

**studying the
experiences of
participant firms**



Megan Turner

TABLE OF CONTENTS

PAGE	SECTION
i	ACKNOWLEDGEMENTS
1 - 8	SUMMARY REPORT
9 - 26	CASE STUDIES
9 - 11	High Plains Architects
12 - 14	HMC Architects
15 - 18	HOK
19 - 22	The Miller Hull Partnership
23 - 26	Serena Sturm Architects
27 - 29	APPENDICES
27	Appendix I: AIA 2030 Commitment Requirements
28	Appendix II: Operational Action Items (Full List)
29	Appendix III: Operational Action Items (Chart by Firm)
30	WORKS CITED

ACKNOWLEDGEMENTS

This report was made possible through the support of the AIAS, the AIA, and its Committee on the Environment (COTE). I wish to thank my COTE advisors, Filo Castore, Alexis Karolides, and William Sturm, who have been an invaluable source of feedback and guidance during the process of creating these case studies. I especially appreciate the hard work of Kelly Pickard, who acted as my first point of contact and provided much-needed advice and constructive criticism along the way. I also owe particular thanks to my on-campus advisor Pablo La Roche for his unwavering support since the beginning of this project. This report would not have been possible without the help of several interviewees, who spent much of their time telling me about their firms' experiences and tracking down extra data to send me. To Sean Quinn of HOK, Pasqual Gutierrez, Pablo La Roche, and Eera Babsiwale of HMC, William Sturm and Keelan Kaiser of Serena Sturm, Randy Hafer and Ed Gulick of High Plains, and Caroline Kreiser and Jim Hanford of Miller Hull, I greatly appreciate your contributions to this project, and I hope the case studies do justice to all of the stories and information that you so graciously shared with me.

Report Prepared By
Megan Turner, 2012 AIA COTE COTE Research Scholar
Published 2012
By the American Institute of Architects
1735 New York Avenue NW
Washington, DC 20006
© The American Institute of Architects
All Rights Reserved
Printed in the United States

THE AIA 2030 COMMITMENT

Without a significant reduction in greenhouse gas emissions, our planet will encounter climate change which would irreversibly alter life as we know it; the Intergovernmental Panel on Climate Change has predicted that increasing global temperatures will threaten ecosystems, raise sea levels by 0.4 to 1.4 meters, increase “extreme weather events,” and drive up to 30% of plant and animal species to extinction. Restricting global warming to a temperature rise of two degrees Celsius above preindustrial averages would help prevent the worst effects on the natural world, but this target will require carbon dioxide emissions cuts of 50% to 85% below year 2000 levels by the year 2050 – a daunting goal indeed.¹ However, the building sector alone accounts for roughly half of greenhouse gas emissions worldwide,² and 75% of total building stock will be new or renovated by the year 2035, presenting a tremendous opportunity for emissions reductions as buildings are created,

¹ Core Writing Team, Rajendra K. Pachauri, and Andy Reisinger, eds., “The long-term perspective,” *Climate Change 2007: Synthesis Report*, Intergovernmental Panel on Climate Change, 2007
<http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms5.html>.

² “Why?” Architecture 2030, 2011
<http://architecture2030.org/the_problem/buildings_problem_why>.

replaced, or redesigned.³ Furthermore, as building codes become more stringent in requiring high performance design, architectural firms may find it beneficial to proactively address sustainability issues sooner rather than later. The AIA 2030 Commitment aims to help facilitate this process by striving for full carbon neutrality in participant firms’ projects by the year 2030, thereby enabling architects to make a significant impact in the fight against climate change. Through a combination of reporting annual energy usage in projects and reducing the carbon footprint of firm operations, the 2030 Commitment helps architects impact the world around them and “walk the talk” in their own practices. This two-pronged approach helps create a framework of accountability for firms aiming to improve their environmental performance, whether they have a long history of sustainability or are just beginning to “go green.” In order to help firms tackle the 2030 Commitment, the AIA has commissioned a set of case studies on exemplary participant firms of varying sizes and focuses. These case studies are intended to act as a resource by providing real-world examples of how firms have gone about implementing the 2030 Commitment.

³ “A Historic Opportunity,” Architecture 2030, 2011
<http://architecture2030.org/the_solution/buildings_solution_how>.

THE CASE STUDIES

In 2011, the 104 firms participating in the AIA 2030 Commitment reported an average pEUI (Predicted Energy Use Intensity) reduction of 34.6% (with a target reduction of 60%), a commendable effort for a program still in its early years.⁴ Of these firms, five volunteered to be interviewed for a set of case studies detailing their experiences with the 2030 Commitment. These firms achieved an average pEUI reduction of 45.9%, placing them ahead of overall performance but still beneath the target goal; this situates them in an ideal spot for study, since their improvement in energy reduction is significant enough to be exemplary but still incremental enough to be attainable. The case studies summarized in this report aim to show both the firms' challenges and their successes, demonstrating the common issues they have faced, the ways they have striven to overcome them, and the problems with which they still struggle today. Though the organizations studied vary widely – from nine-person local practices to the nation's largest architectural firm – common threads are evident among many of their experiences, creating a cohesive body of advice for others who may be participating in the

⁴ Kelly Pickard, *AIA 2030 Commitment: Measuring Industry Progress Toward 2030*, The American Institute of Architects, May 2012 <<http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab094805.pdf>>.

2030 Commitment themselves or considering doing so in the future.

INVOLVEMENT

Each firm within the case studies expressed a strong commitment to sustainability, either as part of their core mission and legacy, or as a more recent realization that it is a necessary issue to tackle. Because of this, they felt the 2030 Commitment would be an appropriate next step for their firm to take in the pursuit of sustainable design, giving them a tangible way to measure their progress. Furthermore, it would help situate them on the forefront of an industry-wide push toward greener architecture, positioning them as leaders who could then help encourage other practices to join.

However, these firms were not without their initial doubts; many worried that their buildings would underperform, their clients would resist, and their staff would struggle under the additional workload of the reporting process (an especially salient concern for smaller firms). These fears parallel some of the common challenges to organizational change posited in Peter Senge's book, *The Dance of Change*. Many businesses find that their change efforts are not performing as well as hoped because

results were either expected too soon or judged with inappropriate metrics.⁵ The latter was mentioned by one firm which worried its lab and healthcare buildings would appear to be “energy hogs” because of their inherently higher energy usage per square foot. To address this, they have worked to develop an internal metric for measuring healthcare buildings’ energy use by patient rather than square foot. Though it is not used by the 2030 Commitment at this time, this measurement method helps give the firm a better idea of how its hospitals and labs are performing relative to others of their kind.

Another common concern, client reluctance or resistance toward participation, is a manifestation of Senge’s challenge of relevance; without a clear-cut business case, important change efforts can fail even if their other benefits appear persuasive.⁶ This has been a particular problem in many sustainability projects over the years, compounded by the fact that green design is often perceived (sometimes correctly) to be more expensive than “business as usual.” Fortunately, sustainable design is quickly becoming comparable in initial price to traditional design

⁵ Peter Senge, *The Dance of Change: The Challenges to Sustaining Momentum in Learning Organizations*, New York: Doubleday, 1999.

⁶ *Ibid.*

methods, as demonstrated in both research and everyday experience, and its investments bring further financial benefits over time.⁷ As participant firms continue to build a body of work supporting these claims, they are finding it easier to persuade clients with a triple-bottom-line argument backed by real-world examples of successful implementation.

A third problem firms have anticipated, lacking the time or resources to complete the reporting process, is a specific case of Senge’s challenge of time. Many businesses, when embarking on a change initiative, find it difficult to dedicate enough time to their new endeavors and must rethink their approach in a variety of ways.⁸ Smaller firms, which have fewer resources and staff, often have the most trouble with this i. Many have found it helpful to assign one particular staff member to handle reporting duties, with others ensuring that information is available and easily located for their particular projects. This restructuring, combined with a growing familiarity with the reporting process, has helped

⁷ Lisa Fay Matthiessen and Peter Morris, “Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adaptation,” Davis Langdon, 2007 <<http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/>>.

⁸ Senge.

make the extra workload manageable even for firms with staff sizes in the single digits.

All of these three problems are common among the firms studied for the 2030 Commitment case studies, and as evidenced by Senge's description of similar challenges in his writings, they are common concerns for any sort of organizational change. However, as firms move forward, they continue to find ways to tackle these issues that are best suited to the individual characteristics of their architectural practices (as will be further described within each firm's individual case study). Several firms have also found common ground in problem-solving because of their similar size, demonstrating that collaboration and knowledge-sharing may be able to help more recent signees of the 2030 Commitment "leapfrog" early adopters and deal with certain impediments more easily.

One area in which small firms seem to have an advantage is in deciding to adopt the 2030 Commitment in the first place. Leaders of the firms studied were typically the ones encouraging signing on, and their firms' small sizes made them agile decision-makers, quick to reach a consensus. In fact, in a survey to staff, employees of small firms unanimously agreed that their leadership was already on board for signing the 2030

Commitment, and all respondents strongly agreed with the sentiment that their firms were passionate about sustainability. The smaller firms interviewed were more likely to have held sustainability as a core tenet of their design process since their founding, whereas many larger ones had existed for decades before global warming was even a known phenomenon, making sustainability a relatively recent addition to their mission statements. For this reason, large firms meet more obstacles in getting leadership support for joining the 2030 Commitment. In many cases, those within larger firms who are most involved with sustainability champion the cause to company stakeholders, making formal presentations about the 2030 Commitment to firm leaders in an effort to attain their support. This method of inciting change is analyzed in Chip and Dan Heath's book on the subject, *Switch: How to Change Things When Change Is Hard*; sustainability advocates must "script the critical moves," giving clear directions on what is required and how to achieve it, and "point to the destination," creating a picture of what the ultimate goals are and why they are worth the effort.⁹ After achieving initial buy-in, large firms possess the resources needed to invest significantly in sustainability and help lead research for and enactment of the 2030 Commitment.

⁹ Chip and Dan Heath, *Switch: How to Change Things When Change Is Hard*, New York: Broadway Books, 2010.

OPERATIONAL IMPLEMENTATION

The implementation of more sustainable firm operations is another facet of the AIA 2030 Commitment which highlights differences between firms of varying sizes. This is readily apparent in the leadership styles for implementation in various firms; in the largest firm studied, a network of people within each office reports to one coordinator, who oversees general implementation tactics. In medium to large firms, teams of committed sustainability advocates are often the ones in charge of enforcing new operational methods, while in small firms, a single person typically takes on the job – usually the same one responsible for results reporting. These leaders have used a combination of meetings, presentations, “lunch-and-learns,” workshops, and charettes to help educate their staff about the 2030 Commitment (as is described in detail in the case studies). Furthermore, they remain constantly involved with project teams to help better integrate the 2030 Commitment into practice and encourage a sense of ownership, ensuring that staff feel truly engaged in the process. Many firms also find it helpful to introduce an element of friendly competition between project teams or offices to drive a desire for improved performance. These methods of education and engagement parallel two important change tactics described in *Switch*: “growing your people” by fostering a mentality of learning and personal

development, and “rallying the herd” by using social systems to help catalyze change.¹⁰ These efforts are especially important in larger firms, which have a sizable number of staff members to address and a significant amount of preexisting organizational culture to face; formal education and engagement tactics are often employed to help reach a large staff quickly. The smaller firms involved in the case studies all have a deep background in green design, but even without it, their size would still make it easy for them to informally work with staff on a personal level to achieve results early on. As one might expect, the larger the size of staff, the more time firms must dedicate to education and engagement, though preexisting sustainability goals significantly reduce the time needed.

Firms of all sizes, however, had similar methods of choosing operational action items, or in-office changes to make firm operations more sustainable. Many firms already had some sustainability policies or goals in place, making the corresponding operational action items a simple choice; these and other easily implemented options were “low-hanging fruit” that were an obvious first step, but most firms studied desired to go above and

¹⁰ *Ibid.*

beyond these initial picks. Some looked to see where they could make the biggest impact in their firm, studying their current actions to see which were most influential. Others decided to set ambitious goals for themselves, taking on every operational action item their firm could manage. The process of writing a Sustainability Action Plan (or adapting a preexisting document with similar intentions) also seemed like a helpful tool to plot out future implementation. In interviews, many firms listed a few common operational changes: going paperless, reducing energy usage (by computers and in general), reducing travel, reducing waste, and “greening” purchasing decisions.¹¹ These modifications to firm operations help make the businesses themselves more sustainable, but they also encourage employees to “walk the talk,” inspiring them to integrate green design into their projects deeply from the very beginning. These environmental changes are much like those recommended in *Switch*; by “tweaking the environment” and “building habits” through sustainable practices in-house, companies can help ensure that change will happen simply by making the workplace conducive to them.¹² Situating sustainable behavior as the most

¹¹ For a complete comparison of operational action items implemented by firms, see Appendix III.

¹² Heath & Heath.

convenient, natural path makes it an easy choice, and creating an office environment that prioritizes sustainability makes it more conspicuously a part of that firm’s design principles. Furthermore, it also makes the choice of sustainability an easier one for clients who get to see the firm’s green practices first-hand, demonstrating the techniques in action and showing the firm’s mastery of them. A sustainable workplace helps designers integrate sustainability into their mental models of their own firms’ values, both through feedback from clients and through everyday interaction with more sustainable practices. This change in thought and self-perception helps fuel changes in action, making the adoption of 2030 targets more easily accomplished.

REPORTING

Though the goal of carbon neutrality is arguably the most important part of the 2030 Commitment, it would hold little authority if not for the concurrent requirement of tracking energy performance. This part of the process holds its own challenges for firms of all sizes. Many firms commented that they had difficulties determining which projects would be relevant for reporting (especially for larger firms that also do planning, programming, and case studies) and what categories certain projects would fall under (especially for smaller firms that often do additions, mixed use, and renovations). Others mentioned issues assembling all

the data necessary for the reporting process, both within their own firms and from consultants on their projects. A few also had problems with technical parts of reporting, such as calculating lighting power density or obtaining an accurate figure from the EPA Target Finder. However, firms uniformly stated that after completing the reporting process for the first time, the experience gained from it has made reporting since then seem less daunting. By better understanding the program’s framework and being able to anticipate what is needed for data collection, firms have been able to improve their project database organization, gather information more easily, and clarify which staff members are responsible for each part of the process, significantly streamlining the task of reporting. The firms studied now spend an average of ten to twenty minutes per project inputting data into the reporting tool, though some projects may take longer if data is not readily available.

OUTCOMES AND LESSONS LEARNED

Both the reporting process and the 2030 Commitment in general have given participant firms significant insight into their energy performance. Many firms noted that having to report their projects’ energy usage has given them a better understanding of their successes and failures; it forces firms to take a big-picture look at their projects, revealing both their overall progress and the

trends among their various works. Comparing project-level data has shown firms what types of buildings perform best (and worst), and for larger firms, it can also help show which offices are doing particularly well or poorly. Being able to pick out, celebrate, and replicate successes is an ideal way to encourage change, described as “finding the bright spots” in *Switch*.¹³ It creates a template for future accomplishments and inspires teams to strive for such performance in all their work. Most firms share their results with their staff through a combination of presentations, publications (both in-house and external), intranet systems, and meetings (whether formal or informal). These announcements also help to “shrink the change” by creating milestone achievements along the way, demonstrating that the ultimate goal of carbon neutrality is one that firms can attain in time with the combined efforts of enough small “wins.” This method of tackling a large goal in increments also helps “keep the switch going,” since each “win” compounds to give the change effort even more forward momentum.¹⁴

Overall, the firms studied feel that the 2030 Commitment has been a benefit to their firm for several reasons. It teaches them

¹³ *Ibid.*

¹⁴ *Ibid.*

more about themselves and their performance, in part because it creates a formal framework in which to document energy usage. It also shows them how (and where) to improve and encourages further innovation in the future. The firms all appreciate the 2030 Commitment's power to create accountability for and reflection on their energy performance, forcing them to take a deeper look at how their designs are impacting the environment and how they can improve.

CONCLUSION

Though the AIA 2030 Commitment has presented a daunting challenge, the firms interviewed for these case studies have all risen to the occasion, striving to do their part in the fight against climate change. Small, medium, and large firms each have their own unique difficulties to face in some areas, requiring different tactics to address their particular problems; they also have unique advantages that help compensate for what they may lack. Other parts of the program present similar concerns for firms of all sizes, creating an opportunity for collaboration across the entire 2030 Commitment to help deal with common obstacles. Regardless of size, each firm interviewed held similar opinions on the effects of their participation thus far: they felt the 2030 Commitment is a useful tool in striving for sustainability because it provides structure, accountability, and reflection. Although there

is still a long way to go toward carbon neutrality, the 2030 Commitment has been a valuable resource in change efforts so far. As it continues to gain momentum – both within firms and in the architectural community as a whole – its influence will grow, enabling it to make a very significant impact on our world and its future.

the case studies

HIGH PLAINS ARCHITECTS

HMC | HOK | MILLER HULL | SERENA STURM

“We like to think of our current office... [as] the ‘living laboratory,’ so we’re kind of experimenting on ourselves.” - Randy Hafer

FIRM PROFILE

Founded: 1999

Location: Billings, MT

Number of offices: 1

Staff size: ~10

Year joined: 2010

High Plains Architects is a small firm from Billings, Montana, and its location is an essential part of its character. Its founder cites the plains of Montana as both a design inspiration and a motivator for sustainability out of respect for the land and desire to preserve its unique characteristics. High Plains’ architectural focus is in urban revitalization within the city of Billings, especially historic preservation and rehabilitation as well as new commercial construction. It has also designed a number of notable residential and mixed-use projects.

Interview Participants:

Randy Hafer, President, and Ed Gulick, Architect

INVOLVEMENT

High Plains Architects felt that the AIA 2030 Commitment was a good way to continue working on the firm’s preexisting goal of sustainability and push it toward the ultimate aim of completely green architecture. They thought it was time to tackle carbon neutrality in a more structured way, hoping it would become a widespread initiative throughout the AIA. As firm president Randy Hafer states, “We really thought that if we were going to proclaim what we’re proclaiming...that we should step up to the plate and sign on so that we have one more thing in the background that’s pushing us to get to those highest levels of energy and resource efficiency, [and] low carbon contribution...It just seemed like it was a natural fit for us, and it was important that we be involved in a program that’s really pushing the whole industry in that direction.” Fellow interviewee Ed Gulick continues, “By having to report what your actual performance is versus what you want to do, it is a powerful accountability tool...I don’t think we had any reservations.” The firm was somewhat concerned about clients’ typical interest in a quick payback period conflicting with sustainability strategies, but so far this issue has been a manageable one. The firm’s leadership was “right there from the very beginning,” as Gulick says, championing the idea of signing on to the 2030 Commitment because of their passion for sustainability. Thanks to this support and to the firm’s small size, High Plains was able to decide quickly and easily that the program would be a good choice for the firm.

“It is a powerful accountability tool.” - Ed Gulick

OPERATIONAL IMPLEMENTATION

The implementation of the 2030 Commitment is led by one staff member, architect Ed Gulick, who has written the Sustainability Action Plan, filed annual reports, and given sustainability advice to project teams as needed. Teams are responsible for ensuring their projects reach sustainability goals, making education particularly important. The firm tends to hire recent graduates with a strong interest in sustainability in order to build a staff with the same values; as Gulick explains, “hiring people who have a lot of experience at other offices...they often bring with them bad habits, or different habits than what we have – a different approach – and may not have a kind of depth of commitment or the kind of values we’re looking for in our projects, in our approach to architecture.” The firm holds weekly office meetings, during which its staff share project information and discuss sustainability strategies and performance; this helps garner a sense of what Gulick calls “friendly competition or accountability” within the office, with various project teams vying to have the most energy-efficient designs. This has helped make staff “excited about achievements” thus far, encouraging further successes. Hafer is heavily involved in all projects, bringing his strong focus on sustainability to each one.

In choosing operational action items, the firm mostly focused on adapting preexisting sustainability policies. Because its office building is LEED Platinum, the firm’s working environment is already quite environmentally friendly; the staff has dubbed it a “living laboratory” because of the way they use it to test out sustainability features and demonstrate them to clients. Hafer explains:



This page: High Plains' office with bike rack and photovoltaic array

*Next page: In-office daylighting system
Photos courtesy of High Plains Architects*

OPERATIONS PROGRESS

Results of operational changes thus far

2008:

- Average one kitchen trash bag of non-recyclable, non-compostable waste for whole office per week
- Dumpster removed, saving \$400 on annual property tax bill

2009:

- Office received LEED Platinum certification
- 57% of employees walk or bike to work at least 4/5 days, & 29% carpool
- 50 mpg car for office errands and travel
- Double-sided printer used when possible

2010:

- Using paper with 30% post-consumer recycled content
- Roughly 50% of cleaners are Green Seal certified
- Roughly 65% of food procurement is from local businesses
- Emailing employee notices instead of using post-it notes
- Separating office paper from other paper waste for recycling

We're kind of experimenting on ourselves. We have a small PV array on the roof which we monitor constantly. We designed it for lots of natural light, which works great. But living in natural light has been an interesting experience because we can now tell people what it's like. We also have a rainwater collection system, and...we've never used city water since we turned that system on... [It] really makes a lot of difference to clients that we can say, "Well, we're not just talking the talk, we're actually walking the walk." We know how these things work, we know what kind of maintenance is required or not required, we know what really works in our climate, or in some cases we've tried some things that don't work so well.

By working in such an environment every day, the firm's designers have gained practical experience with these sustainability techniques and can better employ them in their architectural projects. This expertise, combined with the office's showroom-like qualities in having green technology on display, helps convince clients to try new methods in their own buildings. The firm has also created a client checklist to help guide teams through the process of deciding on each design project's sustainability goals.

Signing on to the 2030 Commitment has helped the firm "amp up" its preexisting commitment to sustainable firm operations, making staff more intentional about reducing resource usage, purchasing recycled materials, cutting in-office waste, and lowering electricity use. Choosing operational action items and writing a Sustainability Implementation Plan also required the firm to record the policies it already had in place, reinforcing their importance and stressing their actual application. Waste is an area in which the firm has already made significant strides; before signing on to the 2030 Commitment, staff realized that they were only filling one garbage bin and one compost bin a week, allowing them to get rid of their building's dumpster completely. This, along with other green changes both before and after joining the program, has helped save the

firm money and made other sustainable changes seem more feasible. Upon joining the 2030 Commitment, Gulick spent roughly five hours a week over a four-week period working on operational changes and staff education. Because of High Plains' hiring practices mentioned earlier, little additional education was needed; most of the time spent enacting the program was focused on documenting policies and changes and developing new marketing materials focused on the firm's commitment to sustainability.

REPORTING

The firm has found project reporting helpful in understanding where it stands toward the 2030 Commitment's goals as well as its own personal sustainability goals. However, like many firms have found, the process was a challenging one at first. High Plains' primary problem was in determining which projects would be relevant to include, since a significant amount of the firm's work does not fit within the categories specified for data reporting; Gulick states, "It's a little difficult to know what to do with things like feasibility studies and on small projects...they're too small to really warrant that kind of modeling for the whole building." Fortunately, after a year of reporting, this distinction has become an easier one to make, and the firm was essentially able to use the previous year's work as a template for future reporting. Collecting project data has also become a quicker process as staff has gained experience with it; Gulick notes that on average, each project's data takes roughly 15 to 20 minutes to include in the reporting tool. LEED projects have been especially easy to report, since the relevant information is already laid out. In addition, the firm has found that the LEED rating system itself is helpful in achieving the goals of the 2030 Commitment, particularly when aiming for high-level certification with an energy performance focus. The firm typically targets a 50% reduction in energy usage, and this baseline goal acts as a proxy for the 2030 Commitment's goals and helps create an additional layer of accountability.



STAFF COMMENTS

Excerpts from anonymous staff surveys

On deciding to join the program:

“Signing on was the easy part. How and when to submit our information going forward was not particularly clear.”

On operational action items:

“We had already committed to a more sustainable office... however, we are always considering other options as well.”

On encouraging dialogue:

“We think [sustainability]’s important but I’m not sure others understand the significance.”

OUTCOMES & LESSONS LEARNED

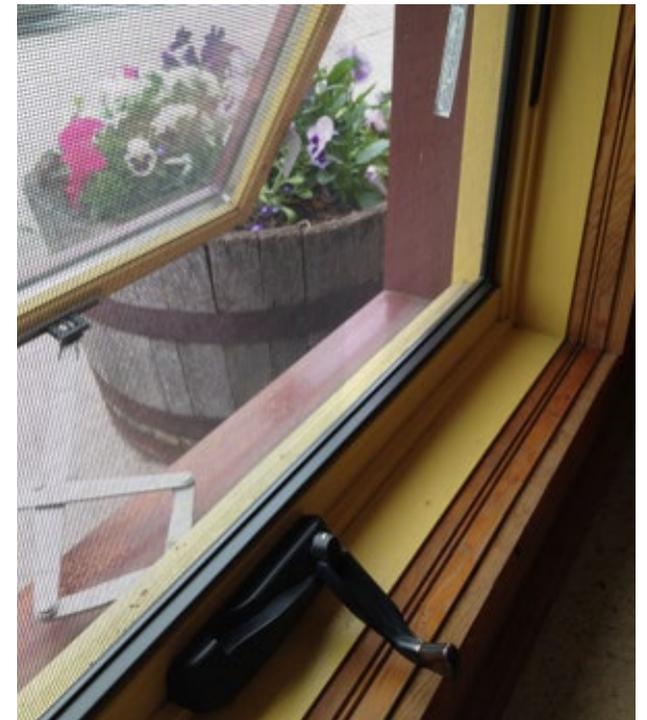
The 2030 Commitment has helped High Plains Architects highlight their strongest and weakest points. Just as LEED has proven to aid in achieving the program’s goals, non-LEED projects have dragged down the firm’s overall portfolio performance. Many of these projects are warehouses with large square footage, so although they make up only a small percentage of the firm’s total work, their size gives them a significant impact. This realization has been a humbling one, demonstrating to Gulick that for “our average performance on a square foot basis, there’s room for improvement.”

Another area in which the firm sees need for change is in the 2030 Commitment itself; at the moment, the AIA uses site energy data in its comparisons instead of source energy data, disregarding the varying carbon footprints of different energy sources. Gulick argues that this method of measuring can give a false impression of actual emissions reductions, creating a “feedback loop that...can lead design teams in the wrong direction.” As an example, the firm cites its own office building, which is a renovation of an older structure. Accordingly, its building envelope is relatively inefficient, requiring more gas to heat than a newer building might. However, because of the large amount of daylighting and natural cooling that the building’s renovations have incorporated, the office saves a large amount of electricity, which has a bigger impact on carbon footprint. Despite these reductions, the building is considered a poor performer when measured by site energy usage because of its gas consumption. Gulick would prefer to see energy usage measured by source energy in order to avoid these potentially misleading readings. As he argues, “The source energy actually tells the story if you’re interested in carbon dioxide emissions; if you’re interested in reducing those, then you really need to be using source energy rather than site energy for measurement.” Although it would create an extra layer of complexity to the reporting process, it could be a valuable addition that would result in a more accurate picture of buildings’ carbon footprints. Even if it were not incorporated into the 2030

Commitment’s data reporting, this important distinction is still one which architects should acknowledge and consider in their designs.

Despite this criticism, High Plains Architects has found the 2030 Commitment a beneficial program to the firm, giving it “accountability – making sure that we actually are walking the talk” and staying on track for its sustainability goals. Since signing on, the firm has been more deliberate about its green policies, both in the office and in its design practice. This feeling of accountability has helped drive the firm forward in its pursuit of carbon neutrality and overall sustainable development, enabling it to fulfill its mission of preserving and celebrating the plains from which it takes its name.

Natural ventilation helps reduce the office’s electricity usage



HMC ARCHITECTS

HOK | MILLER HULL | SERENA STURM

“We focus on good design, and we back that up with documentation... [and] metrics.” - Eera Babiwale

FIRM PROFILE

Founded: 1940

Location: Western United States

Number of offices: 9

Staff size: ~400

Year joined: 2010

HMC is a large firm headquartered in Ontario, California, with offices located throughout California, Arizona, and Nevada. Its architectural expertise is primarily in healthcare and education, and accordingly, it takes an evidence-based design approach to help improve the performance of its buildings, many of which require great technical precision. In recent years, this emphasis on research has expanded to include “high-performance architecture,” which aims to raise the bar for sustainable design.

Interview Participants:

Pasqual Gutierrez, Director of Architecture, and Pablo La Roche, Sustainable Design Director

INVOLVEMENT

HMC Architects chose to participate in the 2030 Commitment in recognition of the architectural profession’s commitment to solving the problem of climate change; Director of Architecture Pasqual Gutierrez described it with the phrase, “If not us, then who?” The firm’s only hesitation was in how its clients might receive the initiative, since most prioritize cost, functionality, and timeliness above all else. As Sustainable Design Director Pablo La Roche explains, “I would say that firm-wide, there’s always been support for this initiative. I think people realize that it’s important, that it just makes sense. The major concern always is: what does the client think? Does the client think that this is going to be more expensive for them? How do we put this as part of our work?” The firm has found that by demonstrating the importance of sustainability to clients and using different techniques to help persuade them, its designers can work around this obstacle and introduce sustainability to most projects.

Gutierrez humorously suggests that the firm did not entirely realize “what they were getting into” in signing on to the 2030 Commitment; although he had been passionate about sustainable design for a number of years, HMC had only founded its Sustainable Design Studio about six years ago, mostly to focus on creating LEED projects. Gutierrez had convinced firm leadership to join the 2030 Commitment as part of this initiative, while simultaneously working to create a Building Science Studio (dubbed ArchLab) “in a clandestine way.” In a firm meeting at a recently constructed sustainable design project, Gutierrez unveiled the concept and mission of ArchLab to the firm’s management: “to use science to validate performance,” as stated by La Roche, who also

heads the Building Science Studio. Fortunately, firm leadership fully accepted this studio as a new component of its sustainability strategy, placing it centrally in the firm’s approach toward implementing and achieving the 2030 Commitment targets.

OPERATIONAL IMPLEMENTATION

Since its inception, ArchLab (a four person team) has acted as the forerunner in advancing sustainable design within the firm, handling most of the obligations of the 2030 Commitment as well. As one staff member of ArchLab, Eera Babiwale, describes it, “The way I’ve always looked at it is that we are essentially in-house consultants to our design teams; our design teams are sort of our clients...so we want to make sure that we’re delivering as much of a service to them as possible, and that means getting involved with their designs as early as possible.” This early participation is a critical part of the firm’s efforts to educate its staff on the 2030 Commitment, using close and constant involvement to help spur regular conversation about green design and incorporate it in the majority of the firm’s projects. The team gives regular presentations on the subject, including “noon hour” talks which are recorded so staff can watch on their own schedule, and they also speak at the firm’s annual conferences, helping to spread information through more formal channels.

One of the most unique tactics used by the firm was a sustainability retreat organized by ArchLab for HMC’s designers – an important subset of staff chosen because they were the first people who would start working on any given project. The ArchLab team helped conduct lectures, workshops, forums, and other educational ex-



*This page: HMC's Eco-charrette process
Next page: Sustainable Design Retreat
Photos courtesy of HMC Architects*

DESIGN PROCESS

High Performance Design system

Eco-Charrette Tactics & Intentions:

- Sustainability Visioning
- Goal Setting
- Environmental Analysis
- Identify Sustainable Opportunities
- High Performance Design Chart

Schematic Design & Simulations:

- Energy & Life Cycle Cost Analysis
- Daylight & Glare Analysis
- Solar Radiation Analysis
- Solar Massing Study
- Acoustics Analysis
- Air Flow Analysis
- Wind Analysis

periences to impart a significant amount of knowledge in one weekend, driving home the importance of what is at stake by having participants sleep in tents in the wilderness. As Babtiwale explains, “By camping out and being very much immersed within the natural elements, it made things more pertinent and more relevant.” Parts of this intensive, hands-on experience have also been replicated in a number of workshops, both within the firm and in the nearby community. Babtiwale describes the ethos behind the workshops by saying, “As designers, this is our responsibility. We have to be able to use our spaces efficiently as possible and understand that a smaller EUI is great, but using it in an effective way is even better, being innovative and coming up with a more creative design is even better, but it still has to be efficient, it still has to work.”

The concurrent introduction of ArchLab and the 2030 Commitment has also changed the way in which the firm approaches the design process. La Roche states, “We want to achieve a certain goal that is ultimately carbon neutrality, or even better if it was carbon positive, but how do we get there?...Through this high-performance design process that is really about testing the ideas in different stages of the process.” High-performance design – integrating science and results-based design to achieve efficiency, sustainability, and comfort – is the core tenet of ArchLab, and it guides the design process for the entire firm. At the outset of every project, design teams conduct an “eco-charrette” to help include sustainability in the very first stages of development. As La Roche explains, “It’s important to really have...everybody that’s going to participate in the process to be involved as soon as possible, and we try to have everybody set the goals together...because then you feel you’re part of that [process]...so if we’re all together in this from the beginning, it makes a big difference.” In these eco-charrettes, the team uses visioning exercises and Integrated High-Performance Design Charts to help map out the direction clients are heading in terms of green design. This experience also helps the design team understand how strongly they can pursue sustainability in each project. La Roche says, “Part of

our goal...is to gauge there with the client how much we can push, so we try to set some goals there.” Just as in working with the firm’s own design staff, ArchLab’s early involvement in the design process helps create a close relationship with clients that enables more significant progress to be made toward sustainability.

The firm also wanted to focus on areas where it could make an impact in choosing its operational action items. As Gutierrez puts it, HMC wanted to “pick [its] targets,” deciding which changes could have immediate effects and which would be more important long-term. Reducing paper usage by transitioning to paperless archiving has been a particular emphasis, but drawings can be somewhat difficult to digitize because of their large size, which makes them unwieldy to scan. On one project, the firm partnered with its client to fund scanning all of the building’s drawings, which would have otherwise filled two large storage units. Another area of interest has been transportation, an especially salient issue for a multi-office firm. By switching to video conferencing in place of in-person meetings, the firm is saving money and reducing emissions. In addition to these two technologically aided efforts, the firm also encourages its staff to use tablets in their workflow to enhance communication overall, reducing the need for traditional methods dependent on paper or travel. To facilitate this, employees were given iPads in place of their typical Christmas bonus for 2011. The firm also hopes to establish an “Energy Cup” contest in the near future, having the various branches of the firm compete to see which office uses the least energy (normalized by office size), thereby encouraging lower energy usage through the power of friendly competition. Gutierrez notes that although he had only been expecting a modest response to such initiatives, he has been pleasantly surprised by the amount of staff enthusiasm, giving such competitions great potential. Nonetheless, completing these first phases of education and engagement was a full-time job for all four ArchLab staff for the first six months of the firm’s participation in the 2030 Commitment, amassing roughly 3,000 man-hours of work.



STAFF COMMENTS

Excerpts from anonymous staff surveys

On reservations toward joining:

“No reservations that I am aware of. It aligns with our mission and design goals. Therefore it always is a template to document the level of energy savings we are designing to. Then we have something to measure against once it is built.”



Above: Graphic recording of the eco-charrette process

REPORTING

The reporting process was also somewhat time-consuming, taking about half of one staff member’s working hours for three months. The team found it challenging to find data from their projects to submit for reporting, meaning staff spent a significant amount of time filtering through information to find the right figures. Because the firm signed on late in 2010, it has only completed one reporting cycle so far, but ArchLab has already learned much from their experiences to date. Working with reporting has helped teach them how to handle project data more efficiently, and it has also demonstrated exactly what information needs to be pulled out; as Babiwale says, “We also got a much better sense of what needs to be reported, like what are they actually looking for?” La Roche also notes that the reporting spreadsheet itself has been helpful in demonstrating what is necessary for reporting. The firm is currently working to help streamline the process by tweaking its project management system to include tabs on each project to track data, which should make the reporting process much faster; with this new system, staff will be able to pull out information quickly (in about 10 minutes, Gutierrez estimates) instead of going back and calculating energy data from archived files.

OUTCOMES & LESSONS LEARNED

HMC has found the reporting process helpful because of the way it demonstrates performance; the firm has been pleasantly surprised by its projects’ performance thus far, but reporting has also uncovered its poorer designs. Being able to sort project data by office and practice has also allowed the firm to compare and learn from its own experiences. Babiwale states, “We started organizing that [information] in graphs so that people could see, sector by sector, how we were performing – which sectors were doing well, which ones needed a little bit more emphasis in 2030, and we learned a lot just by doing that.” She continues, “I think it’s been internally help-

“It’s good to, in a sense, instill that competitive spirit because it’s in a positive way; it worked.” - Era Babiwale

ful. I know that principals have asked us to give them the charts – the individual sector charts – so that they could talk about it at their meetings, and they’ve been setting goals at the beginning of the year for what they want to focus on.” Thankfully, she notes, “Nobody was an ultra-low performer, but nobody wants to be the lower end of even high [performance]...it’s good to, in a sense, instill that competitive spirit because it’s in a positive way; it worked.” Performance data is also shared with staff by presenting it at annual conferences, publishing it on the firm’s website and blog, announcing it through a monthly communication, and making it available on the firm’s intranet.

Gutierrez states that the 2030 Commitment has been a “great return on investment” because of the way it allows the firm to communicate the benefits of green design to its clients; with actual energy usage data, ArchLab can make accurate energy use predictions to help sell the idea of sustainability to its clients. This wealth of data is crucial to the way ArchLab operates: “We focus on good design, and we back that up with documentation... [and] metrics,” says Babiwale. Learning from data has made the 2030 Commitment a valuable experience for the firm, creating self-awareness and helping staff understand that they are “doing the right thing.” It has also helped teach the firm more about itself and “what we do” as an architectural practice, as Gutierrez says. Furthermore, the reporting process has allowed the team to properly document their findings rather than just circulating them internally or never even measuring them; it has also created another metric by which to measure the firm’s performance, alongside typical judges of financial returns and client satisfaction. For a firm focused on results-based design, this new source of performance information has been immensely helpful in pointing toward the eventual goal of carbon neutrality.

“The most important thing is beginning to look at what our standard practice is and how to improve that.” - Sean Quinn

FIRM PROFILE

Founded: 1955

Location: Global

Number of offices: 25 worldwide

Staff size: ~1,600

Year joined: 2010

HOK is the largest architecture and engineering firm in the United States, originally based in St. Louis but now occupying 25 offices across three continents. Its portfolio is highly diverse, as was a goal of its founders, who wished to create an economically resilient practice. HOK has been strongly invested in sustainability for years, officially declaring it a “core value” in 1993, and the firm-created *HOK Guidebook to Sustainable Design* has been an influential green design resource.

Interview Participant:

Sean Quinn, Sustainable Design Specialist

INVOLVEMENT

HOK signed on to the 2030 Commitment because it saw the program as a part of its roadmap toward the firm’s sustainability mission and goals. For the past twenty-five years, the firm has created a legacy of improving its sustainable performance, with an increasing commitment to measurable outcomes in the past decade. Because of the large amount of square footage HOK designs, the firm has a very real impact on the building sector’s carbon footprint, making carbon emissions an especially important metric for it to address. Although it recognized this responsibility, the firm’s large size also made joining the 2030 Commitment a somewhat involved process; Clark Davis, HOK Vice Chairman, and Mary Ann Lazarus, Firmwide Director of Sustainable Design, presented the idea to the central Board of Directors, the Design Board, and the Marketing Board in order to demonstrate that this extra commitment was in line with the firm’s goals as a whole. However, the firm was somewhat hesitant to use the “one size fits all” approach of pEUI as a benchmark for its numerous healthcare and laboratory buildings, which tend to be more energy intensive than average and may appear to perform poorly when judged solely by energy usage per square foot. Sean Quinn, the firm’s Sustainable Design Specialist, notes that “while architectural and engineering teams may improve passive design techniques, building envelopes, mechanical systems, and lighting systems, hospital and lab equipment and data servers have dramatically increased energy load” since the last CBECS survey was conducted. Quinn continues:

There has also been an industry push to reduce the size of these buildings and make them more

program efficient. If we can reduce the total square footage of a building, we may save in material resources and improve general operations, but the energy load profile doesn’t necessarily change much...Our total energy use may stay static or even reduce, but the EUI, measured in kBtu/square foot/year often increases. As a result, a more efficiently planned building may be penalized for being smaller than that of a larger, less efficiently planned building.

To remedy these issues, the firm has “discussed shifting EUI measurements to kBtu/patient/year, creating a more focused metric” for healthcare projects. For labs, HOK’s designers “scrutinize our energy model results to identify loads from data servers, equipment, and other energy intensive loads” in order to research “how to more efficiently treat these systems.” Although these alternate methods of analyzing buildings do not directly impact the firm’s pEUI performance for the 2030 Commitment, they have helped HOK better understand and optimize the portion of its portfolio with high energy intensity, leading to better performance overall.

OPERATIONAL IMPLEMENTATION

Sean Quinn is at the helm of implementation within the firm, managing the process of information tracking through a team of people within each office branch. A staff member in each office is responsible for gathering that particular location’s information for reporting, while individual project managers help gather data for their own projects. This chain of responsibility makes it especially important for each office’s leadership to be in-



*This page: Design Analysis workshop with Atelier Ten
 Next page: HOK's composting system in St. Louis
 Last page: Collaboration meeting for Net-Zero Court,
 using video conferencing
 Photos courtesy of HOK*

OPERATIONS PROGRESS

Results of operational changes thus far

Composting:

- In Fall 2011, HOK's St. Louis office established a building-wide composting program, diverting 1.05 tons from landfills in-office and 8.10 tons building-wide

Repurposing:

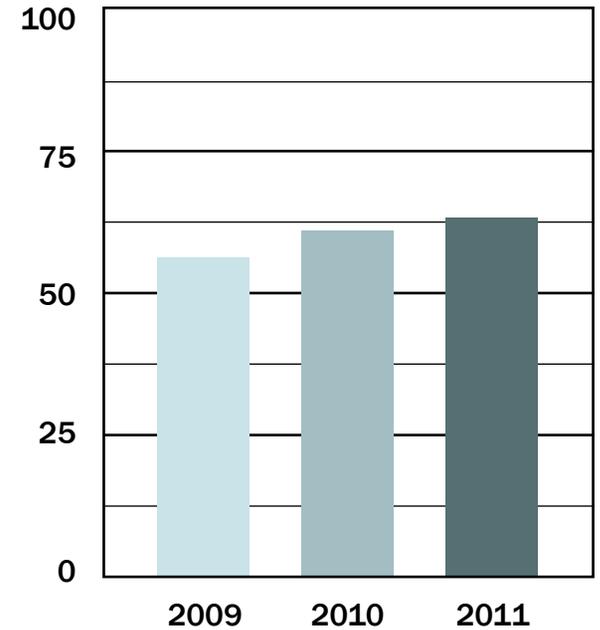
- During the Hong Kong office's move in 2011, all of its furniture was repurposed to local organizations and schools
- Glass, wood, wood doors, and boxlight fixtures from demolition were all donated to local recycling and salvage organizations

LEED:

- By 2011, 63% of HOK's design professionals were LEED credentialed, with 4 offices' design staff over 80%
- 12 of the firm's office buildings are LEED certified

vested in the 2030 Commitment, but staff engagement and education are also essential for success. As its first step toward educating its staff, Quinn says that his firm "initiated educational seminars to 'raise the base' of expertise throughout" its staff, focusing on achieving a 90% rate of credentialing among design professionals. To this end, the firm held LEED training seminars to help prepare employees for the LEED-GA and AP exams. HOK's Sustainable Leader group includes at least one representative in each of the firm's offices to prioritize sustainability in local projects and practices. More recently, HOK has also made a strong push to integrate energy efforts into the core of every project, and as Quinn says, "We want to make sure that every architect understands that there is a real role and responsibility that we have in instituting a passive energy design on our projects." This shared responsibility helps demonstrate to designers that even in a large firm, their input has an impact on the firm's performance. By incorporating sustainability every step of the way in the design process, HOK has helped its staff learn by doing.

Quinn explains that each project begins by setting environmental goals, determined either by LEED certification targets, the client's wishes, or local code. After holding initial design charrettes, the team then conducts "monthly to bi-weekly meetings with teams to make sure that we're leaning toward some of those goals, whether they be energy, water, [or] some other form of environmental metric." Projects also undergo "design analysis," a system of "performing energy modeling at the very early onset of a project...everything from doing climate studies to creating an energy target, massing and orientation studies, envelope studies, as well as daylighting, and we expect that the practice will continue to grow and address other issues like water as well." HOK developed this technique in 2011 through a series of forums and monthly meetings, and in October, formal training was introduced to ensure each office would have at least one staff member capable of performing such analysis. This process, combined with a close partnership between designers and engineers, allows the firm to use modeling as an "iterative response



% of Designers LEED Credentialed Firmwide by Year

method." This approach has allowed staff to learn about the goals of the 2030 Commitment as they work toward them, helping the firm move forward fairly quickly. In general, most of HOK's staff is already interested in sustainability, so integrating that concern into work practice through seminars and hands-on experience is the most important part of the firm's education and involvement strategy. As Quinn explains, "One of our strongest recruitment methods is our overall commitment to sustainability, and that's actually what brings a lot of people to join HOK, and so people's involvement is very active. We try to promote that growth within all of our projects."

In choosing operational action items, the firm built upon a Sustainability Roadmap it had begun developing in 2009 and released in 2010. In creating it, the firm utilized its staff members to help target the most relevant issues; Quinn states, "There was essentially a board of both experts within sustainability and within every major discipline within the firm that started form-



SUSTAINABLE OPERATIONS

Operations plan checklist categories

Office Certification and Recognition

Prerequisite credits:

- LEED Requirements & Green Leases
- Education

Energy

Prerequisite credits:

- Lighting
- Workstation Energy Efficiency
- Energy Star Appliances

Water

Procurement

Prerequisite credits:

- Office Supplies - North America
- Kitchen Supplies
- Catering

Waste Management

Prerequisite credits:

- Recycling
- Materials Reuse

Indoor Environmental Quality

Travel

Social Responsibility

Innovation

ing task forces within each office...That was a task that was put together by individuals that have a higher level of expertise within sustainability, but then that was then shown to individual office leaders.” This Roadmap consisted of directives specifying that “all future HOK offices had to be LEED certified, that we would reduce a lot of the material resource, and then we would start forming methods to reduce everything from energy use to water use to lighting, and so on.” These specifications provided the firm with a basis for operational action items that were already “in place either formally or informally. Our signing on to the AIA 2030 Commitment meant that it was formalized, and we’ve now been tracking that formally every quarter,” says Quinn. However, even with this strong foundation, the firm has still encountered obstacles in certain operational changes. Because most of HOK’s offices are leased rather than self-owned, Quinn explains that “one of the things that we’ve been evolving with a lot of our projects is the role and response from our building landlords, and I think that’s perhaps been an interesting process. Implementing certain building operations set-points are easier in some places than others, based on relationships and leases.” Another area in which the firm’s various offices have differed is in the time spent on these operational changes, and on educating their staff. Because the firm is so large and “every office definitely put in a different extent of work,” Quinn can only conclude that overall, the total time spent on these tasks after signing on to the 2030 Commitment was “a lot.”

REPORTING

HOK’s size has also made the reporting process a rather daunting task. Specifically, the firm’s huge number of projects means that its biggest challenge has been “getting an accurate collection of all of our projects.” The firm’s large amount of planning, programming, engineering, marketing, and concept projects makes it difficult to determine which out of their enormous portfolio is actually going to be built. In a firm of their size, this



Sustainable Design Charette

list is often over 600 projects, sometimes longer when smaller projects are involved. In order to sift through this volume, the firm has tried two methods; the first utilized its IT department and Building Smart Group to see which projects were actively creating drawings and generating Revit files, but this approach was too broad because a number of irrelevant projects also used the same design tools. The second approach, which the firm is using currently, is “utilizing our Accounting Group to identify which projects are in various phases. We’ve found that to be a bit more of an accurate method of limiting that list,” says Quinn.

By better honing which projects should be included and gaining experience in conducting the reporting process, the firm was “able to essentially almost double the amount of projects that we were able to get tracking on,” creating a more complete picture of the firm’s actual performance. Quinn attributes this development in part to a clearer division of work, “by making sure that



STAFF COMMENTS

Excerpts from anonymous staff surveys

On operational action items:

“Teach by Example. It’s easier to sell clients on a strategy you have successfully implemented in your own office.”

On challenges to reporting:

“After being called out [in] a board meeting, office leadership at our multiple locations has been more committed to encouraging staff to participate in reporting.”

On benefits of the program:

“We have learned a LOT about our projects!”

there wasn’t just a central person that was handling this for every office, but that there was a local person that was really tracking all of this information.” Furthermore, the firm found it beneficial to foster an increased level of commitment from leaders within each office in order to demonstrate that HOK was actually dedicated to the pursuit of sustainability. Quinn says:

We really tried to get management within offices on board with that tracking mechanism. It was ...a matter of getting a commitment from the firm’s leadership to begin designing buildings to a higher energy standard, [which] made it that much more of an impetus for all project managers to be more involved with tracking the energy use on their individual projects. That led to a much higher yield on the projects where we have both reported data as well as modeled data.

After working with the 2030 Commitment and becoming more familiar with the reporting tool, Quinn has found that each project takes roughly fifteen to twenty minutes to record. As long as data is already available and correctly filed, the process should simply be a series of emails, but for some projects that are either more complex or lacking data, it may take up to an hour.

OUTCOMES & LESSONS LEARNED

Participating in the 2030 Commitment has helped HOK see its portfolio in a new light; just recently, the firm created a central system that can filter projects by type, office, and square footage, allowing Quinn to “identify both the highest-performing projects within HOK, and what are some of the best practices that are put in place there that we can begin to boil down.” On the other hand, the system also reveals “the projects that are not doing so well,” allowing him to “start looking at what practices are in place there that are perhaps hurting us, and in the case of perhaps scope and budget, what are the ways to begin implementing some of the practices

on our higher performing projects into our more average projects.” In addition to presenting the 2030 data to the Board of Directors and the Design Board every six months, the firm sends individual reports to each of its offices, showing both overall firm standing and individual office portfolios. Quinn says, “we want to be able to indicate which projects every office is doing extremely well in, and which projects need improvement, or what kind of projects need improvement, and hopefully that begins to create responses, and not only in the way our leadership works, but in the way our individual staff members approach design.”

This philosophy is also echoed in what Quinn calls the biggest benefit of the 2030 Commitment: “It creates reflection.” He continues to say:

Quite simply, I think the goal of reaching a carbon neutral building stock is a very ambitious one, and we have a lot of projects that are doing extremely well, but the most important thing is beginning to look at what our standard practice is and how to improve that. How do you take the largest quantity of buildings that are more average, both within HOK but also nationwide, and begin pushing that forward? And the 2030 Commitment really begins to point out where are some of our best steps, as well as some of our missteps. By knowing that delta, we can begin to start creating change. Without knowing that, it’s really hard to actually pinpoint ways to improve, so it’s helped create a roadmap for us.

Quinn notes that the formal structure of the 2030 Commitment has helped immensely in constructing this roadmap, “really moving from the standpoint of trying to do the right thing to making sure in the same way that we registered and certified most of our projects. It’s not enough just to do it; we have to actually make sure that we’re tracking that formally, and so essentially working to the same standard that we have to perform on all of our projects, and obviously trying to exceed that.”

THE MILLER HULL PARTNERSHIP

SERENA STURM

“It’s interesting to see where the firm is as a whole, which I hadn’t been doing until I actually started using that tool.” - Jim Hanford

FIRM PROFILE

Founded: 1977

Location: HQ in Seattle, WA

Number of offices: 2

Staff size: ~55

Year joined: 2010

The Miller Hull Partnership is a medium-sized firm based in Seattle with a second office in San Diego. Since its inception, its focus has been on socially responsible architecture, inspired by its founding partners’ experiences in the Peace Corps. The firm strives to create public work that incorporates citizen input in the design process, helping to make the resulting buildings a positive contribution to their communities. Sustainable design is a natural companion to this philosophy, and accordingly the Miller Hull Partnership has been on the forefront of green design since its early days.

Interview Participants:

Caroline Kreiser, Sustainable Strategy Specialist, and Jim Hanford, Energy Efficiency Advisor

INVOLVEMENT

The Miller Hull Partnership chose to join the AIA 2030 Commitment because they felt that it was “the right thing to do” – a sentiment expressed more than once in communicating with various staff members. They had been interested from the program’s inception; one of their partners, Norman Strong, had been a former VP of the AIA and a Steering Committee member for the Committee on the Environment. During this time, he helped develop the 2030 Commitment, so it seemed like a natural and appropriate step for their firm to incorporate it into their sustainability pursuits. Although another partner, Ron Rochon, was somewhat worried about what they might find in their pEUI data, the firm had already been collecting energy usage information in the past, so they already had a general idea of their performance before then. Accordingly, Rochon and other staff members were eager to participate and make use of the 2030 Commitment’s structured approach; the firm already had a number of sustainability policies in place, so creating a plan provided an opportunity for compiling them all into one cohesive document and enforcing them more mindfully.

OPERATIONAL IMPLEMENTATION

The firm uses a team of five people in implementing the 2030 Commitment, headed by Sustainable Strategy Specialist Caroline Kreiser, who focuses on operations, and Energy Efficiency Advisor Jim Hanford, whose primary responsibility is project tracking and reporting performance. This team uses a variety of methods to help educate and engage staff members, though as a strong-

ly sustainable firm from the outset, the need for these interventions is fairly low. For the past three years, the firm has held a session at the beginning of the year announcing progress and giving updates on performance, both for the firm itself and the 2030 Commitment in general. Round-table sessions provide more intimate opportunities to discuss progress, while a lunchtime series of green reviews called “Mixed Greens” helps bolster educational efforts. Hanford describes it as “four or five lunch sessions that are optional but well-attended, and many of the topics that we have in there touch on the 2030 Commitment in some way or another.” Furthermore, in-house publications of performance help incentivize staff to do well by fostering a sense of friendly competition. The implementation team is also working to create a new hire package explaining the firm’s approach to sustainability, integrating the education process into the very beginnings of employees’ careers. Kreiser explains that the packet will include the firm’s Sustainability Action Plan, and that “we’ll walk them through to make sure that they understand all the different sustainable processes we have in the offices, including our composting and how the recycling works and all of that.”

In choosing operational action items to address, the Miller Hull Partnership wanted to aim for total sustainability rather than a few isolated green practices; Kreiser states that “we’re doing everything we can...anything we can get our hands on.” The firm was already involved with the Seattle Climate Partnership, a local sustainability initiative, before joining the 2030 Commitment; their participation in this program has helped them profile their operational carbon footprint, pinpointing emissions “hot spots.” Through their efforts with the Climate Partnership, they have been designated a



OPERATIONS PROGRESS

Results of operational changes thus far

Annual Electricity Usage:

2007	311,897 kWh
2008	327,631 kWh
2009	320,545 kWh
2010	223,857 kWh
2011	257,020 kWh

Travel & Commute per Employee:

2007	7,422 mi	2,095 mi
2008	14,542 mi	2,356 mi
2009	4,523 mi	2,459 mi
2010	4,993 mi	1,816 mi
2011	7,530 mi	2,876 mi

Paper Usage:

2007	2.167 million sheets
2008	3.328 million sheets
2009	1.645 million sheets
2010	0.880 million sheets
2011	0.690 million sheets

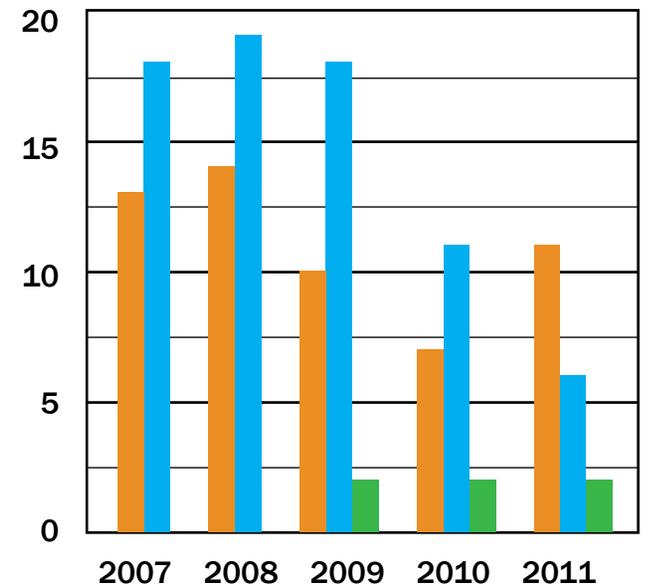
Waste, Recycling, & Compost:

2007	13	18	0 tons
2008	14	19	0 tons
2009	10	18	2 tons
2010	7	11	2 tons
2011	11	6	2 tons

Net-Zero Carbon office. However, travel is still a major concern, accounting for over half of the firm's carbon emissions. As Kreiser describes, "Our biggest opportunity for savings is really in reducing our travel costs; that is a huge amount of our footprint...so we are working very hard to reduce our travel." Hanford continues, "It's hard to really focus on travel though, because it's just so dependent on specific projects and numbers of projects that you have, and it's hard to compare year to year if you're actually improving your performance." The firm recently opened a satellite office in San Diego to more efficiently handle a large number of projects in Southern California, and it has also begun to use web meetings more frequently to help cut down on the amount of travel required.

Within the offices themselves, the firm is still striving to reduce environmental impact. Having already tackled the "low-hanging fruit," the implementation team is focusing on broader changes that could significantly reduce resource usage. They are especially interested in decreasing computing energy usage, recently halving its footprint by shrinking their number of servers, increasing their hardware's efficiency, and decreasing its usage by turning it off at night instead of leaving servers online for software updates. The firm is also looking for ways to lower paper usage, such as shifting to electronic archiving and using digital files for review and transmittal. Unlike other firms interviewed, the Miller Hull Partnership has also enacted strict catering guidelines, which specify that all disposable dishes must be compostable, a large portion of their catered food must be vegetarian and organic, and that bottled water must not be used. Over the firm's first year in the 2030 Commitment, Kreiser, who was mainly responsible for these initiatives (and for writing the Sustainability Action Plan), spent an average of ten hours per month working on operations issues. Kreiser notes, "The first year, putting together that Sustainable Action Plan was a lot of work, but in the subsequent years...you build on it, and it's much easier because now you have a pretty solid base, and growing from that is a lot easier than starting from scratch."

The firm has faced challenges in their attempts at operational sustainability as well; for a time, thermostat set points were changed to help reduce power consumption, but as Kreiser put it, "we found that that wasn't too well-received in the office," so this energy-saving mechanism was discontinued. The firm has also chosen not to pursue recycling fluorescent light bulbs because establishing an in-office program would have been both difficult and expensive, whereas simply doing so outside the office is fairly easy. Utility data has also presented somewhat of a stumbling block. As Kreiser explains, "A really big challenge is to get proper utility information for both of our offices; right now most offices don't have separate meters, so [the] first hurdle was to get the utility information from our property manager. In my Seattle office, over the years I've managed to work out that process by just basically keeping at it. In San Diego...no luck so far, so it's going to take me a few years before I can massage that process." In spite of these few setbacks, however, the firm's progress so far has been very impressive, demonstrating that carbon neutrality within an architectural office is an attainable goal.



Tons per year of office waste, recycling, and compost



*Previous page and next page sidebars:
Naturally lit workspaces in the Seattle office
This page: In-office compost bin
Photos courtesy of The Miller Hull Partnership*

DESIGN GOALS FOR 2015

Sustainable design goals for current projects

- Energy modeling on 100% of all projects
- Calculate project carbon footprint on 30% of all projects
- Exceed water use reduction based on LEED 2009 baselines in 50% of all projects
- No potable irrigation beyond establishment phase on 90% of all projects
- Incorporate renewable energy features in 75% of all projects
- Specify half of all wood on projects to be FSC certified in 75% of non-residential projects and 90% of residential projects
- No PVC unless required by code on 90% of all projects

REPORTING

In reporting energy usage data for architectural projects, the firm quickly realized that finding time for staff to deal with project tracking was problematic. To resolve this issue, a member of the implementation team, Jim Hanford, took on the job, also acting as the go-to person for energy efficiency matters and post-occupancy studies. He notes that “before project tracking became one of my major responsibilities, it was more of a second-tier responsibility – it was [challenging] really just finding the time to do it. So once it was made my responsibility, it changed everything.” As time went on, Hanford discovered that simply finding project data could be difficult as well. He explains that “during the first year we reported, it was actually pretty easy because almost all of our projects were LEED projects, so the data was there. This year was quite a bit different, so not near as many LEED projects.” Because of this, fewer projects were required to use energy modeling, making data collection a somewhat lengthier process. Hanford also noted that comparing calculated pEUI to estimated averages can present issues, since the EPA’s Target Finder can be very sensitive to user input, changing significantly depending on how it is calibrated. Furthermore, since a number of the firm’s projects do not fit neatly into available categories, finding the right baselines can also be difficult. Hanford explains:

A lot of our projects are not easily located within either the Target Finder building types or even the table; they’re kind of combinations of things, lots of different uses...A lot of them are public buildings that may be community centers with a library on them, and maybe something that has operations from six in the morning ‘til midnight whereas another part of it may only be used sporadically. It’s [challenging] finding the right baseline to use and trying to figure out, is that actually reasonable for this project or not? ...Like I tell people, I think [for] the baseline, you kind of have to pick something and go with it...and in the end it’ll all kind of come out in the wash, because it’s more about

the firm’s overall performance and not any one specific project.

After a year of reporting, the firm has gained a better understanding of the intent of the reporting tool, and its staff has also learned how to more accurately estimate the performance of projects that have not undergone energy modeling. Hanford says, “I’ve been collecting data on projects before that and had my own way of doing it, and so I did need to modify some things in order to be collecting data in the same way that was useful for my purposes and also for the reporting tool...In general, it was pretty easy; there weren’t really too many challenges because I’d been collecting the data already.” Hanford has found that for most projects, the reporting process goes quickly, but for a few which do not have information immediately available, it can take quite a bit longer; averaging between these two extremes, he estimates approximately two hours.

Recycling initiatives





STAFF COMMENTS

Excerpts from anonymous staff surveys

On deciding to join the program:

“No reservations. Simply the right thing to do!”

On client reception:

“Client priorities and decisions play a contributing factor -- how far are they willing to embrace the same level of commitment. That is a constant discussion that takes place.”

On benefits of the program:

“I think the program provides a good tool to gauge whether we are meeting our sustainability goals as a firm.”

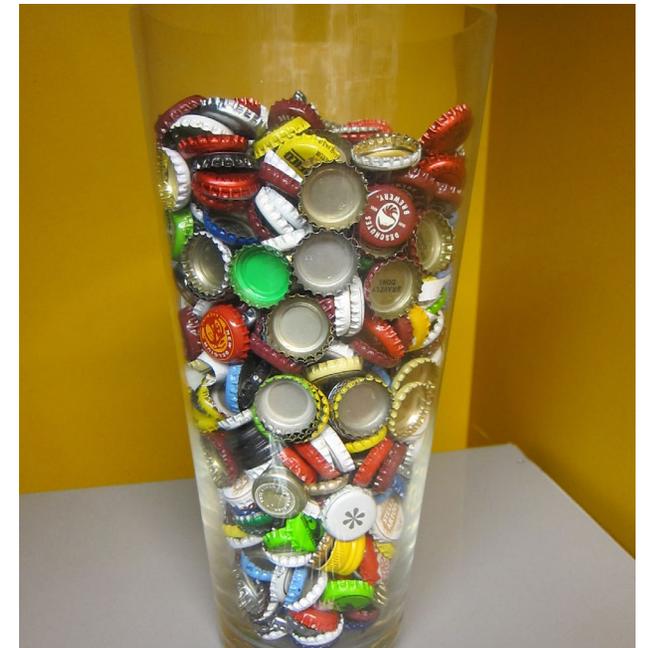
OUTCOMES & LESSONS LEARNED

The Miller Hull Partnership has discovered that their participation in the 2030 Commitment has brought many benefits. As Kreiser paraphrased on behalf of principal Ron Rochon, “We have determined a [level of] detail on the performance of our projects that we didn’t have before; it’s collected in a very clear format, and it tells us that we are doing better than expected.” Tracking year-to-year performance is also informative because it presents a big-picture view instead of merely individual project performance, allowing the firm to see its progress as a whole. Hanford states, “When I started collecting data on projects, it was really just to see where each project was and to try to push each project forward, but with this tool, it shows you an overall firm average, which I think is very interesting as well.” He goes on to say, “In the last two years, in the reporting tool we’ve got a couple projects that are net zero or near net zero, and then we’ve got some that are at the other end of the scale, so it’s interesting to see where the firm is as a whole, which I hadn’t been doing until I actually started using that tool.” Happily, the Miller Hull Partnership has found that its overall performance is actually better than expected, comparing quite favorably to national averages and surpassing the 2030 Commitment’s current targets. This data is shared with the firm in the annual update sessions mentioned earlier and is also easily accessible from the firm’s intranet.

Overall, the 2030 Commitment has given the firm a defined format in which to pursue sustainability, and it has also created the discipline necessary to collect and integrate all of its green efforts. Furthermore, Kreiser adds that “this provides us with a great tool to share that information and to track that information,” allowing the firm to compare its performance with the profession as a whole and figure out where it stands. However, Kreiser states that the online interface for firm comparisons can be cumbersome at times, “mostly when I’m trying to look at what other people are doing, and I want to search for firms and see how other firms are doing. I think there’s room for improvement on how that

information is shared, with both the people that are participating and the public in general.” In spite of this minor roadblock, the 2030 Commitment has generated conversation and activity around the idea of sustainability, and as a result it has encouraged collaboration and discussion between firms, benefiting the architectural profession as a whole. Hanford tells of a “local group of people that meet to talk about issues related to the AIA 2030 Commitment program; people from different architecture firms in town get together once a month and talk about topics related to the Commitment, so it doesn’t just benefit our firm, but it benefits the profession in our city as well.” Though some have argued that the data collected is not important or useful because of its rather general nature, Hanford maintains that “as we continue to collect it over time, useful information will come out of it...If you can keep collecting it in a specific way and presenting it and tracking it, then we will actually have learned something in several years about the direction of the profession.”

In-office collection for recycling bottle caps in art projects



SERENA STURM ARCHITECTS

“What we really need to do is have the tool help evolve firms into this interest. It can be addicting.” - William Sturm

FIRM PROFILE

Founded: 1983
Location: Chicago, IL
Number of offices: 1
Staff size: ~9
Year joined: 2010

Serena Sturm is a small firm located in Chicago (previously in the suburbs but recently relocated to the city itself). Sustainability has been a core part of the firm’s philosophy since the beginning, and its founders strive to promote user health and productivity along with energy efficiency in each of their designs. The firm has been influential in sustainable design in the Chicago area and the nation, acting as an early adopter for numerous green programs. Despite its small size, it offers a broad range of services and has a varied portfolio.

Interview Participants:

William Sturm, Principal, and Keelan P. Kaiser, Architect

INVOLVEMENT

Serena Sturm Architects joined the 2030 Commitment because, as principal Bill Sturm states, “It just followed our mission. It was something that we saw the value of and, frankly, would feel a little bit ill at ease if we weren’t part of that effort, and so I guess [it was] a little Catholic guilt combined with a notion that there should be measurable ways to reaching our goals.” The firm’s only reservation was in figuring out if it had the extra resources necessary to commit to the reporting process, an important question for a practice of its small size. Both of the firm’s founding partners were immediately interested in joining the 2030 Commitment, so conferring with one another to resolve this logistical issue was the only step necessary before the firm signed on.

As an early adopter of sustainable design practices, the firm has sometimes struggled with meeting its goals, but it has always attempted to be transparent in its experiences to better share knowledge with the architectural community, hoping the rest of the industry will follow suit. Serena Sturm was a charter firm for the Chicago branches of both the USGBC and COTE, and it has helped influence green policies and codes within the city. It was one of the first firms to join the 2030 Commitment, and having carefully watched program-wide performance since joining, it has realized that few of its peers are actually meeting target goals; the firm hopes that by sharing experiences among firms, participants can figure out why they are falling short and how to fix it. Sturm says, “I know from being involved in our local committee, the biggest interest is just getting people to enlist and engage, but once you’ve been engaged and seen the benefit, how can we then go to

the next step?...not just report, but report wins along the way – honest wins, not tooling with the numbers, but just making sure that we’re meeting this commitment.”

OPERATIONAL IMPLEMENTATION

Interviewee Keelan P. Kaiser leads the firm’s implementation of the 2030 Commitment, but everyone in the firm is involved to some extent because they feel it is important for sustainability to be integral to the design process. The firm’s small size and its staff’s high level of involvement make communication about the 2030 goals easy. Sturm attributes this to the fact that “this tool didn’t change our philosophy as much as it maybe changed the rigor in which we applied that philosophy.” However, as Kaiser explains, “Some people in the office are much more aware of the subtleties of environmental design than others, so there’s always a kind of mutual education process going on, and that’s one of the things that makes a small office desirable.” This sort of collaboration is enhanced by the office’s open floor plan, which allows for quick sharing of knowledge. This working climate rendered formal education and engagement initiatives mostly unnecessary, since many staff members were already interested and invested in the program; as Kaiser states, “I don’t know that we have formal educational training programs, per se, but we often have those conversations with the group informally and impromptu” in lunch-and-learns and other casual settings. However, Sturm notes that “that’s probably identified as a weakness...Because we’re an open room, it’s very easy to feel comfortable that you can easily get information, but maybe there’s a need in the future for us to be a little bit more planned in some of that edu-



*This page: Serena Sturm's Chicago office
 Next page: Sturm presenting at the Judson University Fall Practice Symposium
 Last page: Serena Sturm staff at work
 Photos courtesy of Serena Sturm Architects*

OPERATIONS PROGRESS

Results of operational changes thus far

Relocation:

- New office saved 38.88% kBtu/yr and 19.79% EUI more than old one from 2009-2010
- New location has reduced staff commuting carbon footprint by half

Reporting:

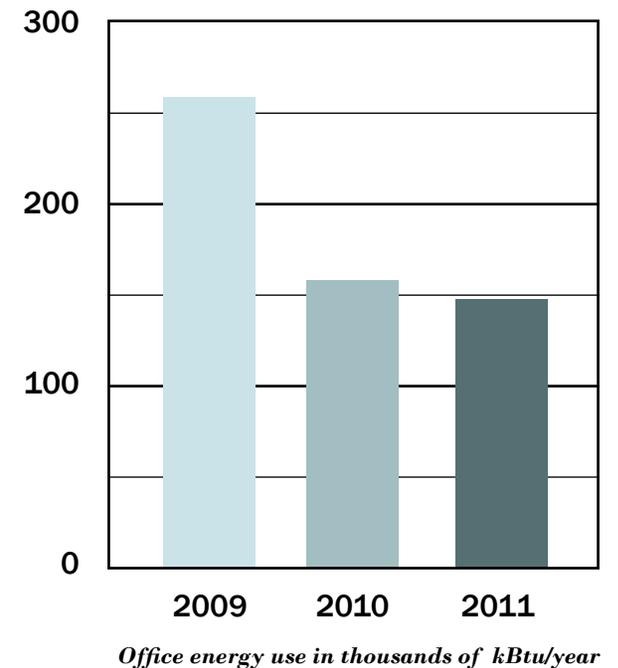
- All projects are modeled in multiple phases
- All projects conduct post-occupancy evaluations and energy usage assessment

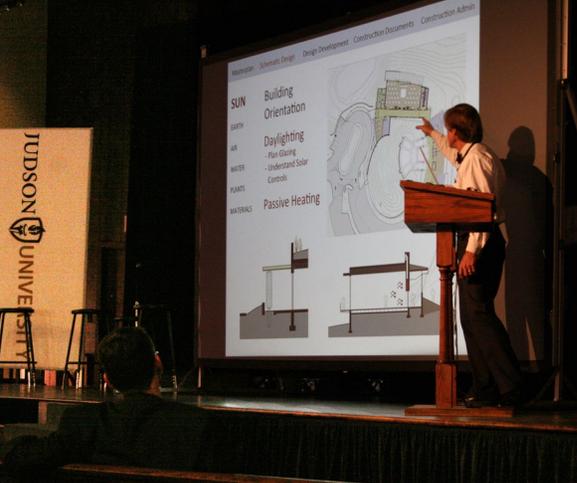
cation” since the firm’s informal approach to learning could result in some staff members missing training opportunities. He continues to explain that this education and engagement step is very important for other firms that might need to develop a sustainability mindset, and that attracting new people to the cause will be more influential in the success of the 2030 Commitment than relying on a small cohort of devotees. As he puts it, “I’d take twenty people being converted versus one person that’s following their mission. That’s what we really need to do is have the tool help evolve firms into this interest. It can be addicting.”

The firm chose its operational action items by first utilizing preexisting features of its new office, to which it had recently moved in order to have a more central location in the city. Having originally been situated in the suburbs, the firm saw a significant reduction in transportation needs from this change alone. The new office gave Serena Sturm a chance to start fresh with sustainable technologies, such as occupancy sensors and water-saving fixtures, and the change of location also encouraged the firm to rethink its operational tactics. Specifically, Sturm noticed the impact of lighting choices, explaining that “in our older office, we were insulated from the utility usage...that we saw a little bit more directly here, so we have this kind of lighting and we learned to use appropriate types – the fluorescents versus the spots on the marketing photos...unless the client was in the office – so that we kept our electricity bill in check.” However, the effects the firm could have on the larger operations of the building itself are somewhat limited because the office is only leased, and its energy usage is billed along with rent rather than separately, making it somewhat more difficult to approach certain options for operational action items. Others were less relevant because of the firm’s size; as Kaiser notes, “Because we’re a small office, we don’t have a policy culture, so to speak, so some of these that are kind of policy related... were already existing practices, you might say.” Sturm’s partner Marty Serena has been particularly mindful about questioning purchasing decisions in order to make each choice intentionally sustainable, selecting

products that are recyclable and recycled, for example, in order to help reduce their carbon footprint. Moving into a new office also gave the firm ample opportunity to make wiser equipment purchasing decisions, which have had a significant impact. However, one drawback of the move was the fact that the new building did not already have a recycling service in place. Fortunately the firm was able to arrange a building-wide recycling program, benefiting all of its other tenants as well.

Overall, the firm found operational changes fairly easy to tackle, since as Sturm explained, “most of them weren’t necessarily new, but they were certainly things that we could do better.” Over the course of the first year participating in the 2030 Commitment, Kaiser estimates he spent between 20 and 30 hours total enacting the first phases of operational change within the firm.





REPORTING

Serena Sturm uses consultants to model most of its projects, ensuring that energy usage data is already available for reporting. As Sturm notes, this practice has also “made it easy for us to communicate back and forth with pretty much any firm scale...as to what they’re doing and what we’re doing,” allowing for clearer performance comparisons across firms of various sizes. However, energy modeling has introduced certain complications as well, since having to obtain data from consultants adds an extra step to the process. Sturm explains that with staff, “you have a kind of camaraderie or a respect for need, but sometimes consultants are working for other people as well, and it’s tough at times to get the data in a timely manner.” This process can be especially difficult for calculating LPD, which can depend on multiple contractors whose level of involvement can vary across projects.

Although the firm was already utilizing energy modeling before joining the 2030 Commitment, the program’s requirements have forced staff to modify the ways in which they approach this procedure. Paraphrasing his partner Serena, Sturm explains that it has changed “how we now ask for work to be delivered to us from our consultants,” since their previous practice of employing modeling in LEED certification “really is too late to help you design, so you’re wanting...a dialogue going on with your modeling, and that can get costly, so you’re trying to find that blend that works well for both the cost of the project and for the process that really has some effect.” Furthermore, incorporating energy modeling early on in the design process can potentially create confusion as various tweaks and iterations are made, resulting in numerous versions of energy models for a single project; keeping track of correct project data is very important in ensuring that reported pEUI is in fact accurate, and this distinction can be particularly challenging for projects on which Kaiser is not directly involved. However, the firm has found that the reporting tool’s clear, graphic format makes it fairly easy to spot major inconsistencies, alleviating any serious inaccuracies.



Above: Kaiser presenting on the AIA 2030 Commitment at the Judson University Fall Practice Symposium

After working with the reporting tool for some time, the firm is finding its interface easier to understand. Kaiser comments that “it reads as a fairly mysterious, complicated matrix when you first look at it; it’s pretty intimidating I think. But it’s actually, in practice, pretty easy – literally it takes ten minutes to register a project if you’ve got the information that you need – so it’s not a cumbersome exercise once you’ve gone through it the first time.” Nonetheless, Sturm admits that year-end reporting can become a “crunch-time” situation even when all the necessary information is readily available, but as familiarity with the reporting tool has increased, the time needed to collect and input data has certainly decreased. This level of familiarity also freed up time for the firm to spend discussing its own performance and how it compares to its peers, and as comparisons and discussions continued both within and outside the firm, the industry as a whole has learned more about how to approach the 2030 Commitment. Kaiser states, “We and our peer firms have a long way to go to meeting the commitment of the 2030 challenge. The average numbers of the percentage of energy savings are impressive, but they’re not keeping track, so we have a lot of questions about what are the best practices in our region, what can we all do better, and how can we disseminate that information to local firms so that others can do better with us.”

STAFF COMMENTS

Excerpts from anonymous staff surveys

On surprising results:

“Several months ago we hosted a gathering of other firms in the city who were committed to the 2030 Commitment. Surprisingly, our office produced better energy efficiency results than most of the offices of the bigger firms who’ve had greater publicity.”

On reservations:

“In this current economy, the most sustainable methods and practices are still very costly, which leaves few affordable options for middle and lower income clients. My hope is that in the near future technology has improved to allow for more options at reasonable prices.”



DESIGN PROCESS

Sustainable design tactics

1. Building envelope efficiency through insulation, infiltration control, and high performance glazing

Energy Relevance: 40%
 Visual Impact: Low
 Cost Impact: Low-Medium

2. Building systems reductions through passivity

Energy Relevance: 10%
 Visual Impact: High
 Cost Impact: Low-Medium

3. Specify energy efficient equipment

Energy Relevance: 30%
 Visual Impact: Medium
 Cost Impact: Medium

4. Building energy offset by on-site and off-site renewable energy strategies and systems

Energy Relevance: 20%
 Visual Impact: High
 Cost Impact: High

OUTCOMES & LESSONS LEARNED

Serena Sturm has attempted to address this problem by involving itself in the Chicago architectural community. Sturm recalls that the first year of their participation in the 2030 Commitment, the firm held an open house with the AIA and “offered our experience in going through the reporting that first year, and the pluses and minuses.” Within the firm itself, data related to the 2030 Commitment is disseminated merely through office-wide emails or staff meetings, belying the fact that this small firm is outperforming many of its local peers in energy performance; Kaiser and Sturm jest that they ought to do more to celebrate their successes thus far. However, they also concede room for improvement, especially in LPD. In observing their portfolio through the reporting process, they have also discovered that the firm’s public work generally outperforms its private work, suggesting that government grants or subsidies for sustainable design features may have a significant impact on energy savings.

Thus far, participating in the AIA 2030 Commitment has provided Serena Sturm with better benchmarks for comparing its portfolio, both internally and to the works of other firms. Kaiser argues that the 2030 Commitment’s largest benefit is in that “it validates best practices in environmental design,” allowing the firm to demonstrate that its lengthy commitment to sustainability is having measurable impacts. Sturm notes, however, that his firm wasn’t “looking to get anything out of it for marketing purposes...We were hoping that it would educate us, which it has...It wasn’t going to open markets. It wasn’t going to do any of that stuff. It was something that we felt was another tool to see if we were meeting our mission.”

Right: Pylon displaying the firm’s green design tactics, constructed for a civic event as part of the firm’s public outreach and education initiatives



APPENDIX I: AIA 2030 Commitment Requirements¹⁵

- Within two months of the commitment date, establish a team or leader to guide the development and implementation of the firm's plan.
- Within six months of signing the commitment, the firm will implement a minimum of four operational action items from the list provided. These actions will be undertaken while the long-term sustainability plan is in development.
- Within one year of signing the commitment, the firm will develop a sustainability action plan that will demonstrate progress toward the AIA's 2030 goals.
- At the conclusion of the year, and each year thereafter, the firm will report on the progress of the firm's design portfolio towards meeting the 2030 goals by using the AIA 2030 Commitment Reporting tool.¹⁶

¹⁵ Quoted from "AIA 2030 COMMITMENT – SAMPLE LETTER," The American Institute of Architects, 2012
<<http://www.aia.org/about/initiatives/AIAB079567>>.

¹⁶ The AIA 2030 Commitment Progress Reporting Tool is publicly available at <http://www.aia.org/about/initiatives/AIAB079654>.

APPENDIX II: Operational Action Items¹⁷

Within six months of signing the commitment, the firm will implement a minimum of four operational action items from the list provided. These actions will be undertaken while the long-term sustainability plan is in development

Office Energy Use

- Track and report energy use in the office
- Install occupancy sensors in meeting rooms and other common spaces
- Procurement of Energy Star rated equipment and appliances
- Institute office-wide policy of shutting down computers when leaving the office
- Replace any existing CRT monitors with LCD monitors
- Replacement of incandescent lamps with fluorescent
- Establish a timeline for ultimately purchasing 100% green power

Waste Reduction and Supplies

- Reduce paper consumption by using electronic documents and forms
- Reduce paper consumption by implementing printing policies (i.e. printing double-sided, print drafts on discarded paper)
- Institute a firm-wide recycling policy
- Implement policies for purchasing environmentally friendly office supplies
-

- Implement policies for purchasing environmentally friendly kitchen supplies
- Implement policies for purchasing environmentally friendly cleaning supplies
- Implement policies for purchasing environmentally friendly office furniture

Transportation

- Incentives for employees who ride share, walk, or bike
- Establish a policy for fuel efficient rental cars for firm travel
- Establish a policy for offsetting firm travel
- Encourage telecommuting options for employees

Meeting Procedures

- Use of paperless technology for agendas, handouts, and presentations
- Encourage virtual meetings when possible
- Establish an environmental policy to share with venues, vendors, and attendees for meetings
- Encourage meeting participants to coordinate travel plans and share rides from the airport

¹⁷ Quoted from "AIA 2030 Commitment: Immediate Operational Actions," The American Institute of Architects, 2012
<<http://www.aia.org/about/initiatives/AIAB086161>>.

APPENDIX III: Operational Action Items

● indicates Operational Action Items the firm has pursued/is pursuing

	HOK	HMC	Serena Sturm	High Plains	Miller Hull
Office Energy Usage	Track and report energy use in the office	●			●
	Install occupancy sensors in meeting rooms and other common spaces	●			●
	Procurement of Energy Star rated equipment and appliances	●	●	●	●
	Institute office-wide policy of shutting down computers when leaving the office	●	●	●	●
	Replace any existing CRT monitors with LCD monitors	●	●	●	●
	Replacement of incandescent lamps with fluorescent	●	●	●	
	Establish a timeline for ultimately purchasing 100% green power				
Waste Reduction & Supplies	Reduce paper consumption by using electronic documents and forms	●	●	●	●
	Reduce paper consumption by implementing printing policies (i.e. printing double-sided, print drafts on discarded paper)	●	●	●	●
	Institute a firm-wide recycling policy	●	●	●	●
	Implement policies for purchasing environmentally friendly office supplies	●	●	●	●
	Implement policies for purchasing environmentally friendly kitchen supplies	●	●	●	●
	Implement policies for purchasing environmentally friendly cleaning supplies	●	●	●	●
	Implement policies for purchasing environmentally friendly office furniture	●		●	
Transportation	Incentives for employees who ride share, walk, or bike	●	●	●	●
	Establish a policy for fuel efficient rental cars for firm travel	●			●
	Establish a policy for offsetting firm travel				●
	Encourage telecommuting options for employees			●	
Meeting Procedures	Use of paperless technology for agendas, handouts, and presentations	●	●	●	●
	Encourage virtual meetings when possible	●	●	●	●
	Establish an environmental policy to share with venues, vendors, and attendees for meetings				●
	Encourage meeting participants to coordinate travel plans and share rides from the airport				●

WORKS CITED

“A Historic Opportunity.” Architecture 2030. 2011
<http://architecture2030.org/the_solution/buildings_solution_how>.

“AIA 2030 Commitment: Immediate Operational Actions.” The American Institute of Architects. 2012
<<http://www.aia.org/about/initiatives/AIAB086161>>.

“AIA 2030 COMMITMENT – SAMPLE LETTER.” The American Institute of Architects. 2012
<<http://www.aia.org/about/initiatives/AIAB079567>>.

Core Writing Team, Rajendra K. Pachauri, and Andy Reisinger, eds.
“The long-term perspective.” *Climate Change 2007: Synthesis Report*. Intergovernmental Panel on Climate Change. 2007
<http://www.ipcc.ch/publications_and_data/ar4/syr/en/spm_s5.html>.

Heath, Chip and Dan Heath. *Switch: How to Change Things When Change Is Hard*. New York: Broadway Books, 2010.

Matthiessen, Lisa Fay and Peter Morris. “Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adaptation.” Davis Langdon. 2007
<<http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/>>.

Pickard, Kelly. *AIA 2030 Commitment: Measuring Industry Progress Toward 2030*. The American Institute of Architects. May 2012
<<http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aia094805.pdf>>.

Senge, Peter. *The Dance of Change: The Challenges to Sustaining Momentum in Learning Organizations*. New York: Doubleday, 1999.

“Why?” Architecture 2030. 2011
<http://architecture2030.org/the_problem/buildings_problem_why>.