



**The American  
Institute  
of Architects**

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# Leveraging Energy Transparency

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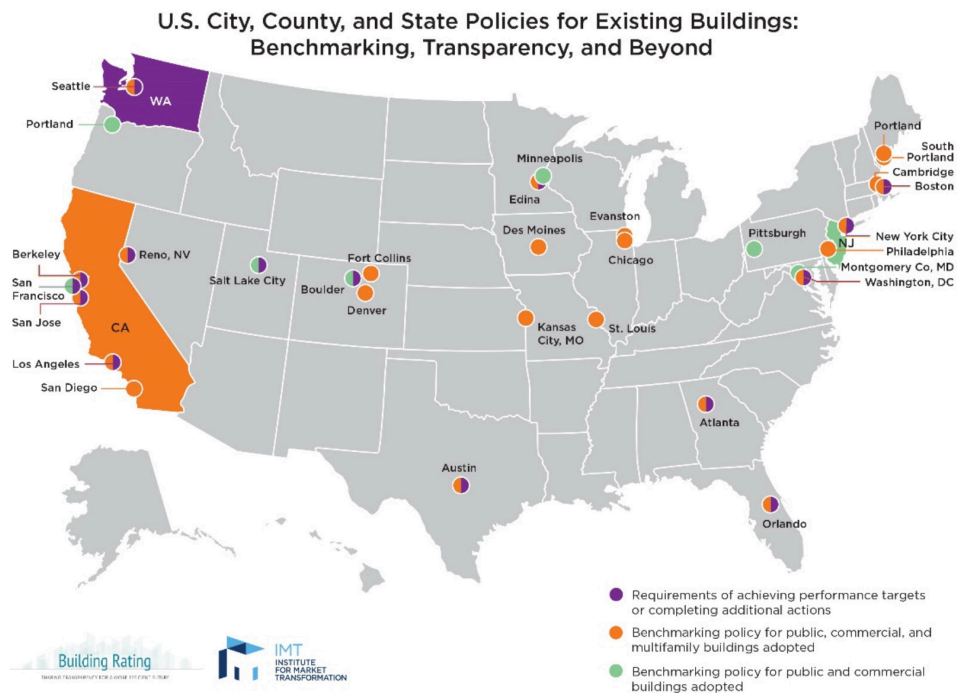
## The Transparency Movement

Data transparency and disclosure is growing in both public and private sectors. From the Freedom of Information Act<sup>1</sup> to open source data within local and state governments, society seeks data to determine how and where public sector resources are used. In business, transparency is driven by corporate accountability to shareholders and, increasingly, by easier access to data used to engage customers and identify business to business partnership opportunities. Disclosures have expanded beyond financial results to include greenhouse gas emissions (GHG) through reporting programs, such as the CDP<sup>2</sup>, that help companies demonstrate progress towards the Paris Climate Agreement<sup>3</sup>.

The building sector, as one of the largest areas of the economy and emitter of GHG emissions (38.7% of US annual emissions<sup>4</sup>) contains a wealth of data that draws public and private stakeholder interest. On the large scale, real estate portfolios have begun self-reporting their performance on economic, social and environmental metrics through GRESB<sup>5</sup> or ULI Greenprint<sup>6</sup> to better quantify the risks and benefits of their assets. Growing concern around human health and environmental impacts have brought transparency in building materials into focus for architects<sup>7</sup>, building on a history of successful leadership around concerns of asbestos and lead exposure. The transparency movement is compelling forward-thinking architects to consider what their contributions should be and what new business opportunities might emerge.

## Energy Benchmarking and Beyond

The performance of existing buildings is a focus in the transparency movement, as cities create data-driven market mechanisms and public policies to support their climate commitments. Energy benchmarking and transparency ordinances are being adopted by cities and states across the country<sup>8</sup>, making private buildings' performance data freely available to the public. The breadth and depth of disclosure ordinances vary by jurisdiction<sup>9</sup>.



Existing building operations account for nearly 40% of US energy consumption<sup>10</sup>. Despite well documented economic analysis<sup>11</sup> of the cost-effective opportunities of energy efficiency improvements, the building sector has yet to drive market prioritization and scaled investment in the performance of existing building stock. Few triggers for improving existing buildings are present in the marketplace.

While building energy codes require improvements for major (whole building) and minor (system-level) renovations, there is hesitancy by owners and managers to engage in renovations that trigger significant code improvements and added costs. Often, building owners are not aware of or do not take advantage of benchmarking tools, such as the EPA's ENERGY STAR Portfolio Manager<sup>12</sup> that assesses if a building's energy performance is in line with peers. Free tools like this can identify the need for and justify expenditures for more meaningful audits, retrocommissioning and renovations. Though there are documented benefits to voluntary ratings such as ENERGY STAR<sup>13</sup> and LEED O+M<sup>14</sup>, they have not yet permeated the existing building market at scale. In response, cities are now mandating the benchmarking and disclosure of existing building energy consumption in an effort to increase awareness and drive the real estate market to value energy efficiency.

A growing number of cities<sup>15</sup> are moving beyond energy transparency alone and mandate that highly inefficient existing buildings undergo detailed audits and upgrades to reduce their energy use, such as the District of Columbia with its Building Performance Standard<sup>16</sup>, adopted in December 2018. The big takeaway is existing buildings are no longer simply "grandfathered in" when it comes to poor energy performance.

## Opportunity for Architects

Nearly every design decision effects building performance. Site orientation, window-to-wall ratio, daylight access, envelope assembly, exterior finishes, interior paint color, among many others, are all architectural choices that impact ongoing energy use for years to come.

Though, as thoughtful as any design strategy is, it's still just a starting point for the building's operational performance. Once the project moves into the owner or operator's control, assumptions made in the design process, such as schedule, maintenance, weather, tenant behavior or plug loads, begin to impact actual building performance. Operational efficiency contributes to a building's carrying costs, utility bills, maintenance, asset value, and lease rates.

Few architects stay involved in completed projects to understand whether the building performs as anticipated and its users are satisfied. The reasons why vary: architects may not be aware of the need, the client isn't presented with a compelling case to allocate project fees to retain professional services after turnover or tight schedules simply prevent further engagement.

Post occupancy evaluation (POE)<sup>17</sup> is a scope of services that keep design professionals engaged after the building is built. Building owners or tenants use spaces in ways that weren't anticipated in the design process and more sophisticated buildings can be complex to interact with. POE is a powerful tool to assess what is and isn't working as expected for users and build consensus around what adjustments should

be made. Commissioning services that optimize the building after its construction and typically focus on mechanical, electrical, plumbing or building enclosure systems, are increasingly commonplace. POE seeks to fill the gap that exists around engaging building occupants by helping the people who live, work and play inside to better interact with their new surroundings so they are happy and productive.

Benchmarking and disclosure is gaining momentum in large jurisdictions around the country. The energy literacy created by this new feedback loop may, over time, enable the profession to more accurately align design predictions to actual outcomes. It's important for architects to be educated on the variances between design and operational performance and help educate their clients, whose expectations for accuracy are only increasing. Unrealistic expectations by owners or the AEC profession falling short<sup>18</sup> in areas for which we are accountable make it difficult to successfully advocate deeper sustainability and energy performance in future buildings.

With only 1-2% of building stock undergoing renovations annually and increased public awareness of energy use from data transparency and disclosure ordinances, architects have growing reason to focus on design services that facilitate the improvement of existing buildings. By shifting our perspective toward building lifecycle and actual performance, rather than just design performance, and taking into account that actual performance is a reflection of the value of design services, architects have a huge opportunity to transform the built environment and prove an expanded relevance of the profession.

## Taking Action

Architects can leverage the shifting landscape and policies to deepen client relationships while improving the performance of their buildings through several strategies.

### **1. Discuss variances between design and operational performance**

Setting energy targets based on existing datasets, such as EIA Commercial Energy Consumption Survey<sup>19</sup>, ASHRAE 90.1-Appendix G, or your own design portfolio, at the project onset is a good way to start the energy discussion with clients. Make clear that predicted energy use is often very different from actual energy use, but steps can be taken<sup>20</sup> to bring them closer together. Project teams can discuss topics such as plug loads, schedules, system operation, and retro-commissioning with owners as they move through the design process; helping clients review the assumptions applied and their role to address through operations and maintenance. Explain that an energy model is a living tool that predicts energy use before design, helps teams make design decisions and validates actual energy use during building operations. These discussions prime all involved for turnover long before it happens.

### **2. Get ahead of the issue**

The best way to respond to energy benchmarking and disclosure is to plan for better performance than code minimum, through both design and operations optimization strategies.

Firms can demonstrate their dedication to high performance building by signing on to the AIA 2030 Commitment<sup>21</sup> to meet the stepped 2030 Challenge targets

toward a carbon neutral built environment. Committed firms transition their practices to meet 2030 goals through the development of a sustainable action plan. Practitioners track predicted performance across their entire portfolio through the Design Data Exchange<sup>22</sup> (DDx), which allows them to see the progress of a single project or whole market sector. Firms observe where they're performing well, need improvement and identify best practices.

Help owners set goals for the operations phase early on in design. When developing an owner's project requirements (OPR) establish performance targets not just for design, but for operations as well. Script the hand-off when design ends and operations starts, setting a plan that engages the right stakeholders to make it go smoothly. Finally, create an ongoing operations plan that includes regular retro-commissioning and a capital budgeting process with annual sustainability allocations.

### **3. Evaluate how your buildings are operating today**

In locations with a proposed or enacted benchmarking ordinance, reach out to clients to inform them of local requirements for disclosure, key metrics to track and how to use municipal databases to compare their project's performance to those which are similar. Look up past projects that have posted performance data under benchmarking legislation and compare to the energy use predicted during design. Take the opportunity to reconnect with building ownership to find out what is going right, what isn't and brainstorm building improvements or operational updates that might help. Inform clients about the benefits of retro-commissioning to increase asset valuation.

Even where benchmarking and disclosure ordinances aren't anticipated, be proactive with your clients by proposing POE services. More clients are seeing value from a tenant engagement, branding and innovation perspective. Post-occupancy evaluation builds trust and deepens relationships with clients. Educated owners can build on that experience when planning for future development.

Architects can benefit from energy benchmarking and disclosure policies. These ordinances can drive competition between building owners and asset managers to improve their portfolios, triggering design and engineering services for deep energy retrofits, POE and repositioning services. Firms that leverage this opportunity will build their database of occupancy evaluation and gain insight of how their own projects perform, informing potential new business strategy. POE is another tool to engage clients while moving the needle on energy performance, resilience, and occupant comfort. Firms leading the way will be recognized as part of the vanguard driving innovation and climate change mitigation.

## Notes

- 1 **FOIA** Freedom of Information Act <https://www.foia.gov/>
- 2 **CDP** Disclosure Insight Action <https://www.cdp.net/en>
- 3 **United Nations Framework Convention on Climate Change** The Paris Agreement <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- 4 **Global Alliance for Buildings and Construction** 2018 *Global Status Report* <https://www.globalabc.org/uploads/media/default/0001/01/Obf694744862cf96252d4a402e1255fb6b79225e.pdf>
- 5 **GRESB** ESG Benchmark for Real Assets <https://gresb.com/>
- 6 **Urban Land Institute** Greenprint Center for Building Performance <https://americas.uli.org/research/centers-initiatives/greenprint-center/>
- 7 **American Institute of Architects** Materials Matter <https://www.aia.org/pages/136261-materials-matter>
- 8 **Institute for Market Transformation** Map: U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond <https://www.imt.org/resources/map-u-s-building-benchmarking-policies/>
- 9 **Building Rating** Policy Comparison Tool <https://www.buildingrating.org/policy-comparison-tool>
- 10 **US Energy Information Administration** Frequently Asked Questions <https://www.eia.gov/tools/faqs/faq.php?id=86&t=1>
- 11 **McKinsey & Company** *Energy Efficiency a Compelling Global Resource* [https://www.mckinsey.com/~media/mckinsey/dotcom/client\\_service/Sustainability/PDFs/A\\_Compelling\\_Global\\_Resource.ashx](https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/Sustainability/PDFs/A_Compelling_Global_Resource.ashx)
- 12 **US EPA** ENERGY STAR Portfolio Manager <https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>
- 13 **US EPA** ENERGY STAR Certification [https://www.energystar.gov/sites/default/files/buildings/tools/DataTrends\\_Certification.pdf](https://www.energystar.gov/sites/default/files/buildings/tools/DataTrends_Certification.pdf)
- 14 **US Green Building Council** LEED for Building Operations & Maintenance <https://new.usgbc.org/leed/rating-systems/existing-buildings>
- 15 **Institute for Market Transformation** Map: U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency and Beyond <https://www.imt.org/resources/map-u-s-building-benchmarking-policies/>
- 16 **Institute for Market Transformation** DC Adopts Nation's Strongest Climate Law <https://www.imt.org/dc-adopts-nations-strongest-climate-law/>
- 17 **Building Resource Information Knowledgebase** AIA Design for Aging Post-Occupancy Evaluation: Evaluator's Toolkit (2010) <https://network.aia.org/communities/community-home/librarydocuments/viewdocument?DocumentKey=df539654-clf4-402c-af00-4ccfdc127509>
- 18 **Crain's New York Business** High-end condos are eating up energy <https://www.crainsnewyork.com/article/20180514/FEATURES/305149999/high-end-condos-are-eating-up-energy>
- 19 **US Energy Information Administration** Commercial Building Consumption Survey Data <https://www.eia.gov/consumption/commercial/>

## Notes cont.

20 **New Buildings Institute** Getting to Outcome Based Building Performance: Report from a Seattle Summit on Performance Outcomes (2015) [http://newbuildings.org/sites/default/files/Performance\\_Outcomes\\_Summit\\_Report\\_5-15.pdf](http://newbuildings.org/sites/default/files/Performance_Outcomes_Summit_Report_5-15.pdf)

21 **American Institute of Architects** 2030 Commitment <https://www.aia.org/resources/202041-the-2030-commitment>

22 **American Institute of Architects** Design Data Exchange (DDx) <https://www.aia.org/pages/5041-2030-design-data-exchange-ddx>

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