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“ Sustainable Design is a design philosophy that seeks to maximize the quality of the built environment, while minimizing or eliminating negative impact to the natural environment. ”  
– Jason McClennan

## Introduction:

Our growing awareness of environmental issues and climate change has driven SLATERPAULL Architects to examine the way we approach our projects and build relationships with our clients. Our passion for sustainable design has inspired our commitment to become leaders in the movement toward a more sustainable future. We believe progressive sustainable design is the best way to minimize negative impacts on the environment while achieving long-lasting buildings that are efficient, healthy and contribute to the community at large.

We as a firm acknowledge the need to emphasize sustainable design as a priority in the design of our buildings and in the way we address current environmental issues. In the United States alone, the built environment is responsible for 72% of electricity consumption<sup>1</sup>, 39% of all energy use<sup>2</sup>, 38% of all carbon dioxide emissions<sup>3</sup>, 40% of raw materials use<sup>4</sup>, 136 million tons of annual building related construction and demolition debris<sup>5</sup>, and 14% of potable water consumption<sup>6</sup>.

SLATERPAULL Architects has created this plan to share our commitment to sustainability, outline an examination of energy performance in the buildings we design and further evaluate our internal operations. We have established three overarching firm objectives as part of our strategic plan.

## Firm Objectives:

1. Expand our leadership in sustainable design in the Colorado/Rocky Mountain region
2. Enhance our design process and optimize the performance of our buildings through research, education, and implementation of sustainable principles
3. Integrate sustainability in our internal operations and daily lives

1 Source: Environmental Information Administration (2008), EIA Annual Energy Outlook  
2 Source: Environmental Information Administration (2008), EIA Annual Energy Outlook  
3 Source: Energy Information Administration (2008), Assumptions to the Annual Energy Outlook  
4 Source: Lenzsen and Roodman (1995), Worldwatch Paper 124, A Building Revolution: How Ecology and Health Concerns are Transforming Construction, Worldwatch Institute  
5 Source: U.S. Environmental Protection Agency (1997), U.S. EPA Characterization of Building-Related Construction and Demolition Debris in the United States  
6 Source: U.S. Geological Survey (2000), 2000 data



## → high performance design

By meeting our objectives we will trend toward the design of high performance buildings that achieve the following:

- Reduce environmental impact through preservation of existing buildings and sites
- Save energy through highly efficient and integrated HVAC systems
- Generate clean power through the integration of renewable energy systems
- Save water through conservation and reuse
- Use environmentally conscious building materials in construction and retrofits
- Restore and regenerate local spaces and environments
- Eliminate waste through reuse and recycling waste management programs
- Have healthy interior spaces that harmonize building function with outdoor spaces
- Provide healthy and productive learning, living and working environments

The initial draft of this plan will span a 12 month time frame. Continuous evaluation will be conducted as the first year lapses to measure performance, address changes in the market and adjust firm goals to align with this transformation. We will continue our commitment with the development of a five-year plan at the close of 2012.

This strategic plan clearly identifies SLATERPAULL Architects' direction, the appropriate methods for achieving success and how we will assess our progress. While we are challenging ourselves to significant goals, we believe this level of commitment is appropriate and is incumbent upon us as architects who contribute to our communities and the built environment.

Jamie Pedler  
President and Principal

Gary Petri  
Principal

Adele Willson  
Principal

Clayton Cole  
Principal

Jennifer Cordes  
Principal

Matthew Porta  
Principal



“Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their needs.” The Brundtland Report of the World

## SLATERPAULL Architects

SLATERPAULL Architects is a full-service architectural firm. Our core services range from historic site assessments, historic preservation design and master planning, to architectural design, interior design and construction administration. We incorporate sustainability into every project where we have a design element in our scope of work. All projects, both new and those with any upgrade to the mechanical system, will seek the most fully integrated sustainable mechanical and electrical system strategy. We have a long history of commitment to sustainability, beginning in the early 1980's when the firm began incorporating innovative sustainable design strategies into commercial and institutional building projects. Since that time, SLATERPAULL Architects has evolved our commitment to prioritize the integration of sustainability into all our projects, our office culture and our personal lifestyle choices. A detailed progression of the history of our firm commitment to sustainability can be found in Appendix A.

### Vision: Design for a Sustainable Future

Our vision is for SLATERPAULL Architects to expand our leadership in sustainable design in Colorado. We are committed to the design and preservation of buildings that significantly reduce the negative impacts on the environment, foster healthy, productive environments and contribute to the community at large. As architects, we have an opportunity to positively impact our communities and our environment by integrating sensitive sustainable design principles that take into consideration the principal concern of environmental degradation and irresponsible resource depletion as well as occupant health and productivity. SLATERPAULL Architects is committed to integrating skillful, sensitive design that delivers high performing, high quality buildings that improve the environment in which they reside, educate the occupants that use them and help create vibrant communities.

For a comprehensive approach to sustainable strategies on our projects and throughout our office SLATERPAULL Architects incorporates multiple layers of strategies which include some of the following components:



## Sustainable Initiatives:

### → Measurable Sustainability

SLATERPAULL Architects is committed to implementing sustainable design strategies on every project. Each project will be evaluated using our Minimum Sustainable Design Goals Guideline (Appendix G), a selective compilation of 32 best practices in sustainable design. Every project team will be encouraged to discuss LEED<sup>7</sup> or other applicable green building rating systems such as CHPS<sup>8</sup>, Green Globes<sup>9</sup>, Living Building Challenge<sup>10</sup>, ENERGY STAR<sup>11</sup>, etc. with the client at project inception. We have recognized the shortcomings of LEED and other rating systems in their inability to apply to all building types. In response we have created the SLATERPAULL Architects Minimum Sustainable Design Goals Guideline as well as Further Sustainable Design Considerations (Appendix G) document which are intended to guide each project toward heightened sustainability strategies. Each project's energy use will be tracked post-occupancy through our Energy Tracking worksheet (Appendix F) to compare actual performance to modeled or anticipated performance.

### → Historic Preservation

SLATERPAULL Architects firmly believes in the preservation of historic buildings and the associated conservation of their materials, embodied energy and cultural importance. The preservation of our cultural heritage fosters the sustainability of our society by enhancing our individual sense of identity within the environment and connecting us to the context of time and place. Historic Preservation saves energy by taking advantage of the non-recoverable energy embodied in an existing building and extending the use of it and the materials and elements that make up the structure. The social and cultural benefits of historic preservation are widely accepted, but embodied energy calculations give historic preservationists a way to fully evaluate the building in terms of today's sustainability concerns. Many historic buildings originally incorporated sustainable strategies such as natural ventilation, daylighting through large windows and clerestories, thermal mass in exterior walls, and many other inherently sustainable strategies. Through the years, many of these strategies have been altered through modern renovations, reducing the original effectiveness of the building. Through restoration efforts we are able to recover and preserve many of the features that provide the historical quality and sustainability components of these historic structures

“All is connected...no one thing can change by itself.”  
– Paul Hawken

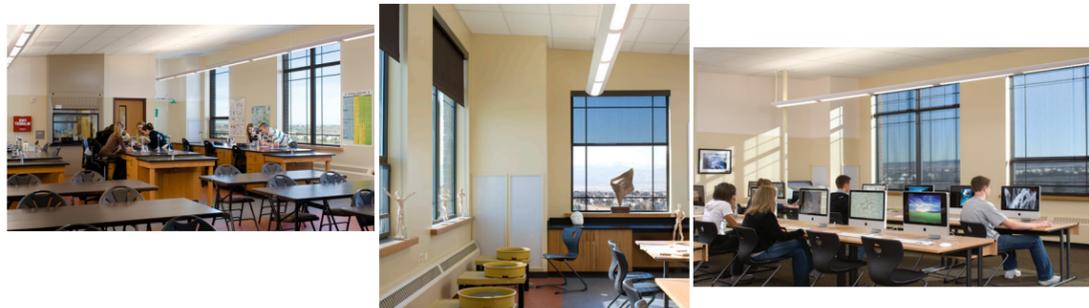
7 Leadership in Energy and Environmental Design (LEED), a product of the United States Green Building Council  
8 Collaborative for High Performance Schools  
9 Green Globes, a product of the Green Building Initiative  
10 Living Building Challenge, a product of the Cascadia Regional Building Council  
11 ENERGY STAR, a product of the Environmental Protection Agency



“ Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their needs.”  
 The Brundtland Report of the World Commission on the Environment and Development – “Our Common Future”

SLATERPAULL Architects strives to achieve a very high level of sustainability in all projects and all building types by coupling preservation and sustainable design practice in retrofits and new buildings.

Embodied energy is defined as the available energy that was used in the work of making a building, element or individual material. Embodied energy is an accounting methodology which aims to find the sum total of the energy necessary for an entire building lifecycle. This lifecycle includes raw material extraction, transport, manufacture, assembly, installation, disassembly, deconstruction and/or decomposition.



→ Pocantico Proclamation

In order to stabilize the existing built environment and capitalize on existing resources, the work of historic preservation practitioners is inherently one of the most sustainable pieces of our focus. The Pocantico Proclamation (Appendix E), written by the participants of the Pocantico Symposium<sup>12</sup>, addresses three imperatives: Climate Change Imperative, Economic Imperative, and Equity Imperative. In response to these three imperatives, five principles were developed: (1) Foster a Culture of Reuse, (2) Reinvest at a Community Scale, (3) Value Heritage, (4) Capitalize on the Potential of the Green Economy, and (5) Realign Historic Preservation Policies with Sustainability. These three imperatives and five principles have resonated with SLATERPAULL Architects and the work that we do. The adoption of the Pocantico principles into our Strategic Plan will be verified through our own three objectives.

→ LEED APs

With most of our technical staff LEED accredited, SLATERPAULL Architects is equipped to establish and implement high levels of sustainability in the buildings we design. We also employ a full-time Sustainable Design Manager who advises the firm on integrating sustainability into all projects as well as firm operations, and who is dedicated to the goal of establishing SLATERPAULL Architects as a local leader in sustainable design. This plan further outlines our commitment to research, training and professional designations.

→ 2030 Challenge

Climate change has an immediate priority in all aspects of our daily life, particularly in the built environment. One of the most prudent ways to address climate change in our buildings is to require aggressive energy use profile reductions. Architecture 2030 has created the 2030 Challenge which provides a framework for reducing energy and achieving carbon neutral buildings by the year 2030. The 2030 Challenge is a cornerstone in this plan and a tool for significantly reducing carbon emissions.

A building that is Carbon Neutral uses no fossil fuels in its operation, creates no direct greenhouse gases, and, as a result, does not contribute to global warming. The energy it uses may be produced on site or may be drawn from a utility grid but it must be “clean,” produced by wind turbines, photovoltaics, or other renewable energy system. Thus, a building that is both Carbon Neutral and Net Zero Energy produces at least as much renewable energy as it uses each year.

-Better Bricks

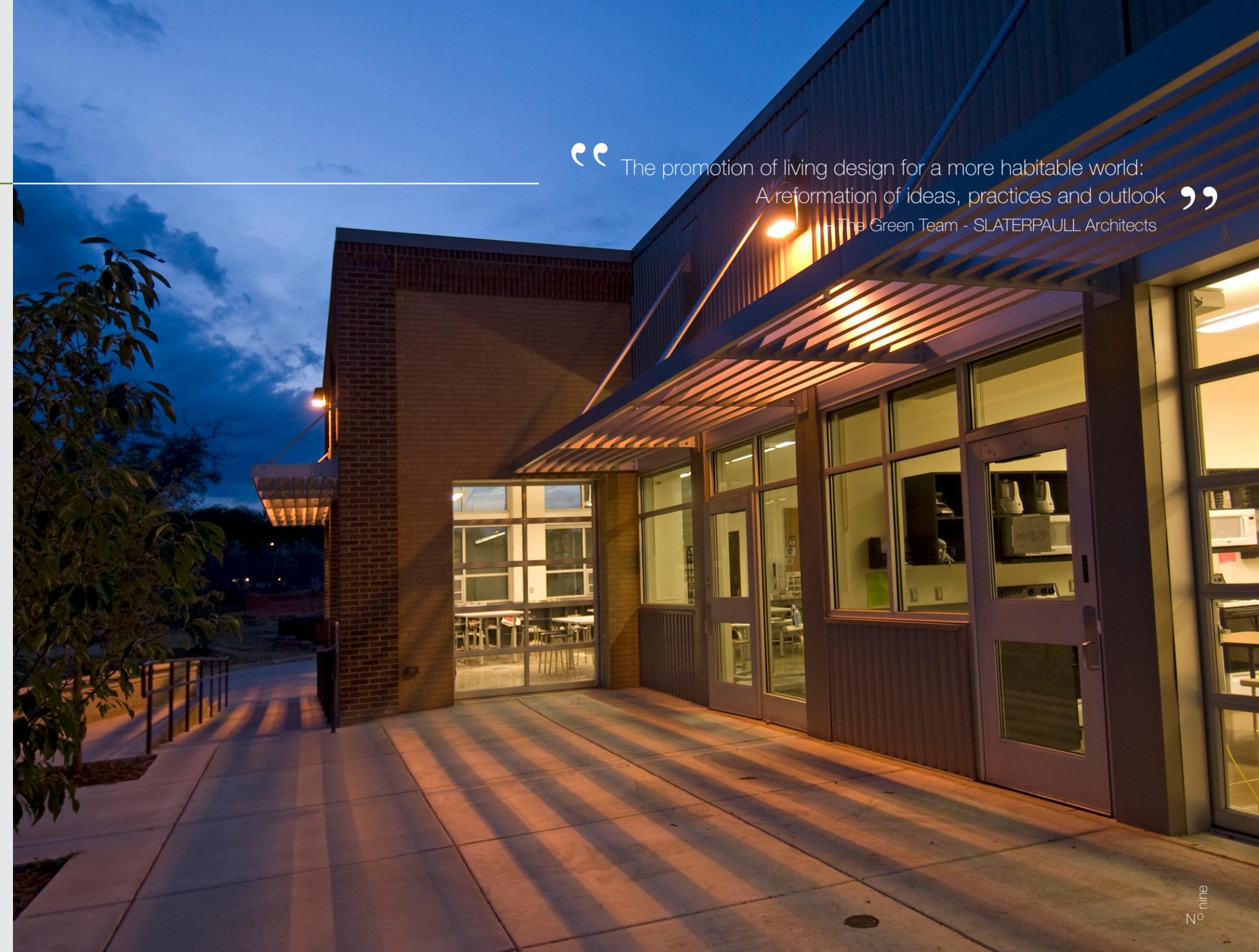
Proposed by architect Edward Mazria and adopted by the American Institute of Architects, the 2030 Challenge calls for an immediate reduction of energy consumption by 60% and continuing to increase by 10% increments every 5 years until the goal of carbon neutral is reached by the year 2030. Whereas buildings contribute 38% of all CO2 emissions, this challenge is ultimately important in slowing the growth rate of Greenhouse Gas emissions to help reduce global warming.

<sup>12</sup> Pocantico Symposium: Sustainability and Historic Preservation - Making Policy, November 5-7, 2008

SLATERPAULL Architects is seeking an immediate firm-wide reduction in emission profiles of all buildings designed and renovated from this point forward and in response has created a plan to move towards meeting the 2030 Challenge Implementation Guidelines (Appendix D).

Net-zero energy buildings, as a standard, remain rather elusive in today's market as it requires the integration of on-site renewable energy systems as well as other aggressive strategies. This has created skepticism among designers on how to commit and achieve the requirements of the 2030 Challenge without negatively impacting budgets and without excluding projects. SLATERPAULL Architects has acknowledged the difficulty of meeting the 2030 Challenge on 100% of our projects due to the variety of project types and ranging scales and budgets. We have formally adopted the 2030 Challenge and have created a plan to account for these challenges on our projects. We are in the process of completing a firm-wide energy tracking assessment of all of our projects. Once that is complete we will be in a better position to determine what percentage of our completed projects are currently meeting the 2030 Challenge and what changes we will have to make to meet future 2030 Challenge energy targets. The estimated completion date of this initial assessment is in the second quarter of 2013, though this process will be ongoing and will apply to all completed projects. We are working toward meeting the 2030 Challenge with our own strategic plan and initiatives that address environmental concerns and the impact of the built environment.

{ Net Zero Buildings are buildings which, on an annual basis, use no more energy than is provided by on-site renewable energy sources. }  
- American Society of Heating and Refrigerating and Air-Conditioning Engineers (ASHRAE)



“ The promotion of living design for a more habitable world:  
A reformation of ideas, practices and outlook ”  
- The Green Team - SLATERPAULL Architects



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→ sharing our knowlege

Objectives: Design for a Sustainable Future

01: Expand our Leadership in Sustainable Design in the Greater Rocky Mountain Region and the State of Colorado

The purpose of this objective is to continue to build upon our knowledge of sustainable design principles, pursue avenues in which we can share this knowledge with the community and establish ourselves as an industry leader. Built examples of high performance new construction and sustainable rehabilitation of existing structures will continue to be the best examples in displaying the transformation to high-performance sustainable design.

“My personal passion is about environmental stewardship and advocating for protection and care of the environment. Our role as planners and architects is to educate and inspire our clients about how sustainable design improves the performance of their building, lowers energy useage and reduces the impact on the environment. My other passion is educational facility design and sustainable design strategies to improve the learning environment for students of all ages.”

- Adele Willson, AIA, LEED AP, Principal

From top left to bottom right: Adele Willson, Gwen Gilley, Lisa Gardner, Zoe Chance



“ Teaching sustainable design is not about teaching students to apply a set of pre-determined strategies – it’s about developing a deep understanding of how things work.” Michelle Addington

Strategies:

→ A. Intensify involvement in industry organizations and continuing education for ourselves and for clients

- Maintain involvement with the following organizations with a goal of increased participation from staff members including committee involvement
  - American Institute of Architects
    - Committee on the Environment
    - Historic Preservation Committee
  - Association for Preservation Technology
    - Technical Committee for Sustainable Preservation
  - Colorado Preservation Inc.
  - Council of Educational Facility Planners International
  - Design Futures Council
    - Leadership Summit on Sustainable Design
  - Public School Capital Construction Assistance, Building Excellent Schools Today (BEST)
  - Society for College and University Planning
  - United States Green Building Council
    - Colorado Chapter
    - Green Schools Advocacy Committee
  - Urban Land Institute
- Increase participation in organizations by 10% firm-wide
  - Perform annual organization involvement survey to determine participation
- Provide educational Professional Development Program that address technical sustainable design issues twice annually
- Encourage conference and presentation attendance for sustainability focused topics for all employees
- Provide client education through Green Team outreach (refer to O2:E for Green Team actions)
- When establishing annual STICK lunch calendar commit 25% of the programs to sustainable topics (once monthly)

→ B. Adopt the 2030 Challenge

- Adhere to and track goals of 2030 Challenge Implementation Plan
- Assess the energy use of projects built to date to better determine methods to achieve required reduction levels
- Track projects<sup>14</sup> for a minimum of 24 months post-occupancy; Energy use gathered during this period will provide an accurate look into how buildings are performing in comparison to their design targets
- Address small renovations, and preservation projects in terms of the 2030 Challenge and make energy use reductions where possible
- Evaluate tracking system and charted energy use annually

“My commitment to sustainability comes from a personal belief that we are responsible for the overall health of the earth and all of it’s occupants; and also that we as architects have a responsibility to our clients to create energy efficient, healthy spaces to live and work in. I believe we can create healthy environments for our clients while at the same time minimize the impact we have on resources in our everyday decisions.”

- Gwen Gilley, AIA LEED AP, Associate, Inaugural Team Member

→ C. Seek strategic partnerships with like-minded firms & consultant experts

- Research consultants and other design firms that practice sustainable design and energy efficiency principles through survey
- Evaluate annually and update list of like-minded firms and consultants
- Team with partners based on commitment to and expertise in sustainable design and energy efficiency; Firms who have prioritized sustainability and who have portfolios demonstrating this commitment will be of primary consideration
- Encourage current consultants/partners who have not yet adopted sustainable practices to move toward education, training and a formal commitment to sustainable principles

<sup>14</sup> New buildings, major renovations, and interior-only projects including lighting design

→ D. Develop outreach initiatives to share sustainable design expertise

- Continue to seek editorial opportunities that share sustainable expertise or profile sustainable projects
- Launch SLATERPAULL Architects Design for a Sustainable Future Blog
- Share expertise through consistent contributions to blog
- Engage other staff members to share expertise via case studies, expert articles, etc.
- Publish case studies on sustainable projects
- Develop & distribute press releases around the topic of sustainability: new projects, completed projects, project certification, sustainable preservation, professional accreditation, Green Challenge, etc.
- Strengthen frequency of appearances as featured speakers on sustainable design, high performance schools and sustainable preservation at relevant conferences and media interviews
- Increase outreach to community and educational organizations by providing educational tours, presentations and webinars
- Analyze public outreach efforts and set baseline for goal setting in subsequent years

→ optimizing performance

02: Enhance our Design Process and Optimize the Performance of Our Buildings through Research, Education and Implementation of Sustainable Principles

Strategies:

→ A. Develop and adhere to minimum project goals

Minimum project sustainability goals will be established on every project with a scope of design work. In order to ensure sustainability practices are established and adhered to on every project, a Minimum Project Sustainability Goals Guideline has been established<sup>15</sup> (Appendix G). A post-occupancy report for clients has been created to compare actual energy usage with expected energy usage. Project goals in the guideline that don't apply to particular projects or scopes of work will not be required of the team. In lieu of the goals that don't pertain, those project teams will be requested to submit an alternative set of goals that do pertain to the project. Particular energy targets have been assessed and compared to the reduction requirements of the 2030 Challenge. These minimum targets are set within the goals document.

- Establish Minimum Project Sustainability Goals Guideline for all projects<sup>16</sup>
- Establish energy use goals and ENERGY STAR rating targets for each project according to the reduction recommendations of the 2030 Challenge
- Design each project<sup>17</sup> according to the ENERGY STAR Target Finder
- Use embodied energy calculator to promote reuse of existing building projects and their components
  - Research embodied energy evaluation tools and determine which to utilize on projects
  - Demonstrate proficiency with the selected tool
  - Analyze which project types are best served by selected or other available tools

<sup>15</sup> Guideline established from recommendations by the ASHRAE Advanced Energy Design Guide for Schools, United States Green Building Council and Energy Star. (Appendix F)  
<sup>16</sup> Projects with a scope of design work  
<sup>17</sup> New buildings and major renovations



“I think along the way, as we treat nature as model and mentor, and not as a nuisance to be evaded or manipulated, we will certainly acquire much more reverence for life than we seem to be showing right now.” – Amory Lovins

→ B. Institute a Post Occupancy Evaluation process

A post-occupancy evaluation and occupant interview process is essential in educating the building owners, occupants, designers and additional team members on how the buildings they design are operating. In order to make the changes necessary to improve building design and performance, a post-occupancy review of project performance is required. The intention of this process is to provide detailed feedback on the actual energy performance, function and use of space of the building to assist with future design efforts. This process is intended to be an educational tool within the firm as well as for the client.

- Establish Post-occupancy Evaluation Process (POE) tools including:
  - Basic user survey
  - Occupant comfort survey
  - Detailed user interview/survey
  - Energy tracking tool and Building Performance Database(Appendix F)
- Provide building owner with a post-occupancy survey and a tracking mechanism for building energy and water use, prior to occupancy
- Follow-up with client on a quarterly basis for a minimum of 2 years, to ensure data is being properly collected
- Collect 1st year data after 12 months of occupancy
- Collect 2nd year data after 24 months of occupancy
- Input data to energy tracking database at 1 and 2 year marks to determine where the project is falling according to original targets
- Share project performance statistics annually with Principals and Staff to help establish goals on future projects and to verify that projects are meeting firm goals, the 2030 Challenge and the imperatives of the Pocantico Proclamation

“I have a personal interest in the social aspects of sustainability and community. Sustainable design is integral to the creation and evolution of healthy environments. This carries over into the role that sustainable design plays into the preservation of our historic places. As designers, we must recognize the importance that historic structures have to understanding our past as well as retaining buildings and sites that are already inherently sustainable.”

- Lisa Gardner, LEED AP, Associate, Green Team Leader

→ C. Seek green building certifications

SLATERPAULL Architects values the importance of third-party verification through certifications and evaluations as a means to continue improving the design and construction process and contribute to the growth and overall promotion of sustainable design principles. Though all buildings designed and renovated by SLATERPAULL Architects will meet minimum sustainability goals, the thorough nature, accountability and merit of a formal rating system are of equal importance.

- Discuss merits of building certification with owner and project team at onset of design/planning phase
- Select certifying body and level of sustainable performance, if deemed appropriate by owner and project team - LEED certification via the United States Green Building Council (USGBC), Green Globes certification via the Green Building Initiative (GBI), or Living Building status via the Cascadia Region Green Building Council, Colorado Collaborative for High Performance Schools (C O-CHPS), etc.
- Design building to meet or exceed internal Minimum Sustainable Design Goals Guideline and/or those of outside certification agencies
- Complete process for formal certification and work with client to promote this achievement

→ D. Obtain and expand professional accreditations (LEED Accredited Professional, Green Globes Professional, Living Building Leader)

- Establish standard for new employees to obtain a LEED Accredited Professional designation (or equivalent) within 18 months of date of hire

→ E. Continue and expand Green Team presence

- Organize educational site tours of sustainably built buildings for staff twice annually
- Promote in-house and client education forums through specialty speaker invitations twice annually
- Initiate SLATERPAULL Architects Design for a Sustainable Future Blog
- Introduce sessions where new sustainable design ideas can be tested first in the office



“ You can't draw a line between good design and sustainable design. ”  
- Sandra Mender

## → internal sustainability

### 03: To Integrate Sustainability in Our Internal Operations and Daily Lives

It is vitally important that SLATERPAULL Architects integrate sustainability into internal operations. Though many operations have been modified to reduce the firm's ecological footprint through Phase I and Phase II sustainability policies, these policies will need to be expanded to address LEED for Existing Buildings Operations and Maintenance credits as well as policy requirements.

In 2010, SLATERPAULL Architects moved into our new office space in downtown Denver. We purchased an historic 1922 Fire House in an historically landmarked neighborhood and rehabilitated the building to meet stringent sustainability guidelines. The building was awarded a LEED Platinum certification for New Construction buildings. The office will target and track a LEED for Existing Buildings Operations and Maintenance rating. The revised policies and tracking worksheets created during this process will be essential in maintaining a visionary level of sustainability.

#### Strategies:

- A. Develop and implement internal operations standards
  - Organize educational site tours of sustainably built buildings for staff twice annually
- B. Educate staff on internal operations standards and opportunities for expansion
  - Present the current state of and progress on Internal Operations Standards on an annual basis to entire firm for feedback prior to revision of the plan
  - Incorporate feedback from annual progress meeting into subsequent version of Internal Operations Standards document
  - Educate office about Internal Operations Standards document and specific policies
- C. Institute a Post Occupancy Evaluation process
  - Green Team to aid in the design and development of sustainability standards for new office



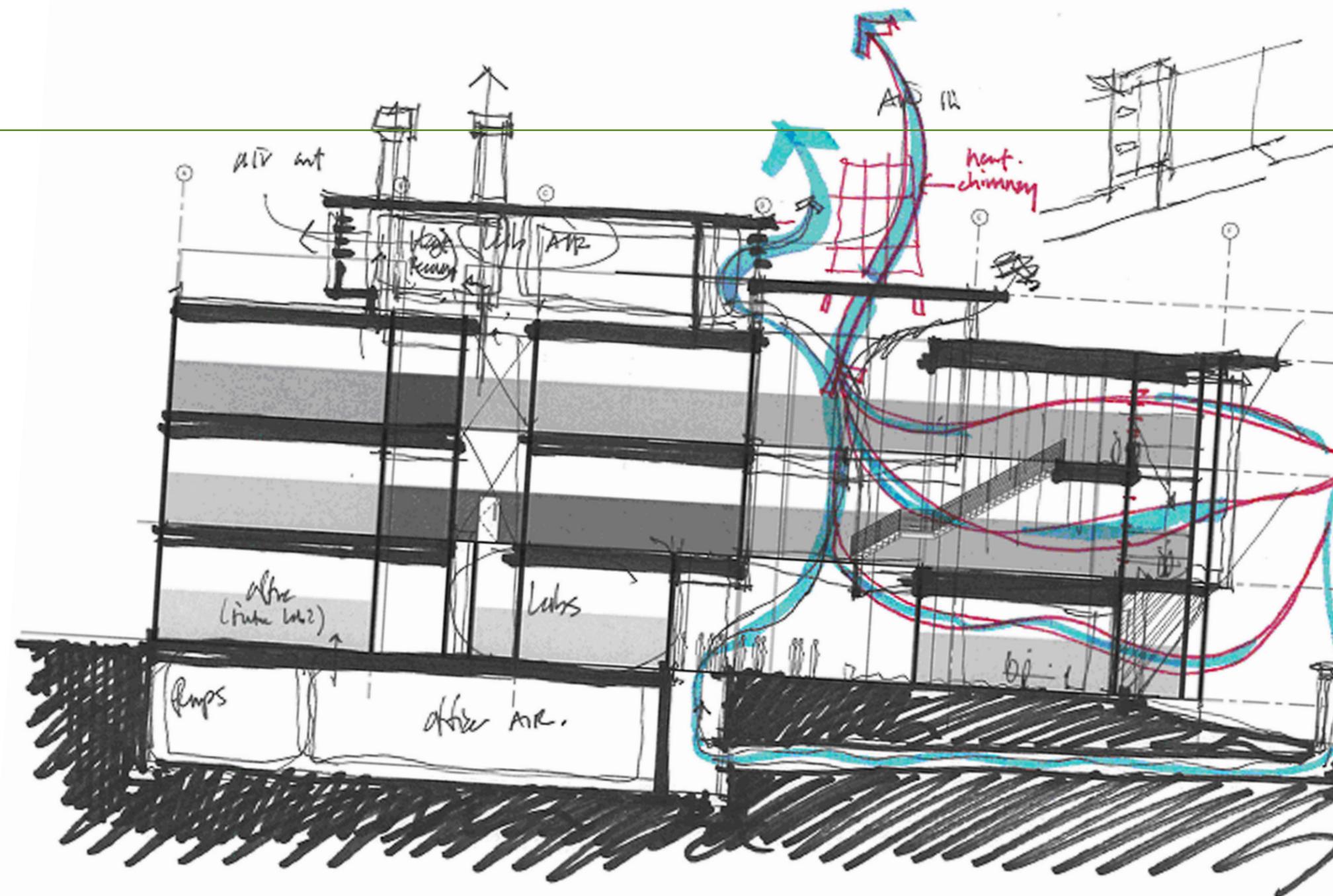
“You can't draw a line between good design and sustainable design”. Sandra Mendler

- D. Institute a Post Occupancy Evaluation process
  - Explore avenues for bringing Green Challenge to national organizations
  - Increase level of individual commitment and firm-wide commitment
- E. Institute a Post Occupancy Evaluation process
  - Educate office on methods in which individuals can reduce their carbon footprint through presentations twice annually
  - Affirm position as general sustainability education resource
  - Establish Green Team Task Force to develop comprehensive Internal Operations Sustainable Policies document

Implementation:

The strategic plan will be reviewed on an annual basis by the firm partners, the Green Team and the entire firm. In order to ensure the plan applies to the progress of the firm as well as accelerating changes in the market, the plan will be revised continually. After an initial 12 month period the strategic plan will be revised every 5 years in concurrence with 2030 Challenge landmark years.

- A. Revisit plan and update at the close of 2014
  - Meet quarterly with Partners to discuss progress
    - Focus on the outlined three objectives and their challenges and achievements as well as where we fell short in the previous quarter
  - Discuss additions and changes to be incorporated into next revision
- B. Institute a Post Occupancy Evaluation process
- C. Green Team input
  - Monthly ten minute discussion on progress and challenges
  - Assess progress quarterly



“ Comfort is enhanced by developing a stronger connection to the natural world.  
- Susan Ubbelohde ”

## → Appendix

### A: History of Firm Commitment to Sustainability

SLATERPAULL Architects has a long history of commitment to the environment. Projects in the 1960s and 70s incorporated high performance wall/roof systems, passive solar gain techniques, active hot water collection systems, and the use of durable institutional building projects. Starting in the early 1980s, the firm began incorporating innovative sustainable design strategies into commercial and institutional building projects. Since that time SLATERPAULL Architects has evolved our commitment to prioritize the integration of sustainability into our projects, our office culture and our personal lifestyle choices.

The firm's commitment to sustainability took on much greater momentum in 2003 when employees of the firm came together to create the office Green Team. This initiative evolved from one individual's Capstone Project, a professional development program created by SLATERPAULL Architects to further the firm's expertise in relevant areas. The project's goals were to pursue sustainability and to integrate it into the office. The Green Team became a mechanism for achieving this goal.

In the same year, the Green Team prepared a response to the Request for Proposal (RFP) for a project proposed to be the State of Colorado's first U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Platinum office building project. The Green Team regarded this proposal as an opportunity to incorporate their vision into a project designed to be ultimately sustainable. Their efforts set the stage for the development of best practices by incorporating sustainable elements into all design projects.

Inspired by the collaboration, creativity, energy and shared commitment to sustainability that went into this proposal, the Green Team was further strengthened and began work on developing a proposal to the firm's partners for incorporating sustainable practices office-wide. In order to obtain support from the firm's partners, the team mapped out a five stage formalized plan, with several areas of focus including project design, specifications, education, project process, marketing, office culture and resources. The plan formalized the Green Team's goals and is summarized by the following Mission Statement: "The promotion of living design for a more habitable world: A reformation of ideas, practice and outlook." The proposal established quantifiable goals to apply across the firm, including steps for being more sustainable on our projects, in office, and in our personal lives. The partners unanimously approved the mission and gave their full support to the Green Team and to the plan, which was adopted in late 2003. One of the primary initiatives that came out of this initial plan was "Greening the Office Phase One" (Appendix B), which looked at all areas of our office environment and created a plan to reduce waste, start an office recycling program and reduce electrical power use. The effort marks the beginning of the process to change our culture from being heavily dependent on printed paper documents. Based on the Green Team's success, other fitness teams were formed among office staff to take the firm to a much higher level of expertise in multiple areas.



“To halt the decline of the ecosystem, it is necessary to think like an ecosystem.” Douglas P Wheeler, EPA Journal, September-October 1990

Since the adoption of the Green Team proposal, the firm has worked on multiple LEED projects. The first LEED registered project opportunity, The Academy of Charter Schools, occurred in 2004, followed soon after by the first LEED certified Gold project in 2006, the Valor Christian High School Campus project.

Displaying a heightened dedication to sustainability throughout the office, the firm made the commitment to incorporate sustainable design principles into all projects. In order to better understand and execute the LEED rating system requirements in project design, two architects became LEED Accredited Professionals in 2006. This inspired SLATERPAULL Architects to sponsor LEED trainings for the entire staff, encouraging pursuit of the LEED Accredited Professional credential among everyone in the firm, with a goal of having 100% of the technical staff being LEED Accredited Professionals. The first group training for the LEED exam resulted in an additional 13 LEED AP's within the firm, and at present, over 90% of the technical staff are LEED Accredited Professionals.

For the 2006 Greenbuild Conference, which took place in Denver, SLATERPAULL Architects participated in the conference's Greening Colorado Challenge. For the firm's project, the efforts of the Green Team and the Historic Preservation Team were combined to evaluate a historic church. Both historic preservation and sustainable strategies were considered in the evaluation of this building. The goal was to keep historic structures viable through energy conservation. The result was the creation of a sustainable preservation assessment tool which aids in the understanding of energy consumption and how to lower energy usage in historic buildings.

In 2007, “Greening the Office Phase Two” (Appendix B) was initiated. The biggest step in this phase was the purchase of a company hybrid vehicle, a Toyota Prius, to provide a company car for out of office meetings and thereby encourage staff members to utilize public transportation to get to work. The firm also planted thirty five trees at seven project sites to celebrate thirty five years in business. That same year the “SLATERPAULL Green Challenge” (Appendix C) was launched in an effort to involve staff in a personal sustainability commitment to mirror the firm's commitment to evolving sustainability in the office and on all of our projects. The Green Challenge is now an annual 5 week long commitment, from St. Patrick's Day to Earth Day, and encourages every employee to challenge themselves for those five weeks to further reduce their carbon footprint beyond whatever efforts they have already incorporated into their daily lives. For the 3rd annual SLATERPAULL Green Challenge in 2009, SLATERPAULL Architects worked with the American Institute of Architects' Denver chapter of the Committee on the Environment (COTE), to expand the effort as a public challenge and hope to take it nationwide with the national AIA COTE over the following year.

Commitment to incorporating sustainable design in projects continued to gain momentum and spurred the creation of a Sustainable Design Manager role within the firm. Sustainability goals are now set and tracked on every project. In 2009 SLATERPAULL Architects hired a full-time Sustainability/LEED consultant to further develop the firm's expertise and focus on sustainability and high performance strategies in all of our projects, as well as to provide high level client service to all clients seeking similar sustainability objectives. In 2009, SLATERPAULL Architects codified our commitment to sustainable design principles by obtaining a trademark for the firm, “Design for a Sustainable Future”.

In 2010, the firm moved to our current downtown office space. The historic 1922 Fire House in an historically landmarked neighborhood was rehabilitated to meet stringent sustainability guidelines. Drastic energy and water usage reductions as well as rooftop, solar collection system helped the building earn its LEED-NC Platinum certification. The office provides 46% improved energy efficiency over ASHRAE 90.1 - 2007 requirements, and the Solyndra solar array offsets over 16% of the building's electric use. Additionally, high efficiency toilets, pint flush and waterless urinals, and 1.5 gpm sinks reduce water use by over 44% over baseline standards.

To further our sustainability commitment, SLATERPAULL Architects is now working towards prioritizing Architecture 2030's 2030 Challenge of achieving carbon neutral buildings for all new developments and major renovations as well as interior projects containing lighting design.

 Appendix

## B: Greening the office - Phase I

July 16, 2003

1. Turn off computers, lights, fans and sound systems when you leave for the day or for longer meetings
2. Recycle all 8 1/2 x 11" paper
3. Recycle all large format bond paper
4. Eliminate use of paper plates and plasticware
5. Recycle glass, aluminum and number 1 and 2 plastics
6. Recycle cardboard
7. Create a schedule for volunteers to take the recyclables that are not picked up by the Recycling Company to a recycling facility
8. Minimize use of glossy paper to the final print for presentations, rather than using for test copies
9. Print project documents that are to be used for red lining on 1/2 size sheets. Create PDF files for documents so that we do not need to print a set to send to the printer

“ If you ask the wrong question, of course, you get the wrong answer. We find in design it's much more important and difficult to ask the right question.

Once you do that, the right answer becomes obvious. ”

- Amory Lovins

11. Minimize use of transmittals for faxes if they will not be filed with the document and will just end up in the trash; Use electronic documents whenever possible
12. Recycle toner cartridges by returning them to the manufacturer
13. Donate old library material samples and binders to local schools; Resist taking new or updated binders from manufacturers and use internet for research
14. Create double sided copies for large documents

### Greening the office - Phase II

May 21, 2007

1. Install Occupancy Sensors on all lights
2. Purchase a hybrid vehicle (or 2) for the office for team members to check out
3. Purchase wind power for office electricity use
4. Team with consultants who are as committed to sustainability as we are, and/or educate those consultants that we feel are good team members about the importance of sustainability
5. Plant trees for every project

6. The Green Team proposes that energy modeling should be performed on every project; It should be utilized to select mechanical systems and analyze life cycle costs for assemblies incorporated into each project
7. Purchase sustainable cleaning products, such as biodegradable soaps
8. Re-use waste paper in SLATERPAULL notebooks
9. Utilize a shipping service that incorporates sustainability in their every day business practices
10. Turn off computers at night at power strip
11. Replace any incandescent light bulbs with fluorescent bulbs as old ones burn out

### → Additional Green Team ideas for taking sustainability in the office to the next level

#### In-Office Steps

- Biodegradable soaps and cleaners - I.E. [greenlinepaper.com](http://greenlinepaper.com), Seventh Generation;
- Can we get these products through our current supplier?
- Recycled content paper towels; Can we eliminate paper towels altogether?
- Eliminate all paper from use and replace cloth napkins/towels

#### → Office Supplies

- Print double sided whenever possible
- Improve the recycled content of the paper that we use
- Reduce paper consumption
- Use technology - digital whiteboard, project websites
- Shift printing to General Contractor; provide whiteboards at each desk for notes instead of using post-it notes and notepads

- Recycle waste paper into office notebooks
- Research shipping services that have sustainable services, I.E. UPS uses 100% recycled paper with 80% post-consumer material in packing materials. Fedex uses only 30%

#### → Priority Mail vs Fedex?

- Combine deliveries so that there is only one per day
- Eliminate individual architecture magazines and only subscribe to one magazine for the office to share
- Coordinate with stick lunch presenters to provide box lunches that are not individually wrapped

#### → Electrical

- Turn off lights that are not being used - library, conference rooms, offices, supply room, kitchen
- Turn off lights at the end of the day
- Install occupancy sensors to control lights
- Replace equipment with energy efficient equipment - copiers, printers, computers, monitors
- Turn off computers at power strip at end of day

#### → Energy

- Switch out light bulbs to energy efficient bulbs.
- Switch all incandescent bulbs to fluorescent when they burn out
- Upgrade appliances - energy star dishwasher and refrigerator
- Run the dishwasher only when full
- Use wind credits for electrical power
- Firm to buy carbon credits for all business travel, both air and auto
- Buy a hybrid car (or 2) for business use; Put firm logo on it
- Provide incentives to those who walk, ride bus or light rail

#### → Recycling

- We are great about recycling, now our challenge is to use less; Zero Waste
- Purchase more products with high recycled content
- Create joint venture with other companies in the Park Central building for cardboard and plastics recycling to encourage landlord to provide this service

#### → Practice What We Preach

- Volunteer in the community as a corporate team - Arbor Day tree planting
- Invest time and resources into organizations committed to the environment
- Join sustainability organizations beyond AIA/COTE
- Open our doors to educate students from elementary school to college; I.E. CAL, college interns
- Research and choose socially responsible investment accounts for 401K; What we do here will transfer over to what we do at home
- Share our pride, celebrate our accomplishments and always keep it fun and challenging

#### Project Based Steps

##### Collaboration with Clients and Consultants

- Work with like-minded consultants
- Educate our favorite consultants to maintain relationships
- Lead seminars/box lunches with contractors on how to apply green philosophies to their practices
- Educate and convince clients of opportunities - sometimes all you can do is voice convictions
- Develop life cycle costs, etc. to back up sustainable principals for owners
- Xcel Energy provides free energy modeling for projects over 50,000 SF
- Digital project conferencing

- Digital whiteboard for conference room
- Redlines on computer using ADT tools
- Large monitors in pinup spaces for partner drawing review
- Utilize more sophisticated project websites so contractors can download and print documents
- Digital notebooks

#### SLATERPAULL Submittals

Create fixed specification guidelines for all projects:

- Recycled content of products
- Construction waste management/recycling
- Following LEED guidelines for interior products (sealants, paints, carpet)
- Energy efficient windows (glazing, air infiltration, U-Value)
- Casework (formaldehyde free, laminates)
- Recycled gypsum board
- Low flow plumbing fixtures
- Day lighting and other energy efficient fixtures
- Ceiling tile reclamation (Armstrong)

#### Construction Phase

- Centralize cutting operations to reduce waste (think about waste during design)
- Identify where materials can go for recycling
- Donate salvage materials to organizations like Habitat for Humanity, Resource 200
- Reduce salvaged waste by re-using as much material as possible
- Educate crews about recycling and offer rewards programs
- Ask suppliers to minimize packaging prior to shipment to site

 Appendix

 C: Green Challenge

we planted the seed six years ago and it is growing . . . !

Green Day to Green Day  
ST. PATRICK'S DAY . . . . . EARTH DAY  
MARCH 17 . . . . . APRIL 22

reduce your own ecological footprint by changing at least one personal habit . . . try it for a little over five weeks . . . minimize your impact on the earth's natural resources and perhaps change a habit for good . . .

bring your own shopping bags . . . refill that travel mug . . . pay bills on-line . . .  
. . . try a vegetarian diet . . . purchase wind power . . . stop junk mail . . . reuse . . .  
recycle . . . unplug . . . buy organic . . . change light bulbs . . . ride a bike . . . walk . . .  
carpool . . . etc.

challenge yourself to challenge others . . . spread the word

## THE GREEN CHALLENGE

What can you do to reduce your own ecological footprint?

Here is the challenge - from Green Day to Green Day - St. Patrick's Day, March 17th to Earth Day, April 22, reduce your footprint, be kind to your Mother (Earth) and improve your life and the lives of those around you.

Do at least one thing you are currently not doing to minimize YOUR impact on the earth's natural resources. Try it for just five weeks and perhaps change that "old" habit forever. The ultimate goal is to continue that activity after the challenge is over, but at the very least give it a try.

SLATERPAULL Architects has done this as a firm since 2007. Here are a few examples of personal successes:

- No more plastic or paper grocery or shopping bags - bring your own reusable bag
- Reduce the quantity of junk mail you receive
- Install a low flow shower head and reduce the length of your shower
- Replace all incandescent light bulbs with compact fluorescent
- Dry clothes outside or inside - not in a dryer
- Pay all bills online
- Become a vegetarian - eat lower on the food chain
- Buy only seasonal and locally grown produce
- Choose food with less packaging
- Don't use the garbage disposal - compost instead
- Use biodegradable, non-toxic cleaning products
- Purchase wind power
- Wash cars rarely - when you do take them to a car wash
- Buy less! Replace items only when you really need to
- Recycle all your paper, glass, aluminum, and plastic - your trash container should be very small

Challenge yourself to challenge others - spread the word . . .

There are numerous websites to calculate your ecological foot print:  
[www.myfootprint.org](http://www.myfootprint.org)  
[www.carbonfootprint.com](http://www.carbonfootprint.com)  
[www.nature.org](http://www.nature.org)

## → Appendix

### D: 2030 Challenge Implementation Guidelines

A Resource for Firms and Organizations Adopting  
 The 2030 Challenge  
 Prepared by: Architecture 2030

#### Synopsis

Buildings are the major source of demand for energy and materials that produce by-product greenhouse gases (GHG). Slowing the growth rate of GHG emissions and then reversing it over the next ten years is the key to keeping global warming under one degree centigrade ( ° C) above today's level. It will require immediate action and a concerted global effort.

To accomplish this, Architecture 2030 has issued The 2030 Challenge asking the global architecture and building community to adopt the following targets:

- All new buildings, developments, and major renovations shall be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 60% of the regional (or country) average for that building type.
- At a minimum, an equal amount of existing building area shall be renovated annually to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 60% of the regional (or country) average for that building type.
- The fossil fuel reduction standard for all new buildings shall be increased to:
  - 70% in 2015
  - 80% in 2020
  - 90% in 2025
  - Carbon-neutral in 2030 (using no fossil fuel GHG emitting energy to operate).

These targets may be accomplished by implementing innovating sustainable design strategies, generating on-site renewable power and/or purchasing (20% maximum) renewable energy and/or certified renewable energy credits.



“The era of procrastination, of half-measures, of soothing and baffling expedients, of delays, is coming to a close. In its place we are entering a period of consequences.” - Winston Churchill 1936

### Responsibilities of Adoptees

Architecture 2030 asks that all firms, organizations and individuals choosing to adopt The 2030 Challenge commit to design all of their projects to meet the targets outlined by the initiative. This requires each new building project or major renovation to be design to achieve and energy consumption performance standard of 60% of the regional (or country) average for that project's building type. For new building projects, this performance standard will increase to 70% of the regional (or country) average in the year 2015. Every five years the standard will increase by an additional 10%, achieving carbon-neutral buildings in the year 2030. Major renovations are only required to meet a 50% target, as established in 2009, throughout this timeline but are encouraged to achieve the increased reductions.

If a firm or office is unable to achieve the targeted reductions for 100% of its projects, there are no penalties. However, Architecture 2030 urges firms who wish to adopt to have a clear implementation plan that will assist designers and team members in reaching the

### Implementation Plan

The 2030 Challenge outlines real and obtainable targets for the building sector to curb global warming. In order to meet the described timeline, Architecture 2030 recommends that each firm or organization adopting The 2030 Challenge prepare a plan of action for implementing the initiative's targets.

Each implementation plan will be different and unique to suit the adopting firm or organization's structure and philosophy. However, each plan should contain the following key elements:

- Inform all partners, employees, consultants and clients that the firm has adopted The 2030 Challenge. Explain what The 2030 Challenge entails and why the firm has committed to its targets.
- Establish energy-efficiency as a central tenet of your firm's design philosophy. Require energy-wise practices in the firm's day-to-day activities.
- Require that all employees become educated in the design of energy-efficient buildings. Outline energy-efficient design strategies, technologies, and opportunities for each project. Organize regularly scheduled meetings to discuss how this information can be applied to all projects.

- Engage clients in discussions relating to energy efficiency. Explain that reducing carbon emissions from the building sector is now a major focus for the firm and that the firm plans to incorporate cost-effective design strategies that should not increase the overall cost of the work. Provide a life-cycle cost analysis for each project and encourage clients to review those costs to ascertain the true cost of each project.
- Establish a portfolio of the firm's work that highlights energy efficiency. Demonstrate that the firm's designers are knowledgeable professionals, with regard to energy-efficient design, who can produce quality projects with an allotted budget that meet an agreed upon schedule.
- Hire consultants and engineers who have adopted The 2030 Challenge and have a similar implementation plan within their firm. Approach every project with an energy focus and review the project for further energy reductions at every stage of development.
- Create a database that contains energy-consumption statistics for your projects. Include outside projects as a reference if your firm does not have a portfolio of energy-efficient work yet. Use this information as a tool to analyze strategies that work and those that may need improvement. Share this information with clients and collaborators. Include each completed project's energy achievements in the database.
- Verify that your project meets The 2030 Challenge targets, either through a final energy-analysis or through post-occupancy measured consumption. Document this data for future reference and in the firm's portfolio to establish an energy priority.

## → Appendix

### E: Pocantico Proclamation

On Sustainability and Historic Preservation

#### Premise

The historic preservation community has a deep tradition of stewardship for our built environment, emerging as leaders in sustainable practices. Consistent with this tradition, historic preservation practitioners resolve to face head-on the global human-caused ecological crises that threaten our built and natural resources. Historic preservation must play a central role in efforts to make the built environment more sustainable. To this end, we urge all policy makers to recognize the following:

1. The Climate Change Imperative - Human activity has increased and accelerated global warming putting the environment at risk. It is imperative that we immediately and significantly reduce greenhouse gas emissions to begin reversing extreme climate change patterns within a generation.
2. The Economic Imperative - Our current economy is based upon unsustainable consumption and an overreliance on finite resources. A new green economy must rest upon a conservation-based foundation to manage natural and cultural resources in a sustainable and economically beneficial manner.
3. The Equity Imperative - In recent years, economic inequalities between rich and poor have grown in the United States and abroad. The disproportionate levels of resource consumption and global pollution are unsustainable. Our consumption patterns must be altered to foster social equity, cultural diversity, and survival of all species.

The Pocantico Principles on Sustainability and Historic Preservation

Therefore, in order to address the three above imperatives, we advocate the following:

“ In the future, the houses we live in and the offices we work in will be designed to function like living organisms, specifically adapted to place and able to draw all of their requirements for energy and water from the surrounding sun, wind and rain. The architecture of the future will draw inspiration, not from the machines of the 20th Century, but from the beautiful flowers that grow in the landscape that surrounds them. ”

- Bob Berkebile and Jason McClennan

### 1. FOSTER a Culture of Reuse

Maximizing the life cycle of all resources through conservation is a fundamental condition of sustainability. The most sustainable building, community or landscape is often the one that already exists. Lessons learned from historic preservation are transferable to the entire existing built and landscaped environment.

### 2. REINVEST at a Community Scale

It is not sufficient to address sustainability on a piecemeal basis through individual building projects. We must consider the larger context of the built environment: our communities. Reinvestment in existing, more sustainable neighborhoods - especially our older and historic ones - saves resources and promotes socially, culturally, and economically rich communities.

### 3. VALUE Heritage

The design of older buildings, landscapes, and communities should inform future building practices. While new green building technology offers promise for reducing the environmental harms caused by new construction, traditional building practices provide a wealth of sustainable design solutions that are premised on sensitivity to local conditions, careful siting and planning, and long-term durability, all of which provide essential models for the future.

### 4. CAPITALIZE on the Potential of the Green Economy

Preservation economics provide a powerful model for shifting away from a consumption-based and energy-inefficient economy. Reinvestment in our existing built environment must become an indispensable part of America's new green economy. Per dollar spent rehabilitation activities create more new jobs than new construction.

### 5. REALIGN Historic Preservation Policies with Sustainability

Today's challenges require that historic preservation move beyond maintaining or recovering a frozen view of the past. Historic preservation must contribute to the transformation of communities and the establishment of a sustainable, equitable, and verdant world by re-evaluating historic preservation practices and policies, and making changes where appropriate.

#### NEXT STEPS

Consequently, we, the historic preservation community, recognize the environmental, economic, and social challenges that face us and call for policies that will result in revising our present course. We stand ready to offer an example for sustainability, while further challenging preservationists to more fully accommodate sustainable practices. We call for our leaders and fellow citizens to join us in taking immediate action.

The Pocantico Proclamation on Sustainability and Historic Preservation was written by participants in the Pocantico Symposium: 'Sustainability and Historic Preservation -- Making Policy, November 5-7, 2008' based on materials developed at this symposium and the discussions that took place there. It reflects the views of the authors and not necessarily those of the Rockefeller Brothers Fund.

→ Appendix

F: Building Energy Use Tracking Tool

Project Goal Setting and Evaluation

1. Project Information

<b>Who:</b>	Project Name	
	Project Number	
	Design Team	
	Owner	
	Owner Contact Information	
<b>Where:</b>	Address	
	Climate Zone	
	Egrid Subregion	WECC - RMPA
<b>What:</b>	Project Use Type	
	Project Scope	
	CBECs Space Type	
	Gross Square Footage	
	% Heated	
	% Cooled	
<b>When:</b>	Design Start	
	Design Completion	
	Construction Start	
	Construction Completion	
	Date of Occupancy	

2. Operating Information

Hours of Operation	
Months of Operation	
Use on Weekends	
Occupancy Numbers	
# of PCs	
# of Walk In Refrigeration Units	
Presence of Cooking Facilities	
Grade Range	
School District	
Building Code	
Energy Modeling Software	
Building Components (Y/N)	(Y/N) Description/Energy Use Goals
Heating	
Cooling	
Ventilation	
Hot Water	
Interior Lighting (Power Density)	
Exterior Lighting	
Plug Loads	
Vertical Transport	
Other	
Utility Bills Provided	Gas, Electric, Water, Other

3. Energy Goals

Energy Star Goal	87
Energy Use Intensity Goal	kBTU/sf/yr

populated as an example

Worksheet Instructions/Notes

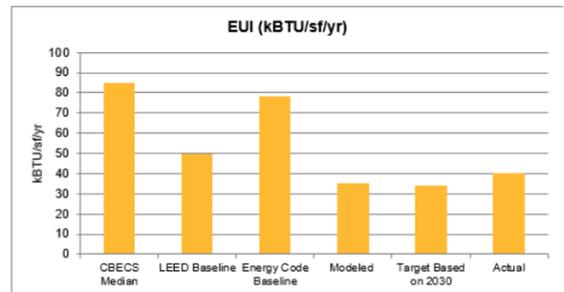
<b>General</b>	Enter data for buildings after they have been in operation for one full year First year is considered commissioning/warranty period - numbers 4a-4d Enter data for second full year for comparison - numbers 5a-5d Note incomplete data Update pull downs as necessary
<b>1</b>	Climate Zone - <a href="http://www.eia.doe.gov/emeu/cbecs/climate_zones.html">http://www.eia.doe.gov/emeu/cbecs/climate_zones.html</a> Climate Zone corresponds with Heating Degree Days (HDD) and Cooling Degree Days (CDD) eGRID Subregion - <a href="http://cfpub.epa.gov/egridweb/index.cfm">http://cfpub.epa.gov/egridweb/index.cfm</a> eGRID (Emissions and Generation Resource Integrated Database). Source of data of environmental characteristics of almost all electric power generated in the US
<b>2</b>	Briefly describe systems and energy use goals
<b>3</b>	Energy Star Rating Goal will come from Target Finder kBTU/sf/yr will also come from Target Finder
<b>4a</b>	Data from 1st year - commissioning/warranty. Enter year range for data. CBECs Average - K-12 comes from Target Finder, Higher Ed in CBECs LEED, Energy Code, and Modeled will come from energy model 2030 value changes every 5 years as percentage improvement required increases Actual comes from at least 12 months of data entered into Portfolio Manager 2030 Challenge EUI reductions based on national averages Fill in corresponding national average EUI depending on project type Based on project type Target will change every 5 years
<b>4b</b>	Target, Actual, and Average EUI is linked to values in 4a Intended to portray where project is falling in comparison to averages and goals Will need to update chart in 2010 - chart refers only to 2009 percentage
<b>4c</b>	Goal linked to #3 Actual comes from output from Portfolio Manager
<b>4d</b>	Average and Actual EUI is linked to values in 4a Required percentae linked to 4b Actual reduction is an equation dividing acutal by average EUI Compliance is determined by equation - if actual is equal to or greater than required reduction = compliance
<b>5a-d</b>	Same as number 4a-d. Data will be from second year and thus will differ. All links the same.

Project Goal Setting and Evaluation - Year 1

4a. Energy Use Intensity (EUI) - kBTU/sf/yr (Enter yr. range)

Source	EUI (kBTU/sf/yr)
CBECs Median	85
LEED Baseline	50
Energy Code Baseline	78
Modeled	35
Target Based on 2030	34
Actual	40

Populated as an example

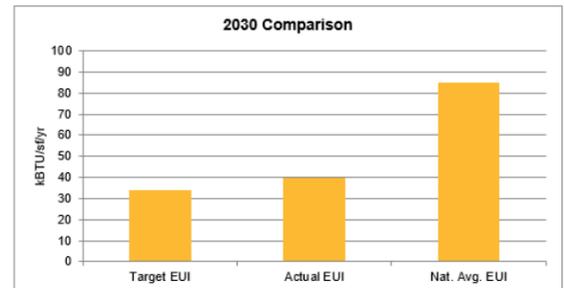


4b. 2030 Goal Comparison (Enter year range)

2030 Challenge Reductions	Target EUI	Actual EUI	Nat. Avg. EUI
2010 - 60%	34	40	85
2015 - 70%	25.5		
2020 - 80%	17		
2025 - 90%	8.5		
2030 - 100%	0		

Populated as an example

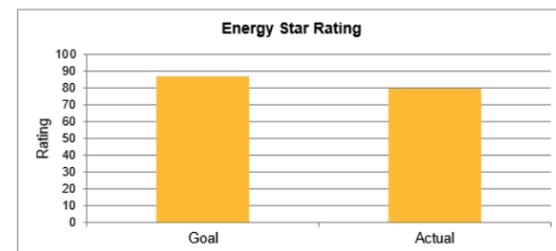
Incomplete Data:



Project Goal Setting and Evaluation - Year 1

4c. Energy Star Rating (Enter year range)

Goal	87
Actual	80



4d. Does Project meet 2030 Challenge?

Average EUI	85	Actual Site EUI	40
Required % Reduction	60%	Actual % Reduction	53%
		Complies?	No



# → Appendix

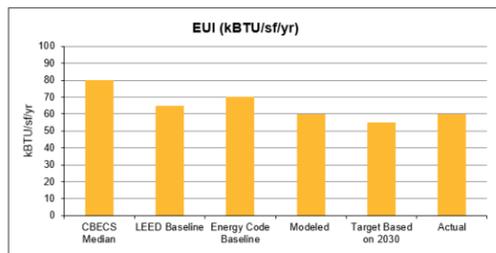
# G

## Project Goal Setting and Evaluation - Year 2

### 5a. Energy Use Intensity (EUI) - kBtu/sf/yr (Enter yr. range)

Source	EUI (kBtu/sf/yr)
CBECS Median	80
LEED Baseline	65
Energy Code Baseline	70
Modeled	60
Target Based on 2030	55
Actual	60

Populated as an example

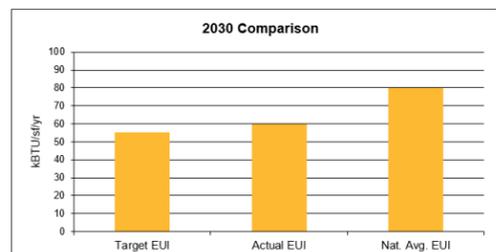


### 5b. 2030 Goal Comparison (Enter year range)

2030 Challenge Reductions	Target EUI	Actual EUI	Nat. Avg. EUI
2010 - 60%	55	60	80
2015 - 70%	24		
2020 - 80%	16		
2025 - 90%	8		
2030 - 100%	0		

Populated as an example

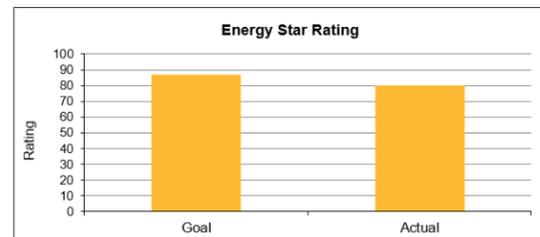
Incomplete Data:



## Project Goal Setting and Evaluation - Year 2

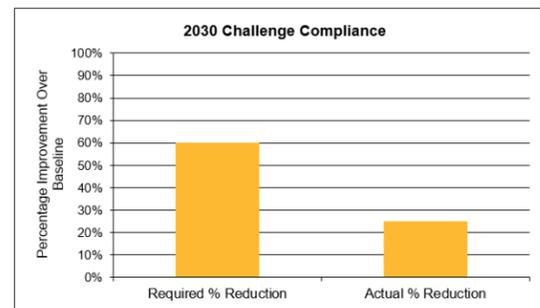
### 5c. Energy Star Rating (Enter year range)

Goal	87
Actual	80



### 5d. Does Project meet 2030 Challenge?

Average EUI	Actual Site EUI	
80	60	
Required % Reduction	Actual % Reduction	Complies?
60%	25%	No



## G: Minimum Sustainable Design Goals Guideline

This document is intended to guide the team toward high performance building design. If a certain element is not applicable to the project the element may be disregarded. Further considerations are listed on the 2nd page of this document. For buildings that are renovations without additions, utilize only the elements that apply to the scope of work and set project specific performance goals based on the items below.

### Energy

1. Require engineers to perform a minimum level of energy modeling and systems investigation
2. Improve building energy performance by 30% over the current version of ASHRAE 90.1
3. Achieve a minimum ENERGY STAR rating of 90 in Target Finder; Verify performance post-occupancy through ENERGY STAR Portfolio Manager
4. Design electric lighting to the low range provided by the IES standard per space type; Provide uniform illuminance in task-oriented areas or where needed
5. Design lighting to be 10% better than the current version of ASHRAE 90.1
6. Achieve R-values in walls and roof as recommended in the Advanced Energy Design Guide for the specific climate zone
7. Minimize heat transfer by thermal bridging by designing with continuous insulation
8. Provide high performance envelope with emphasis on vapor and air retarders; Provide continuous air barrier
9. Provide shading on South facing windows at minimum, either exterior (optimum) or interior, consider east and west exposures as well

### Daylighting

10. Achieve daylight illuminance levels of 25 footcandles and a maximum of 50 footcandles in 75% or more of regularly occupied spaces according to IEQ credit 8 in the LEED Reference Guide.
11. Orient new buildings on E/W access to maximize daylight; Analyze optimum orientation - will vary depending on project location
12. Achieve 25 footcandles in daylight spaces

13. Evaluate daylight controls in daylit spaces (to prevent heat gain from adding to cooling load)
14. Provide tubular daylighting devices at internal non-daylit spaces
15. Tune glazing performance per elevation and window condition; Evaluate shading devices: East and West - vertical louver system, South - horizontal or roller shade, bottom up window coverings in areas where awnings are present (South and possibly West)
16. Provide tinted glazing at South facing vision lights to prevent glare; Do not tint at clerestories
17. Visible Light Transmittance and Thermal Transmittance U-Values (0.42 all types and orientations), SHGC - 0.40 for N,S,W,E; Prioritize shading co-efficient in cooling dominated climates, and U-values in heating dominated climates

#### Water

18. Specify low flow water closets at 1.28 gpf - either dual flush or ultra low flow
19. Specify low flow urinals at 0.125 gpf
20. Specify faucet aerators in lavatories at a rate of 0.5 gpm and provide autosensors

#### Landscape

21. Remove, store and replace 100% of topsoil
22. Reduce potable water irrigation by 50%

#### Materials

23. Specify low and no VOC paints, coatings, adhesives and sealants
24. Specify no urea formaldehyde in composite woods or agrifibers
25. Specify GREENGUARD certified furniture
26. Source materials within 500 miles of project site (see Local Materials Reference for guidance)
27. Source recycled content for materials (see Recycled Content Materials Reference for guidance)
28. Consider up to 20% flyash in concrete; verify with Structural Engineer for structural vs. slab concrete and which Class to specify

#### Other

29. Provide rebate information for local utility to Owner where applicable
30. Provide building with SLATERPAULL resource to track energy use and provide input to Energy Tracking Worksheet
31. Specify Construction Waste Management program (at minimum make an alternate)
32. Locate recycling areas in building as well as central collection site

## Further Sustainable Design Considerations

Discuss the following sustainable design elements with your team during programming and schematic design.

1. Basic and enhanced building commissioning
2. Sustainable landscape design
  - a. Bio-diversity
  - b. Green Materials
  - c. Low maintenance and low water use
  - d. Connecting area to local systems
  - e. Provide wind buffers, shading to building
  - f. Stormwater quality and quantity control
  - g. Reuse materials
  - h. Use site as natural habitat
  - i. Maximize heating and cooling loads on building with strategic landscaping
  - j. Educate client on water-wise landscape
  - k. Specify native, non-invasive landscaping and purchase from vendors who obtain the landscaping materials from growers within a 500 mile radius
3. Renewable energy
  - a. Solar hot water
  - b. Passive solar
  - c. Geo-exchange
  - d. Photovoltaics
  - e. Ventilation preheat
  - f. Wind
  - g. Design to allow for solar in the future

#### 4. Lighting

- a. Daylight controls
- b. Integrate landscaping / shading with daylighting design
- c. Daylight gyms and employ glare control measures
- d. Views to outdoors
- e. High efficiency lamps and ballasts
- f. Design the overall average building lighting to better than 0.9 W/sf

#### 5. Building shell

- a. Consider benefits / drawbacks of white roof in building climate
- b. Reduce air filtration for renovations

#### 6. HVAC

- a. Full energy model to inform mechanical system selection
- b. Premium efficiency motors
- c. VAV
- d. Displacement ventilation
- e. Manage peak loads
- f. Heat recovery at air handlers
- g. Boilers - 90% efficient

#### 7. Reduce HVAC loads

- a. Efficient lighting
- b. High performance glazing
- c. Overhangs

#### 8. Building controls

- a. DDC system
- b. Integrate occupancy sensors with HVAC operation
- c. Demand controlled ventilation coupled with CO2 sensors
- d. Lighting controls
  - i. Daylight
  - ii. Dimming

#### 9. Kitchens / Other

- a. ENERGY STAR appliances

#### 10. Explore thermal massing options

#### 11. Expanded commissioning of building

#### 12. Measurement and Verification

#### 13. Design for expansion, adaptability and deconstruction

Consultants to SLATERPAULL Architects were involved in the creation of this document. Their discipline-specific recommendations have been included above. GreenPrint Denver guidelines have also been taken into consideration.