Sustainable Operations

ACTION PLAN




2011

Updates from 2010 are noted in Dark Green Print

The **Miller Hull** Partnership

SUSTAINABLE DESIGN

CONTENTS

SUMMARY OF 2011 UPDATES

- Our office has expanded: we opened an office in San Diego in early 2011. This will help reduce our carbon footprint due to air travel by being available on-site for our Southern California projects. We have included sustainable priorities for this office based on its location in Southern California.
- We have included our residential projects and the goals we have set for this market segment.
- We have updated the EUI comparison of our past and current projects.
- Other new items are identified in dark green type.

THE SUSTAINABILITY A-TEAM

Three partners and two staff members form our A-team in charge of tracking and advancing all sustainable efforts of the office. This includes individual project goals, overall project performance, as well as office operations & maintenance.

The Sustainability A-Team

RON ROCHON Managing Partner & Sustainability Lead
SIAN ROBERTS Post-Occupancy & Building Evaluation Lead
SCOTT WOLF Making The Business Case
JIM HANFORD Energy Efficiency Advisor
CAROLINE KREISER Strategy Advisor & LEED® Coordinator

TEAM

OUR COMMITMENT

Miller Hull has been designing environmentally sensitive buildings since the inception of the firm. As the sustainability movement has taken off in recent years, our firm has remained at the forefront, designing buildings that have explored innovative site and building systems to improve the performance of our built work. We believe that early collaboration with excellent consultants, working with an integrated design process, leads to the most successful and sustainable designs.

Miller Hull also believes there are great opportunities to develop solutions to our environmental problems. As architects we see our role in creating the solution is to imagine and plan for a better, healthier future for us and for our planet. We play our part in the solution by helping our clients imagine and realize their more sustainable future. The 2030 Commitment is a perfect framework to prove out our sustainable design ambitions.

SUSTAINABLE DESIGN GOALS

The office strives for each project to meet the 2030 Challenge goals in terms of energy use reduction. For projects targeted for completion prior to 2015 this means a target of at least 60% less energy use than the CBECS baseline. Our in-house energy efficiency advisor Jim Hanford tracks all projects with respect to both design goals and actual performance (see diagram next page). Jim is available for consultation on all projects regarding improving performance and reducing

Miller Hull has adopted these goals:

GOALS

PROJECT COMPLETION	ENERGY USE REDUCTION TARGET
2015	70%
2020	80%
2025	90%
2030	100% (carbon neutral)

loads. He reports to the A-Team four times a year, and to the entire office once a year.

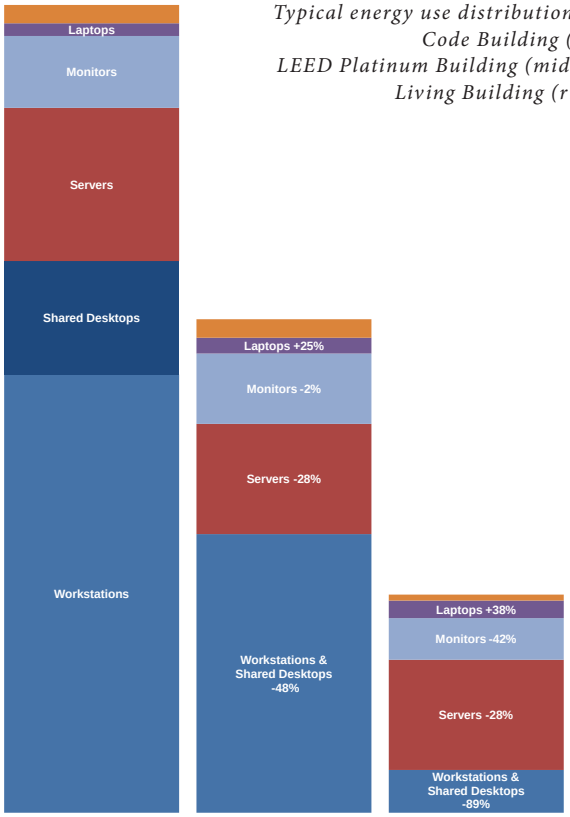
GREEN BUILDING PROGRAMS & ACHIEVEMENTS

As of December 2011 twelve (up from seven in 2010) of our projects have achieved LEED certifications: one - platinum, seven- gold, two - silver, and two - certified. Currently, 31% of active, non-residential projects are registered for LEED® certification (15 of 49). Two of these are expected to achieve a Platinum level certification, two are targeting Gold. Two of our projects are pursuing the Living Building Challenge. One of these projects is in an urban setting, the other suburban/ rural - posing very different challenges with respect to appropriate sustainable design strategies. We hope to use the experience with these two LBC projects to discuss advanced sustainable design goals with future clients.

Our firm is a regular participant in local and national green building award programs. We are proud to have garnered recognition from groups including the AIA's COTE (national and local), AIA Seattle's What Makes it Green, the Boston Society of Architects, Earth Day, BPA Architecture + Energy, and others. Since the inception of COTE in 1990 our office has been recognized with 6 (up from 5) TOP TEN awards.

THE GREEN GIANT

We have an internal award for sustainable achievements by our staff - the Green Giant Award. These achievements can be project- or operations-related. The awards are handed out at the annual holiday party. The 2010 award went to



Typical energy use distribution for:
Code Building (left)
LEED Platinum Building (midldle)
Living Building (right)

Doug Mikko, our IT specialist, who was recognized for his achievements in lowering the office energy needs by reducing plug loads by approximately 40%. In 2011 Kate Spitzer took home the jolly green hat for her determined discussions with Wetflash, succeeding in the elimination of phthalates (red-listed material) from one of the product lines.

MILLER HULL SUSTAINABLE DESIGN GOALS FOR 2015

CATEGORY	STRATEGY	METRIC	% OF NON-RES PROJECTS	% OF RES PROJECTS	WASHINGTON	CALIFORNIA
STORMWATER	run-off control	no discharge into the public storm sewer for the 100 yr storm event	90	-	●	
	reuse	incorporate rainwater collection and reuse design strategies	25	90	●	
WATER	conservation	exceed water use reduction based on LEED 2009 baselines	50	50	●	●
	conservation	no potable irrigation beyond establishment phase	90	90		●
ENERGY	renewables	incorporate renewable energy generation to deliver 5% (WA) and 10% (CA) of annual building power demand	75	-	●	●
	renewables	incorporate renewable energy generation to deliver 15% (WA) and 25% (CA) of annual building power demand	-	75	●	●
	energy models	perform energy modeling	100	100	●	●
MATERIALS	detoxification	no PVC unless required by code	90	90	●	●
	reforestation	half of all wood on project to be FSC certified	75	90	●	
AIR	reduce pollution	bicycle storage	95	-	●	●
	reduce pollution	preferred parking for low-emitting vehicles	90	-		●
RESTORATIVE	reforestation	plant one tree per $100,000 construction cost	30	-	●	
	habitat	restore habitat on-site per LEED 2009 SSc5.1 or contribute to local land conservancy to meet the intent of the credit	30	30	●	●
	awareness	calculate project carbon footprint	30	30	●	●

Cascadia Center for Sustainable Design

THE DESIGN PROCESS

We firmly believe that collaboration and an integrated design process is essential to creating the best and most sustainable projects, and we are committed to managing our projects through a team-oriented process that accomplishes just that. Furthermore, systems integration is an important part of our design. We work closely with our engineers, space planners, landscape architects, lighting designers and related disciplines to create solutions with synergies. The key to this is a clear understanding of the big picture and the implications of each issue, and this is best accomplished working as an integrated team.

Our integrated design process is aided by several tools. We are using Building Integrated Modeling (BIM) software as a our tool of choice for design and documentation. The coordination capabilities of this software greatly enhance and streamline the integrated design process. Other technical tools at our disposal include:

- Ecotect for climate analysis, shading studies, and daylighting performance
- Rhinoceros & Grasshopper have provided a parametric modeling platform to explore iterations of photovoltaic panel placement
- The EPA Target Finder and the CBECS database to establish baselines and targets
- The Pharos database and ILBC website for materials research

We also work closely with our mechanical consultants during the development of ventilation design strategies and energy model creation.

Each client is encouraged to begin the project development with an eco-charrette, as early as possible in the design process. Ultimately, we plan to seamlessly incorporate the eco-charrette into a project-goals meeting, where sustainable design efforts are as integral as the building program.

At this first assessment, goals are determined for the sustainable strategies. The progress towards meeting these goals is periodically be reviewed and evaluated: each project undergoes a rigorous quality review procedure at the end of each design phase, including an evaluation of the sustainable design efforts.

Kitsap County Administration Building

In addition, we have created a quarterly 'Quality Green Reviews' which push the sustainable design envelope of projects internally. This voluntary lunch hour event is an opportunity for all staff to participate in a brainstorming exercise to improve the environmental footprint of our buildings. Each projects receives a report and a score based on the input received by the Quality Green Review panel. 26 standard points are available, plus additional points for extraordinary efforts. In 2011 we have reviewed the UW Gould Hall Renovation (score: 20) and Bothell Civic Center (score: 16). An example of the scorecard is shown on the next page.

Sustainable Possibilities Matrix

UW Gould Hall (project name) | Feb. 16, 2011 (date) | Pre-Design (phase) | 20 (score)

	Strategy	YES	NO	?	Mission Bonus	Specific Goals	Notes	Follow-Up
SITE		1						
S 01	Urban Agriculture		x					
S 02	Stormwater Infiltration		x					
S 03	Habitat Creation	x				possible plant-cleansers near air intake		
S 04	Brownfield Rehabilitation		x					
WATER		0						
W 01	Rainwater Collection		x					
W 02	Greywater System		x					
W 03	No Potable Water for Irrigation		x					
W 04	Rehabitate Lost Streams		x					
ENERGY		1						
E 01	Meeting the 2030 Challenge		x					
E 02	Renewables: Photovoltaics	x				demonstration panels on roof		
E 03	Renewables: Solar hot water		x					
E 04	Renewables: Wind		x					
E 05	Geothermal Heat-Exchange		x					
E 06	District Energy		x				already on district steam	
E 07	People Power		x					
	Energy Efficient Lighting	x				LED's, new fixtures for demonstration value		
	Coffee Shop Appliances	x						
	Integrated Window Shades	x				controlled daylighting		
E 99	Envelope R-Value*	0				try R-30 glazing		
MATERIALS		7						
M 01	No PVC	x			x			
M 02	No Redlisted Materials	x			x	careful selection of finishes		
M 03	FSC certified wood (50% min)	x			x	regional priority		
M 04	Made in USA	x						
M05	Salvage	x				reclaimed wood floor, salvaged steel road plates		
	Recycle	x				recycle concrete from demo etc		
	Embodied Energy Demonstration	x			x		contributed by Adin	
RESTORATIVE		1						
R 01	Planting Trees off-site	x				student led carbon off-set?		
R 02	Indoor Green Wall		x					
COMMUNITY		3						
C 01	Encourage Alt Transportation	x				invite viewing from busstop?		
C 02	Interpretation/Education	x			x	demonstration materials		
C 03	Outdoor Space for Interaction	x				connect busstop to entry?		
OTHER		2						
O 01	Sustainable Maintenance Plan	x				green cleaning?		
	Air Quality Improvement	x				investigate CO2 and odor scrubbers for air intake		

TOTAL 15		5 Mission Bonus

* Average of walls, glazing, roof and floor, per sf (see worksheet or ENV-UA minus slab)
Mission Bonus: if strategy aligns with project mission or office goals, mark here.

We participate regularly in the life cycle cost analyis process for our projects. In addition to life cycle cost we also look at carbon emissions costs and we coordinate continually with our mechanical consultant to find the optimum energy cost/value solution.

We have implemented a post-occupancy evaluation (POE) process to learn from our past projects and to help improve the performance of our future projects. The POE consists of two primary parts: one is a client interview about how well the building is meeting their functional needs. The second part is an analysis of available energy and water use data to determine how well the building is performing.

We use the POE process to compare goals to reality – what was achieved, what was not? We use it to obtain input and provide feedback to consultants on their performance. We use it to understand the degree to which sustainability principles are working, and to gather real data on building performance. Lastly, we use it to identify problem areas in our buildings and assist in implementing remedies.

All of this is important to our pursuit of sustainable design strategies. Feedback from clients tells us how well our design process is working. More importantly, it tells us how well our integrated design approach has worked. Building operations and maintenance issues highlight areas where the design team may need to improve coordination. Analysis of the utility bills helps us to evaluate if buildings are performing as intended, and also how well our projects perform compared to others.

THE BUSINESS STRATEGY

Our Sustainable Business Strategy is pretty basic: We attempt to demonstrate to our clients that sustainable design is simply good design - from an environmental, social and economic perspective. This triple bottom line, which is well documented and increasingly accepted in the business community, serves to balance the various factors contributing to a sustainable project. We have found over the years, that most clients enter the sustainability discussion primarily through one of those three points. We have also found that, more importantly, keeping them interested in advancing the sustainability discussion requires objective and favorable data on the economic leg of the triple bottom line. The good news is that we are increasingly able to demonstrate the financial benefits of designing sustainably and we are also encouraged that the business community is increasingly valuing sustainability as a viable business strategy.

On all of our projects, we make every effort to work with our clients to deepen their knowledge base so that they can make more sustainable decisions in the design and planning of their facilities. These decisions must recognize the financial as well as the environmental and social benefits of various options, considering them in the context of the overall cost of ownership, instead of simply looking only at initial capital costs. Putting sustainability on the right side of the value equation for our clients has been a recent focus for the firm. We strive to help our clients understand the market drivers that make sustainability an important component in their business model and to communicate those principles effectively so that we can better assist them in making the right decisions on their project.

We are currently in the process of developing tools to better describe "The Business Case for Sustainability" to our current and prospective clients. One of our Partners – Scott Wolf – graduated from the Presidio Graduate School's Executive Education program which provides a forum for researching this topic in greater detail and generating methods for communicating the information more effectively. We have been focusing on this topic within the firm for a number of years, but recognize that having a more thorough and refined knowledge of financial issues would help us to be more effective in convincing our clients to make better sustainable decisions that will have a positive impact on climate change throughout the design, construction and operations of their projects.

We have also made great strides in the past few years to green

our own office and improve our internal business operations. We have worked with the Seattle Climate Partnership to analyze our firm-wide operations and carbon footprint and have made changes that result in being a Net-Zero Carbon office. A high percentage of our employees either walk, bike or take public transportation to work.

We also try to walk the walk and donate both time and money to causes and organizations that support environmental stewardship in our region. We participate in the 1% program (www.theonepercent.org) through which we donate 1% of our total annual labor hours to non-profits and other organizations that need to retain architectural services but don't have the financial resources to do so. For more detail on our stewardship in the community, please refer to the end of this document.

STAFF TRAINING POLICIES

Today, 73% (up from 70% last year) of our architectural staff members are LEED® AP's (32 of 44). LEED® accreditation of technical staff is a key consideration in hiring and promotions. The office pays for LEED® exams and all staff has access to an education stipend (both time and money) each year to spend on seminars, conferences and lectures. After five years of employment each staff member is eligible for a travel stipend, which can be used for research in the field.

All staff are prompted for ideas on how to make the office and our projects 'greener' during annual performance evaluations. Several ideas such as kitchen composting, an office bike as well as cork and cell phone recycling have been implemented as a result of staff input. Occasionally we host a design charette with all staff, pondering bigger ideas such as a green roof for our office building, or a photovoltaic panel demonstration station.

OFFICE EDUCATION & ACTION

The office supports our "Mixed Greens" committee which is responsible for arranging five lunch-time events a year which focus on sustainable design issues, as well as lessons learned. Recent topics have included: an update on our progress towards meeting the 2030 Challenge, Red-Listed Materials: Why Not and What Else? Salvage & Deconstruction, Advanced Framing and tours of the green roof on our city hall as well as a tour of the local steam plant which is pioneering a new furnace using urban waste wood. These lunch-time events are eligible for AIA continuing education credit.

The "Mixed Greens" event on the Red-List Materials resulted in the general consensus to ban PVC from all of our projects to the extent legal/possible. This will be a long process and to aid the staff with this goal a special Red-List task force was created. This task force is devoted to clean up the specifications and to assist with client and staff education on the topic. The task force is also going to create an educational pamphlet which identifies the detrimental environmental effects of PVC to educate both our staff and our clients.

Furthermore, the task force is working with product representatives to address red-listed materials in their in their products. This has resulted in several manufacturer's evaluation of their methods. One recent example is a discussion with Prosoco regarding their Wetflash product. Prosoco had been working on a phtalate free version, which was deemed to costly to pursue. Discussions with our task force convinced them that a phtalate-free version would have a market-edge worth developing (see Green Giant Award on page 4).

Miller Hull Volunteer Party

SUSTAINABLE OPERATIONS

OFFICE FOOTPRINT

We have been estimating our carbon footprint since 2007 as part of our participation in the Seattle Climate Partnership. These figures include some assumptions, as our building does not provide separate meters for each tenant. We use these totals to offset our carbon emissions via the Bonneville Environmental Foundation.

The chart below shows our office's annual electrical consumption.

POWER

YEAR	ANNUAL ELECTRICITY USAGE	
2007	311,897 kWh	
2008	327,631 kWh	(+5%)
2009	320,545 kWh	(-2%)
2010	223,857 kWh	(-30%)

We have raised/lowered our thermostat set points to 72 degrees to reduce the heating and cooling needs. Almost all of incandescent light bulbs have been replaced with compact fluorescents. We are investigating 'thin computing' as a power saving alternative to desktop computing and anticipate moving in that direction by the end of 2010. We are going to talk to the building management about participating in the 'green' power program, which supports the development of renewable energy resources in the area.

OFFICE WATER USE

The hot water supply is constantly circulated to reduce water use. Currently, the four faucets in the bathroom and the single faucet in the kitchen are not the low-flow type faucets and neither shower is equipped with low-flow shower heads. We are working with building management to retrofit all faucets with flow reducers. The six toilets are neither low-flush nor dual-flush. Refurbishing the toilets would require a substantial remodel, and is currently not planned.

STAFF TRANSPORTATION AND TRAVEL

Travel for out-of-state projects comprises the largest slice of our carbon emissions pie. We make an effort to combine trips, share rides and substitute teleconferencing as much as possible. We have reduced our office fleet by one car and increased the overall gas mileage from 17 mpg to 31 mpg over the past 3 years. Our office fleet for local travel now features two Toyota Prius (Green Score: 52), and one Toyota Highlander Hybrid (Green Score: 39). We also have an office bike for short (and casual) trips. Employee commuting is subsidized if mass transit is used. There is also a financial benefit for bicycling commuters, as well as showering facilities. There is no free automobile parking for employees and we have successfully worked with building management to increase bike parking spaces by revising our office vehicle parking. This simple change has added 20 bike parking space (which are full every day in the summer).

The chart below reflects business travel as well as miles commuted by employees, in miles per employee.

TRAVEL

YEAR	TRAVEL	COMMUTE
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

In 2010 office staff participated in Seattle's Parking Day

OFFICE EQUIPMENT & SUPPLIES

Almost all of the equipment in the office has an Energy Star® rating. The remaining non-Energy Star® items will be replaced in the near future. New furnishings are fabricated from FSC® certified wood. Our office manager searches for the highest recycled content paper and plastic products, and orders reusable items where available.

Cups, plates and other disposable kitchen ware is made of compostable materials with recycled content. We are in the process of changing all of our cleaning supplies to green products only. We will discuss the general building cleaning supplies with the building management to determine if a change towards more sustainable products is advised.

OFFICE PAPER USE

Paper use has been reduced significantly in just this past year. We are instituting electronic shop drawing review, and encourage electronic communications over paper correspondence. Double-sided printing is the office standard, and draft prints as well as old stationary is bound into scratch pads for reuse. As much as available, our paper stock contains recycled content. We are continually requesting updates on recycled content material from our printers.

The chart below shows our annual supply of paper purchased, in sheets.

PAPER

YEAR	PAPER	
2007	2.167 million	
2008	3.328 million	(+35%)
2009	1.645 million	(-49%)
2010	0.880 million	(-53%)

WASTE & RECYCLING

In late 2008 we convinced our building management to sign up for commercial compost pick-up service. The collection of compostables has reduced our trash volume considerably: we calculated that this effort removes one full boxcar from the daily trash-train a year. Other efforts to reduce trash include cork recycling (to a floor tile manufacturer) and cell-phone and rechargeable battery recycling (industry sponsored). We are investigating the options for CFL light bulb recycling.

The chart below tracks our waste and landfill reduction through recycling and composting, in tons.

WASTE

YEAR	WASTE	RECYCLE	COMPOST
2007	13	18	-
2008	14	19	-
2009	10	18	2
2010	7	11	2

CATERING GUIDELINES

Our office hosts two or more large lunch meetings a week, with about 25 to 40 people attending. The waste from these meetings used to be huge, with individual sandwich boxes, wrappers and plastic water bottles. To reduce the waste we have implemented the following requirements:

- Sandwich platters and salad bowls instead of invidual lunch boxes
- Reduced and only compostable packaging
- No bottled water
- Provide drinks for 50% of expected attendance
- Provide 20% vegetarian fare (to be increased to 35%)
- Provide food from local and organic sources (as available)

We ask that meeting attendees bring their own cups and their own drinks (for example water from the filtered faucet). Discussions about our sustainable goals with caterers as well as lunch presenters who have their own meal providers have created awareness that our firm insists upon reducing waste

and is serious about environmental stewardship.
Overall, the office energy and resource use is dependent on the number of employees and the Seattle Climate Partnership tool helps us reduce the overall use of energy and materials, travel and transportation, as well as waste generation into a tidy overall emissions number per employee.

The chart below shows the average CO_2 emissions per employee, based on overall office operations, as calculated for the Seattle Climate Partnership.

CARBON

YEAR	CO_2 EMISSIONS PER EMPLOYEE	
2007	2.5	
2008	4.0	(+38%)
2009	3.4	(-15%)
2010	5.6	(+64%)

The office donates dollars for miles biked by employees

MORE...

OFFICE INDOOR AIR QUALITY

The tenant improvement plans at the time of our move-in, as well as currently, specified the use of low-VOC paints, stains and glues. The filtration media on the air conditioning equipment is changed 4 times a year. We are still developing a design for a small vertical green wall planted specifically to address air pollution such as might be generated by printing and photocopying equipment.

PROJECT SPECIFICATIONS & MATERIALS

We are in the process of updating our specifications to eliminate certain redlisted materials such as PVC, plated products, endangered wood species and others. At the same time, we are purging our materials library of these materials, and are advising manufacturer's representatives that redlisted materials will be tagged as such. Project quality control reviews will include a materials review designed to highlight inappropriate materials if included.

STEWARDSHIP - COLUMBIA LAND TRUST

In order to expand our emphasis on sustainable environmental design, Miller Hull established a stewardship project that reflects the same care we place on our built projects towards the conservation of land, water and wildlife in our surrounding habitats. Out of this was born the Miller Hull Legacy Project. While there was never the intention of partnering with a single organization, a "natural" partnership evolved with Columbia Land Trust that has led to six Miller Hull Legacy Projects so far. Teams of volunteering employees have planted thousands of native trees, removed miles of scotchbroom and other invasives, and deconstructed barns in an effort to return the banks of the Columbia river to its natural state. So far, it has been six seasons of a highly rewarding partnership.

In addition to the Legacy Project, we support many other environmental causes with donations. This includes the Cascadia Green Building Council, What Makes It Green, the

North American Association for Environmental Education, the Puget Soundkeeper Alliance, FutureWise and Climate Solutions - Network for the Good.

COMMUNITY

To round off our sustainable efforts we contribute to our community via Public Architecture's 1%. The 1% connects architecture and design firms willing to give of their time pro bono to non-profits and other groups that need architectural services. Launched in 2005 with the support of a grant from the National Endowment for the Arts, The 1% is a first-of-its-kind effort to encourage pro bono service within the architecture and design professions. Miller Hull is a long-time supporter of, and proud participant in the 1% Program, having provided over 4,000 hours of pro bono service on more than 50 projects since 2005.

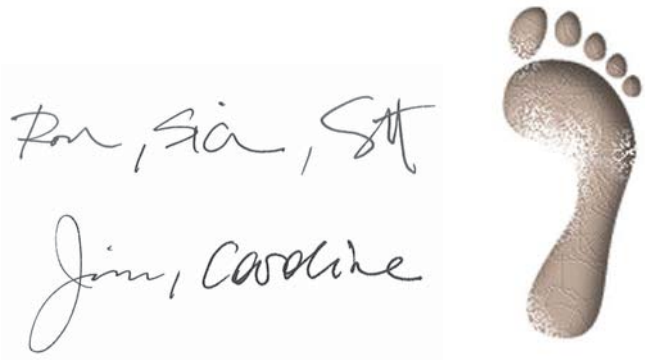
The work that we have donated through this program includes traditional architectural design services as well as planning/programming efforts, feasibility studies and fundraising materials for capital campaigns. We have worked with a wide variety of non-profit organizations on projects as far ranging as an orphanage in Sri Lanka and a hospital in Afghanistan, to closer-to-home efforts for the Loon Lake Food Bank in Spokane, an Alcohol & Drug Dependency Recovery Center in Moses Lake and an administration and technology learning center for the Technology Access Foundation (TAF) in White Center. TAF is a non-profit foundation with a mission "to prepare underserved students of color for success in a technology-driven world by providing technology and life skills training.

In addition to the 1% our staff donates, volunteers or otherwise contributes to a variety of causes in the Puget Sound area:

- Each year we host a craft sale (crafts by employees are auctioned off) to support Food Lifeline.
- Each Christmas we collect clothing and household items for Youth Care
- Each year employees donate to United Way (typically with an office match, though this is currently suspended due to austerity measures).
- Every other year we collect donations for Pasado's Safe Haven (animal charity) via the sale of a calendar featuring employee's pets.

We are proud to be part of a enthusiastic and dedicated staff and leadership commited to sustainable design.

December 2011



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