategic Energy Management, the goal is to recognize NEIs as universally applicable, not bound to one delivery model.

To be clear, we are not suggesting that energy efficiency programs become general-purpose business support or economic development tools. Their accountability to ratepayers remains central. The boundaries we propose are twofold: programs should remain anchored to energy system benefits as their primary purpose. In addition, when non-energy impacts are directly tied to or enabled by efficiency-related investments, they should be documented and, where feasible, incorporated into program valuation. This framing allows programs to support broader business outcomes, such as resilience, productivity, or workforce satisfaction, when those outcomes are contingent on, or inseparable from energy efficiency investments. In this way, programs remain accountable to their core mission while capturing a fuller picture of how energy efficiency drives customer and system value.

This reframed role for energy efficiency does not discard rigor or accountability; it enhances them and can start with incremental shifts: improved customer documentation, better evaluator storytelling, and deeper consideration of strategic project outcomes. It challenges utility programs to be more relevant, more equitable, and more agile in the face of economic, climate, and social change. The integration of NEIs is not just a methodological evolution; it is a philosophical one. It redefines the purpose of efficiency itself: not just to reduce consumption, but to enable progress. The opportunity is clear. As energy challenges become more complex and customer needs more urgent, programs must evolve. By embracing NEIs as essential, not optional, utilities can lead the way toward a more relevant, equitable, and effective future. We are not suggesting immediate wholesale changes to cost-effectiveness testing. Rather, we offer this as a step in an evolving process, one that starts with highlighting existing gaps, building supporting evidence, and helping customers and regulators see the broader value already being delivered.

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