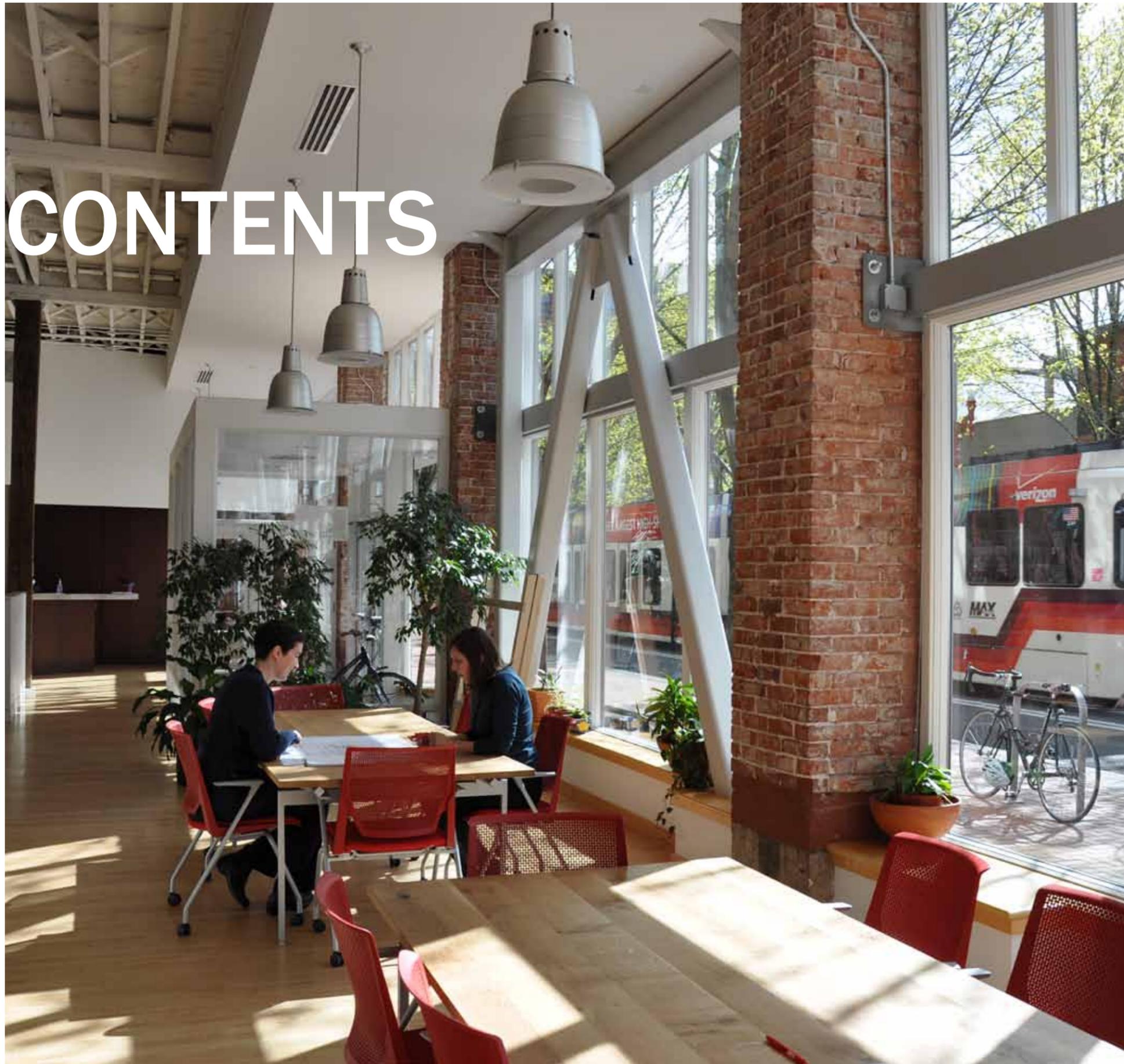




Sustainability Action Plan

SERA

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*“We shape our buildings, thereafter they shape us.”
-Winston Churchill*

WHY BUILT ENVIRONMENT?

SERA'S COMMITMENT

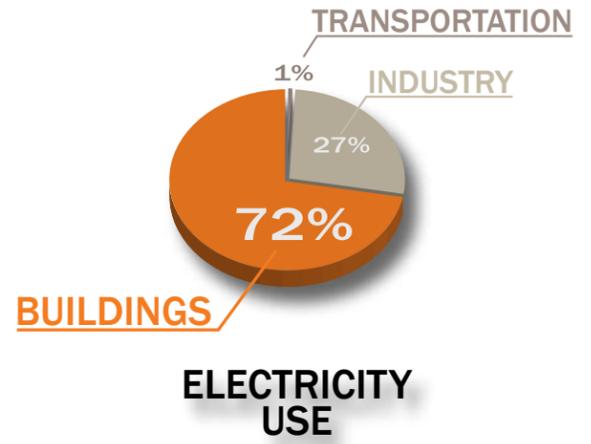
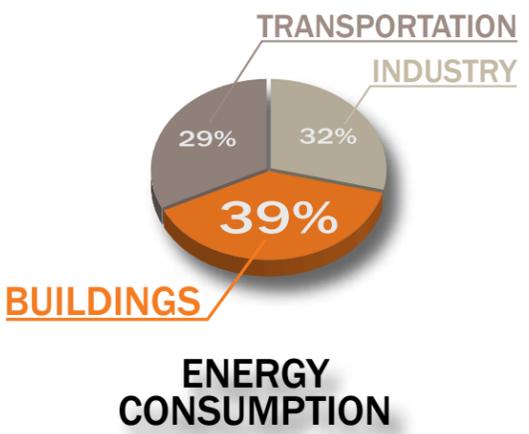
The buildings in which we live, work, and play are the largest sources of greenhouse gas emissions in America; the communities that we live in determine our transportation choices; even the carpets we walk on affect our health. At SERA, we recognize that sustainability is not just a building-driven issue, it is a built environment-driven issue. To address this reality, our office integrates architecture, urban design and planning, and interior design to create places that enrich lives and endure for decades.

We recognize the reality of the context in which we design – we can't change the past, but we can shape the present and future built environment to be more sustainable, more efficient, materials less toxic, and more beautiful.

As architects and designers, we understand our responsibility as leaders in creating a sustainable built environment. We believe we must alter our profession's practices and encourage our clients and the entire design and construction industry to join with us

to change the course of the planet's future. A major effort is required to reinvent current design and construction practices to promote regeneration of natural resources and to realize significant reductions in the use of natural resources, non-renewable energy sources, and waste production.

This Sustainable Action Plan is intended to be a living document in which our goals and strategies are constantly evolving as we learn and grow. We aim to be honest and transparent as we experience both the successes and challenges associated with our sustainable design efforts. We understand that the path to a sustainable future is just that, a path. It is not likely that we will ever declare our efforts in this arena as complete—to do so would be to disregard the complexity of the systems, practices and interrelationships involved with a truly sustainable practice. But we can always be setting goals to push our built environment to be more beautiful and have the least impact on the earth.



Source: Energy Information Administration Annual Energy Review 2008

BUILDINGS ACCOUNT FOR:

38% of all CO₂ emissions



40% of all raw material use



30% of all waste output



14% of all potable water



Source: U.S. Green Building Council Sustainability Action Plan

“If you don’t know where you’re from, you will have a hard time saying where you’re going” - Wendell Berry

SERA’S APPROACH

OUR APPROACH TO SUSTAINABILITY

Founded in 1968 (as The Design Collaborative) during Portland’s downtown renaissance, SERA was fundamental in planning and building a city that was revitalizing its downtown during a period of widespread flight from urban centers across the United States. SERA’s genesis came from within the context of heightened environmental sensibility of the 1970’s and national legislation such as the creation of the Environmental Protection Agency under Richard Nixon and the Clean Air Act under Lyndon Johnson. This legislation allowed local leadership, including founding Principal Bing Sheldon (Chairman of the Planning Commission during this time), to focus on public transit, urban growth

boundaries and walkability. During this era, SERA worked with Bill Naito to bring retail to downtown (The Galleria), restore historic structures (The New Market Building, Portland City Hall), and revitalize old manufacturing infrastructure for new uses (Montgomery Park).

SERA and its future evolution rests on the foundation of its original values – urban infill, re-use, and redevelopment as important strategies in creating community. Today SERA is recognized as a national leader in sustainable design, with extensive experience in LEED and other green building strategies such as the Living Building Challenge (LBC). Our history has set the

stage for designing a net-zero energy and net-zero water project - the Oregon Sustainability Center (a collaboratively-designed net-zero energy/net-zero water Living Building high-rise envisioned in downtown Portland, OR) is currently in design.

SERA approaches sustainable design and planning as a basic responsibility. A holistic, integrated design process that applies sound strategies of construction and planning to yield long-term economic benefits, healthier people and stronger communities.



oregon sustainability center



the design collaborative



the galleria



new market building



portland city hall



the nines



edith green wendell wyatt federal building



“If you want things to be different, perhaps the answer is to be different yourself.” - Norman Vincent Peale

SUSTAINABLE OPERATIONS

LOOKING INTERNALLY

SERA's commitment to sustainability begins with the way we run our own office operations. We believe that a fully sustainable workplace is the logical first step towards practicing sustainability in our projects and helps nurture a culture of sustainability. By “walking our talk” we continue to discover new ways to preserve and conserve resources.

Our staff learn from these discoveries, and the change ripples out into the world. The internalization of environmental values provides a foundation to encourage these same values from the people we work with outside the office. SERA has been able to influence and impact such diverse markets as material suppliers, architectural reprographics services, and the local catering market.

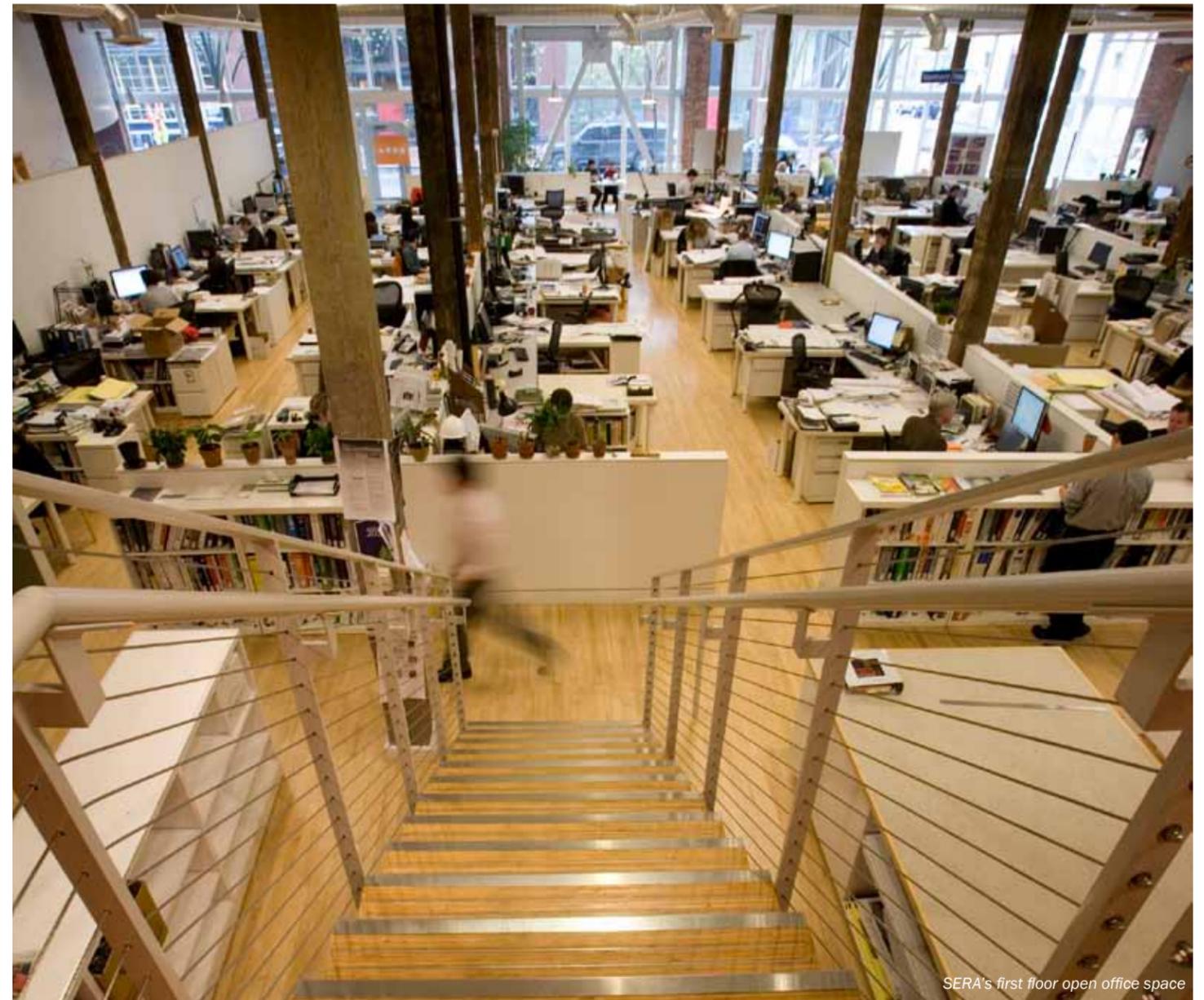
THE NATURAL STEP

The Natural Step (TNS) is a comprehensive model for planning complex systems (businesses) and making sustainable practices both achievable and economically feasible. SERA began to utilize the methodologies of TNS in regards to our construction practices as early as 1997, reorienting our firm's guiding principles to focus on sustainability, incorporating LEED into our specifications and strategically hiring individuals who were oriented towards sustainability. All of the principals of the firm also went through an intensive two-day TNS workshop.

In 2002, the firm began a nine-month comprehensive backcasting analysis of our in-house operations. The backcasting team used a process that reverses the standard forecasting approach by first establishing a future vision of sustainability – to create a fully sustainable workplace, evaluated against the Four System Conditions of The Natural Step – and then work backwards to develop the steps required to achieve that vision.

The lessons learned from the backcasting process continue to permeate all aspects of SERA's culture and operations. After analyzing all of the firm's operations, we began to make numerous changes in how we do business on a daily basis. The original committee that went through the backcasting exercise evolved into the Sustainable Action Committee. This committee initially focused on all aspects of sustainability, both internal operations and for our projects. As our firm has grown and developed its expertise, SAC now concentrates on internal operations, while new groups, such as the Sustainability Resources Group (SuRG), monitor projects and policy initiatives.

SERA is a featured case study at The Natural Step Website:
<http://www.naturalstepusa.org/case-studies/sera-architects.html>



SERA's first floor open office space

SUSTAINABLE OPERATIONS



Offices along Portland's downtown transit mall



Sketch pads made from single-sided scrap paper



Educational office signage



Organic cotton napkins and real dishware



Conducting a waste audit



The office bicycle



TRACKING ENERGY USE

The electricity in SERA's leased office is separately metered, and we read and record the meter weekly. This allows us to accurately track the effectiveness of our energy reduction measures. Our in-office energy reduction strategies include daylighting, occupancy sensors, daylight sensors, EnergyStar compliant equipment and appliances, solar powered faucets, fluorescent lamps and a policy requiring employees to turn off computers each night. For the electricity use, we purchase 100% wind power. Though unusual in a leased space, SERA owns its own mechanical systems, giving us control of the systems' efficiency.



GREENING OUR PROCUREMENT

SERA's Office Supply Procurement Policy stipulates that the products we use be made with the highest percentage recycled content available, be manufactured not to harm the eco-system, with preference given to products produced locally by socially responsible organizations. 95% of the firm's supplies come from a local distributor and a local manufacturer of sustainable office goods. In selecting office furniture, SERA considers third party certifications, recycled content, recyclability, location made, product stewardship, comparison to Living Building Red List, and durability.



WATER USE REDUCTION

SERA uses our office as testing ground for low-flow fixtures to help us better understand water use reductions and qualitative effects of fixtures. This opportunity to test drive the various water fixture technologies benefits our staff and also our projects by showcasing efficient and high-performing fixtures while meeting our water reduction goals. We have aerators in all the faucets, low flow and dual or power flush toilets in the bathrooms, and an ever-changing set of low-flow showerheads for bike-commuters to test out and offer feedback.



PAPER USE

SERA uses a paperless central file system (except when paper documents are legally required), and produces electronic documents instead of paper copies for our drawings, mark-ups, transmittals, and submittals. All default print settings are double-sided and black & white, and our standard copy paper has 30% post-consumer recycled content. All marketing material is printed on 100% post-consumer recycled content paper (as is our plotter paper), manufactured using wind power in the USA, and is completely recyclable. One-sided scrap paper is collected and bound into sketch pads for office use. We also push local businesses to offer greener (and greener) products by issuing annual Requests for Proposals to the local printing companies challenging them to find more sustainable ways of printing, specifically, the elimination of foam core for more ecologically sound corrugated cardboard.



WASTE REDUCTION

SERA workstations don't have individual trash bins (recycling boxes only) making all waste sorting a conscious act. We utilize centrally located sorting bins for various recyclables and have only one main bin for landfill waste on each floor of our office. We divert "clam shell" food containers, plastic bags, Styrofoam, batteries, fluorescent light bulbs and CDs from the landfill by providing extensive recycling beyond curbside collection. We also compost all food scraps and paper towels. Additionally, SERA participates in Terracycle, a program that turns hard-to-recycle items (such as chip bags, energy bar wrappers, and ink cartridges) into affordable green products.

We conduct an annual waste audit to monitor the effectiveness of our comprehensive waste sorting system. The waste audit is an opportunity to re-educate staff on waste sorting techniques and expose possibilities for further waste reduction or diversion. As a result of the information gleaned during our 2009 waste audit, we began composting paper towels from the restrooms with the permission of the City of Portland's Office of Sustainable Development, which reduced our waste by more than 30%.

SUSTAINABLE OPERATIONS



PEOPLE

SERA is 100% Employee Stock Ownership Plan (ESOP) with a greater level of engagement and entrepreneurial involvement than is customarily found in an architectural firm. Being employee-owned is a direct reflection of our commitment to The Natural Step's Fourth System Condition: "In a sustainable society, people are not subject to conditions that systemically undermine their capacity to meet their needs." Empowering our staff in decision-making is one of SERA's fundamental values.



EMPLOYEE COMMUTING

SERA's current office was selected for its central location along the downtown transit mall, within a 1/4 mile of 4 light rail lines and 36 bus lines. We have a commute policy that rewards those who do not use single occupancy vehicles for commuting, and consequently we don't provide parking at our downtown office. We provide public transit passes to those who commute via public transit, and provide an equivalent cash bonus to those who commute by walking, bicycling, or carpooling. We track employee commute practices with a daily sign-in system to understand the carbon impacts of commuting.

SERA supports a strong bicycling culture with secure indoor bike storage, an office bike, changing rooms, and a showering facility. The office also has hybrid office cars for daytime travel such as job site visits.

BIKE COMMUTE CHALLENGE

SERA enthusiastically participates in the annual bike commute challenge in Portland, OR put on by the Bicycle Transportation Alliance. Competing against similarly-sized businesses on the measure of highest percent of commutes to work taken by bike, SERA has repeatedly placed in the top 10.

The bike commute challenge is an opportunity to test out various strategies of occupant engagement on our office, trying out different methods of creating a competitive spirit in the office — all towards the shared goal of greening our transportation options.



BUSINESS TRAVEL

SERA's Travel Policy includes some key sustainability features. We contract with a local rental car company and have a baseline requirement for hybrid vehicles, unless there are extenuating circumstances. The carbon emissions generated by our airline travel are mitigated through our carbon offset process. We are currently developing a strategy to have our offsets reimbursed as a client-paid expense for projects with significant travel. We implemented significant technology upgrades in our office to facilitate greater web-conferencing capability to minimize our travel whenever possible.



GREEN HOUSEKEEPING

Our cleaning service is provided by a local woman-owned business that uses only non-toxic, biodegradable cleaning products and stocks our restrooms with paper products made from 100% recycled content. We also work with them to ensure that all waste gets into the proper streams when disposal goes beyond curbside and composting.



CATERING AND MEETING POLICY

Our catering policy is constantly revised and refined to better reduce waste, encourage sustainably-sourced food options, and support local sustainable businesses. The basics of this policy state:

- No box lunches or individual packages — family style service only
- Washable, reusable or recyclable containers for food only
- No disposable plates cups or napkins as SERA has dishware, cutlery and cloth napkins in-house
- No plastic dome lids and wraps on foods (aluminum foil acceptable)
- Food should be organically grown, natural, and locally-produced
- No bottled water

We have video conferencing capabilities for interviews, webinars etc., and recently added an additional conferencing facility this year.



OFFICE RENOVATIONS AND UPGRADES

SERA's ground floor achieved LEED-CI Gold through the pilot program. Some of the highlights include separate energy monitoring for light, mechanical and plug loads, 92% re-use of furniture and a reduction of material use by leaving existing surfaces exposed. When we expanded in 2006, our new second floor space was certified LEED-CI Platinum, with highlights being 100% green power purchased; re-use of salvaged stair and riser treads from the deconstruction of a nearby office; light fixtures over work stations that have occupancy, daylight and individual controllability; and low-emitting paints, sealants, adhesives, and carpet. As our company continues to grow, the same decision-making processes inform all of our decisions and formalize in our policies and procedures.

“To be pleased with one’s limits is a wretched state.” - Goethe

SUSTAINABLE DESIGN GOALS

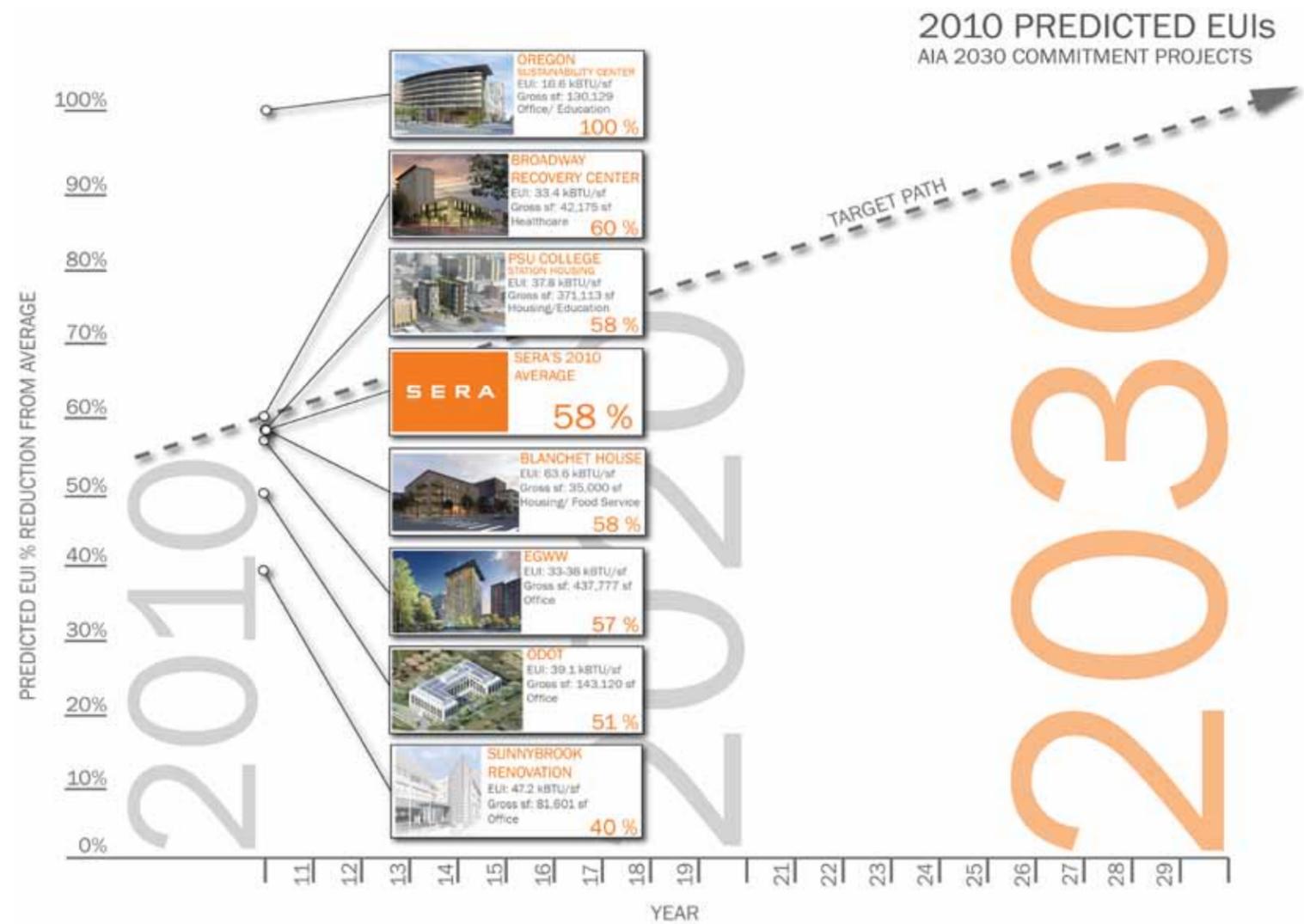
RAISING THE BAR, MOVING THE PACK

SERA always strives to envision and create more sustainable physical environments. To ensure momentum in our efforts, we use the backcasting process to help us identify a long term goal and the intermediate steps to get there. The AIA 2030 Challenge and the work of Ed Mazria’s Architecture 2030 Challenge are strong examples of the leadership that this model provides by identifying where we are going and the steps we need to take to achieve this goal. With regards to energy, SERA has demonstrated a strong commitment, with a 58% reduction in predicted Energy Use Density (EUI) for our 2010 projects. However, SERA’s sustainability goals are not limited to energy savings; they also address water, indoor environmental quality, and the district scale.

One of the largest efforts that SERA has undergone in recent years is the creation of our culture of constant improvement and change. We avoid getting stymied by tensions that often surround change. However, with a global issue such as sustainability, we realize that our internal cultural change has to be externalized in order to make progress. This is why SERA is constantly engaging those resistant to change outside of our office by helping set standards, removing regulatory barriers, creating tools, and spreading awareness. Our hope is that these external efforts will have an equal – or greater – effect towards our goals.

Over-arching firm goals:

- Participate in sustainable building publications and research
- Incorporate leading edge technology into design at all scales
- Expand policy change in Oregon and beyond
- Deepen local community participation in all of our projects
- Demonstrate the importance of increasing occupant engagement



SUSTAINABLE DESIGN GOALS

ENERGY AND EMISSIONS

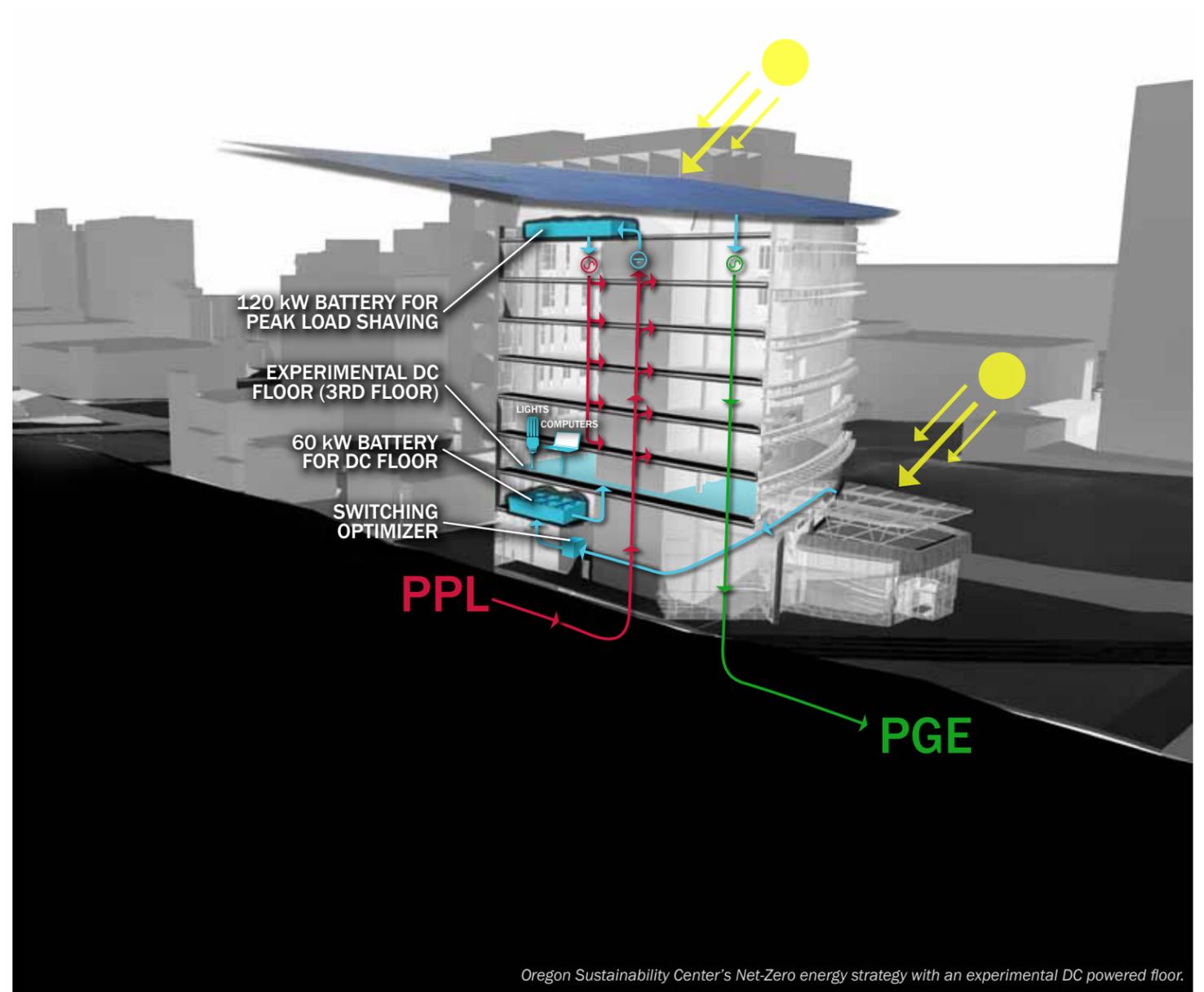
SERA is committed to reducing energy use and its associated carbon emissions. Energy reduction strategies such as efficient building envelopes, advanced daylighting design, and improved HVAC systems are critical first steps in reducing overall demand. Occupant engagement, another significant strategy, encourages behaviors that save energy. Once the energy demand has been greatly curtailed via building improvements and a shift in occupant behavior, clean and renewable energy sources are employed. Our energy reduction goals address physical design strategies, occupant engagement, and renewable energy sources.

Energy and emissions goals:

- Incorporate solar energy in 10% of our projects by 2015
- Complete a post-occupancy EUI report on 20% of all projects by 2015, 100% by 2018
- Connect a smart building to a smart grid by 2015
- Contribute to the creation of a district-scaled energy system by 2015

CHANGING ENERGY POLICY

As part of our efforts to push the industry towards positive change, SERA has been active in shaping the direction of energy policy. In 2008, SERA was part of The Oregon Governor's Energy Efficiency Legislative Work Group which convened to develop recommendations relating to energy efficiency in the built environment. This led to the creation of Senate Bill 79, a directive to the Oregon Building Codes Division to develop and administer a "Reach Code" in which SERA was also actively involved. The goal of the REACH code is to help lead the next generation of energy codes — as energy codes ramp up quickly to meet goals of energy use reduction — and help the industry get prepared for ever-increasing standards. Kate Turpin, an Integrated Design Specialist in the Sustainability Resources Group here at SERA, played a pivotal role in setting the standards and communicating them to the industry.



SUSTAINABLE DESIGN GOALS

WATER

Reducing potable water use is a key sustainable design goal for SERA. Significant reductions in overall water use can typically be achieved only through aggressive water re-use. Water re-use, however, is frequently thwarted by two challenges: a mismatch between a building's water uses and available water supplies, and various regulatory impediments. SERA is addressing both of these issues through design work and policy advocacy. It has become clear that water re-use sometimes can only be optimized at a scale larger than the individual building. SERA's architectural and planning studios have therefore begun addressing water and other systems at the district scale, where several buildings – or an entire neighborhood – share resources, balancing out usage peaks and turning one building's "waste" into another's resource. (See the section on District-Scale Systems for a more detailed discussion.)

The challenges of regulatory restrictions on water re-use are many and varied. SERA has worked at removing obstacles to water re-use in Oregon through both research and policy advocacy. After helping identify the regulatory roadblocks, SERA and other organizations lobbied for legislation that has greatly expanded the opportunities for water re-use in Oregon. (See below)

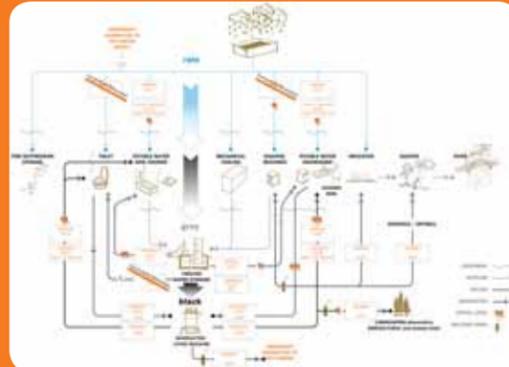
Goals:

- 50% of projects achieve 50% reduction in water use (against Energy Policy Act of 1992) by using water reclaim strategies (rainwater or greywater collection)
- Publish research on hydrological equity by 2015
- Design a district-scaled water re-use system by 2015

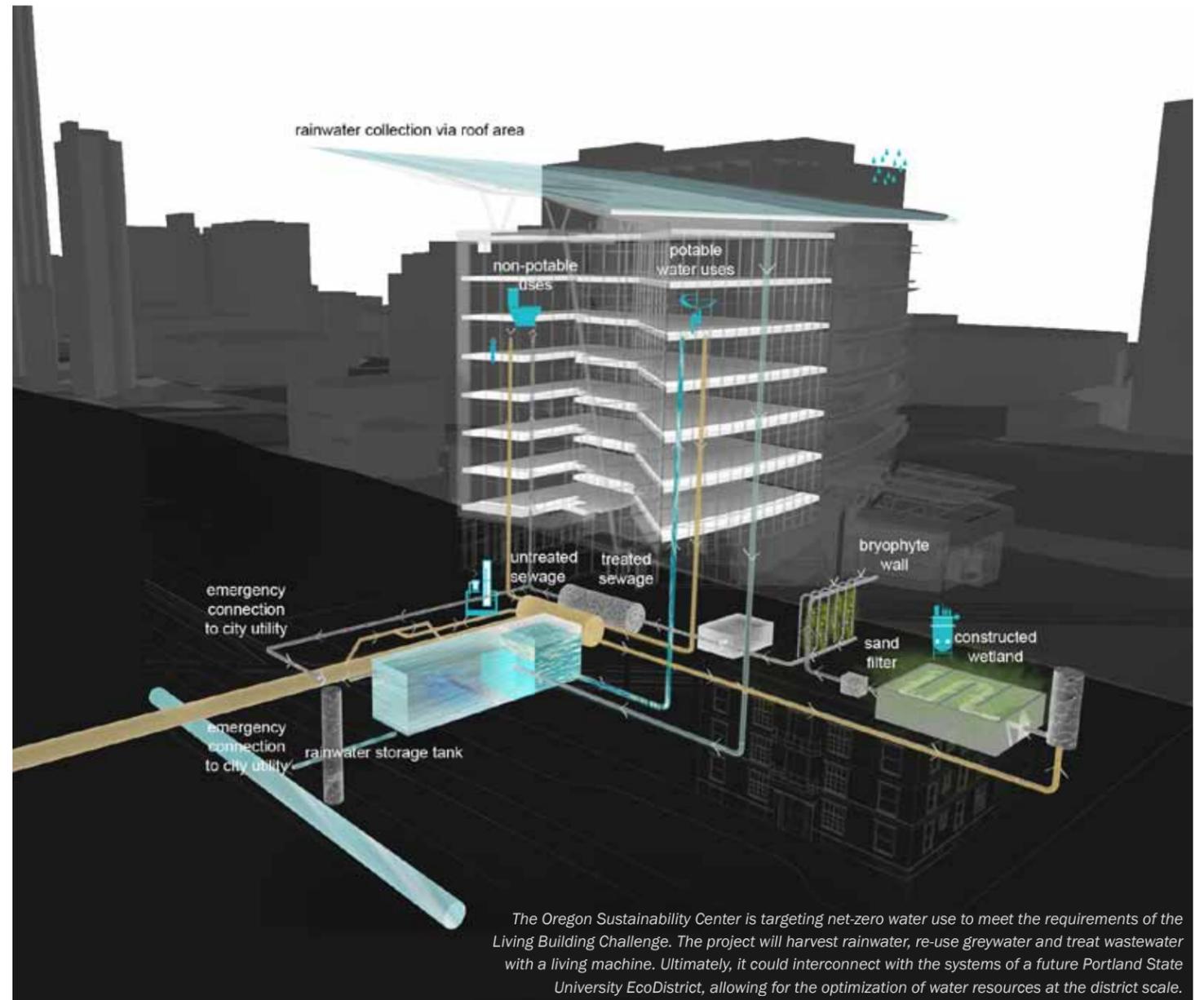
LEGALIZING WATER SAVINGS

SERA has been involved in both research and policy advocacy to remove outdated regulatory barriers to water reuse. In a study sponsored by Central City Concern, a non-profit owner of affordable housing, SERA and the rest of CCC's development team clarified the water systems and regulatory steps required to achieve a water-independent building in Oregon. Achieving Water Independence In Buildings illustrated the barriers to, and opportunities for, water harvesting and reuse in commercial buildings, highlighting what is possible today and how any interested party might navigate regulatory challenges.

The team's work contributed to a transformation of the regulatory environment in Oregon. As a result of efforts made in collaboration with a coalition of interested groups and regulatory officials, Oregon residential and commercial buildings are now allowed to use rainwater for irrigation, toilet flushing and clothes washing, and treated greywater (from sinks, bathtubs, showers, and washing machines) to flush toilets and urinals. Prior to this transformation, commercial buildings in Oregon could expect to achieve a maximum of 30% to 40% water savings by incorporating water efficient fixtures. Now, a building like CCC's conceptual multi-family high-rise development could achieve as much as 60% to 70% water savings by implementing rain and greywater harvesting together with efficient fixtures.



The study is available for download at https://ilbi.org/education/Resources-Documents/Reports-Docs/WaterDocs/Achieving_Water_Independence_in_Buildings.pdf



The Oregon Sustainability Center is targeting net-zero water use to meet the requirements of the Living Building Challenge. The project will harvest rainwater, re-use greywater and treat wastewater with a living machine. Ultimately, it could interconnect with the systems of a future Portland State University EcoDistrict, allowing for the optimization of water resources at the district scale.

SUSTAINABLE DESIGN GOALS

INDOOR ENVIRONMENTAL QUALITY & MATERIALS

SERA is rapidly developing goals around Indoor Environmental Quality, a set of principles that while difficult-to-define, make up the interior environments where we spend nearly 90% of our time. Though setting design standards for this area is ever-developing, SERA is deeply committed to specifying green materials and products that are sustainably manufactured, non-toxic, and have minimal impact on the environment and health of people throughout the materials' lifecycle. In addition, SERA is committed to the mental and physical health of people, and is committed to designing naturally daylight spaces with views to outdoor environs.

Healthy Products and Materials Goals:

- Eliminate urea-formaldehyde in interior products materials and finishes by 2015
- Specify all materials in compliance with LEED material guidelines by 2015
- Specify 100% of all wood products be sourced from sustainably-managed forests in local communities by 2015
- Adopt the 2030 Challenge for Products to reduce the carbon-equivalent footprint of products by 35% by 2015

Indoor Environmental Quality Goals:

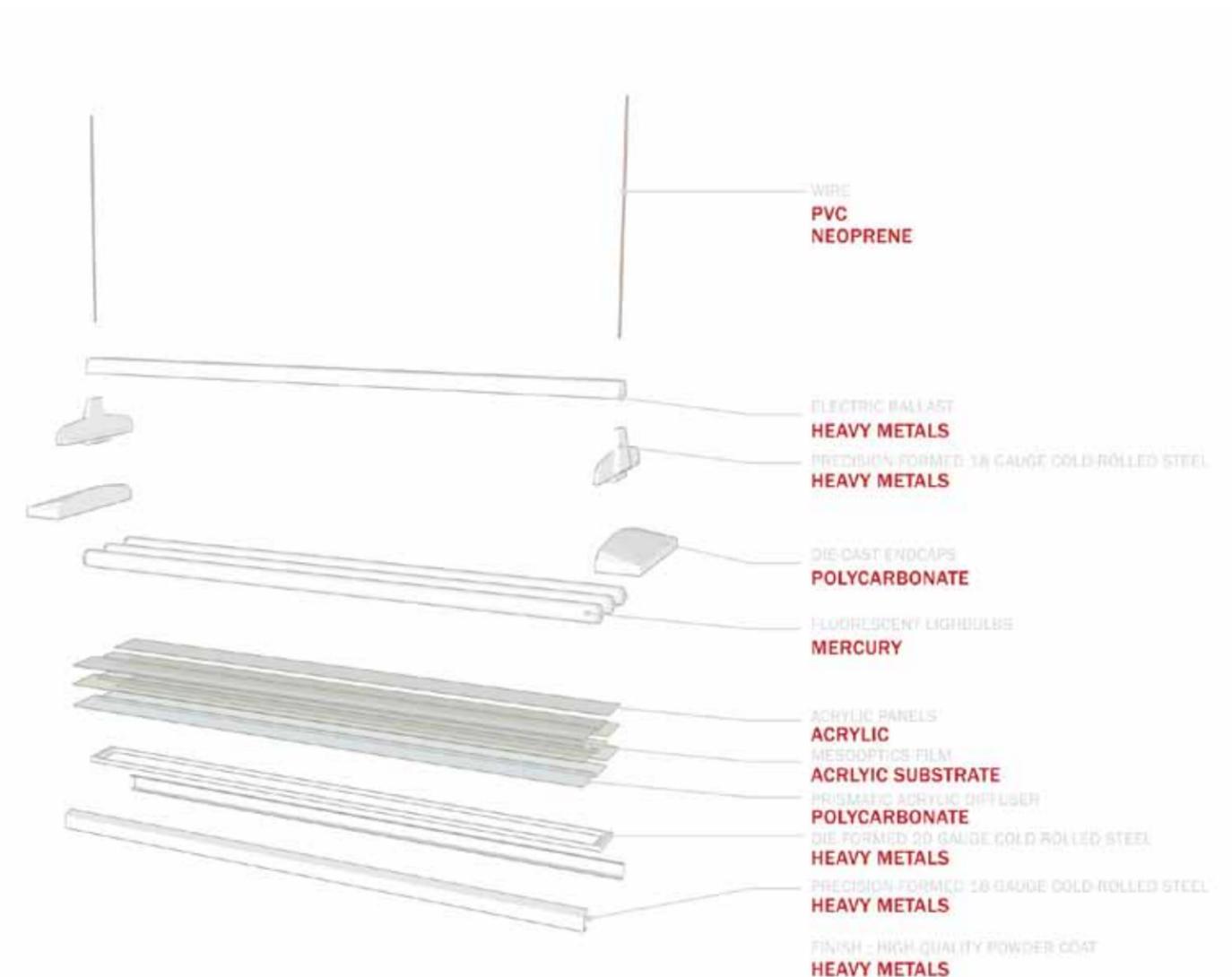
- Provide daylighting for 75% and views for 90% of regularly occupied spaces for all new construction projects
- Develop a framework and tools for assessing, incorporating and prioritizing various IEQ metrics to help projects advance towards optimal solutions for project-specific design criteria and challenges. Highlight both the synergies and conflicts between IEQ and energy efficiency to provide an informed context for decision-making

PRODUCT TRANSPARENCY

In addition to setting minimum standards and removing regulatory barriers, SERA is also working on developing tools to help us design more sustainably. Pharos, one of the tools integral to the SERA material selection process, was initially populated with information by SERA and others in the green building community. Launched at Greenbuild 2009, Pharos allows an unbiased and transparent analysis of products across a variety of impact evaluation areas. We worked with Pharos to facilitate the initial upload of product information and continue to help develop user evaluation tools. Within the office, Pharos has begun to inform our specifications and our in-house building material sustainability database. As our need for a more sophisticated understanding of "ingredients" in the built world around us becomes imperative, Pharos offers the raw information that will enable designers to make informed decisions.

Pharos currently has ten categories in its Building Products Library (BPL), currently evaluated across five impact sectors:

- Volatile Organic Compounds
- User Toxics
- Manufacturing Toxics
- Renewable Materials
- Renewable Energy



Graphic from a product study completed as part of the Living Building Challenge project. Products must be evaluated to ensure their components contain no Red List materials or chemicals.

SUSTAINABLE DESIGN GOALS

DISTRICT SCALE SYSTEMS

A district-scaled system is a geographically defined neighborhood in which the community members, buildings, and the common infrastructure are fully integrated and are established to support a network of sustainable social, ecological, and economic systems. SERA has contributed theoretical, analytical and leadership work to district-scaled systems, specifically addressing the “hardware” (the buildings, streets, parks, etc.) and “software” (the cultural, economic, informational, and resource flows) aspects of this emerging model for linking multiple high performance buildings and shared infrastructure at the district scale.

Hardware and software systems operate at a variety of scales – from the regional, to the city, to the neighborhood, to the block, down to the building. When designing at a district level, it is necessary to consider and allow for each system to optimize at its appropriate scale. Within the district, flows of energy, nutrients, resources, information, financial capital and cultural resources are systematically analyzed. To the greatest extent feasible, they are localized, integrated and synergized to reduce environmental impacts, and to build community connections.

District-scale system goals:

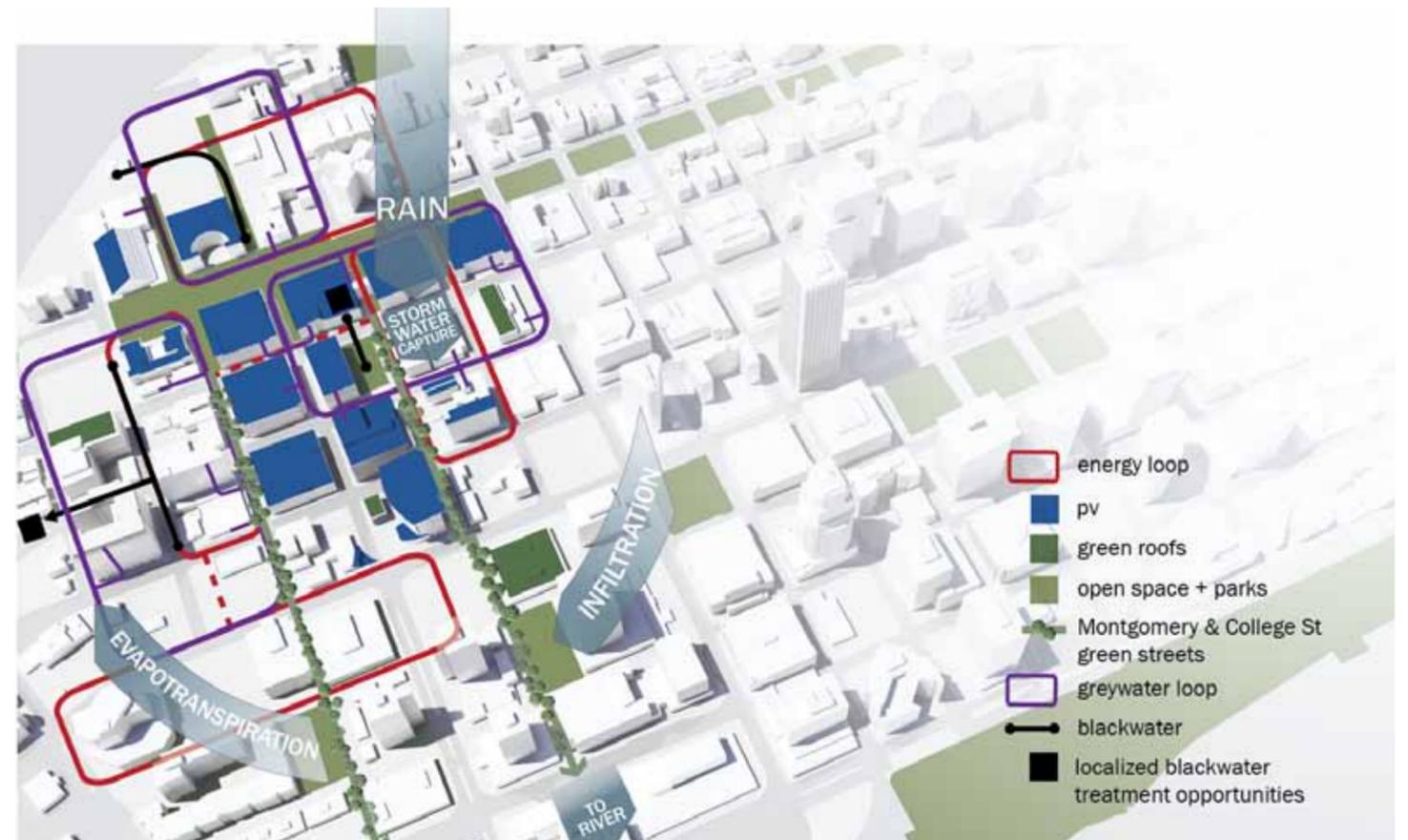
- Resource flows are scaled appropriately
- Energy and water sources are localized
- Food, economics, and cultural resources have strong regional components
- Ideas and culture have global reach with a strong local identity

CIVIC ECOLOGY

Many communities and institutions have begun to realize that attaining sustainability requires careful attention to planning, constructing, and managing a comprehensive framework of community systems. Energy flows, local food production systems, local-global economic webs, social networks, community governance, resource sharing networks, and integrated land use and transportation are just some of the community systems that, when synergized in a specific place, constitute a complex human ecosystem or “Civic Ecology.” Nurturing this web of relationships and flows affords communities opportunities to enhance their local wealth (environmental, economic, and cultural), resilience, and competitiveness, and to take control of designing and managing their future.

Five Principles of Civic Ecology:

1. Employs a whole systems approach
2. Focuses on place
3. Requires a new social contract
4. Matches needs and capacities
5. Is dynamic



The PSU Pilot EcoDistrict is envisioned to create a model that will guide future efforts in Portland and elsewhere, through a rich collaboration of the University, the City and other district residents and stakeholders.

“We are drowning in information, while starving for wisdom. The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely.” - E. O. Wilson

DESIGN PROCESS

INTEGRATED EXPERTISE

SERA is a firm on the forefront of design, fusing social, cultural, economic and ecological insight to create places of lasting significance. Collaborating with visionary clients, we create successful, sustainable environments.

Since the firm's organization in 1968, SERA has been instrumental in the development of Portland's national reputation for livability. This tradition of involvement in urban revitalization, adaptive-re-use projects and historic preservation formed the early foundations of SERA's sustainable design expertise. We later introduced The Natural Step's Four System Conditions and backcasting framework, which catalyzed a transformation of our operations while infusing a culture of sustainability throughout the firm.

Sustainable design at SERA is based in integrated architecture, urban design and planning, and interior design services, utilizing a dynamic team approach that matches talent to the project, using the diverse expertise of our staff of 100+ talented individuals. SERA's Sustainability Resources Group (SuRG) provides in-house sustainable design expertise, research and development, sustainability consulting services, and policy engagement. SuRG is dedicated to an array of sustainable design services including: in-house LEED consulting, early energy analysis and programming, daylighting design and modeling, efficient lighting design, water efficiency and re-use analysis and calculations, building envelope analysis, existing building energy reviews, and a variety of digital performance analyses.

DESIGN APPROACH

LISTEN, LEARN, AND LEAD

We are collaborators, team players, cross-disciplinary thinkers, and committed partners with our clients. At SERA we firmly believe that highly sustainable, climate responsive design cannot hope to be achieved without a truly integrated design process and collaborative design at all levels. Collaborative design has been one of the core principles of our firm since its inception and is the very essence of our practice. From concept, through development and into project completion, SERA is committed to a design approach which demands the full creative involvement of the architect, the design team, and the client. The process is one of listening, asking, analyzing and

engaging the client as a partner in the design process. The collaboration explores possible physical solutions suggested from a thorough understanding of the project's needs and unique parameters of the site. The shared goal is to reveal the project's singular nature and to discover through design an identity that is individual and memorable. Underlying the ability to collaborate is the sense that one can learn.

LEARNING FORWARD

At SERA, we have a healthy disdain for the impossible and are known for asking "why not?" We believe in optimizing value and efficiency for our client partners to optimize their investment. We believe in fast failure. We are willing to experiment and take risks if they serve the needs of our clients, but we are also able to quickly assess if the idea is producing results or not. If the answer is no, we move on to the next innovation in a process we call "learning forward." If our knowledge base is always advancing in the interest of our client, we are moving forward and we can then leverage that knowledge within our entire practice. We have a passion for Research and Development that is well beyond the norm in our industry. We constantly use our R&D knowledge to create new tools that advance the capabilities of our practice and abilities to deliver highly integrated sustainable designs.

ADVANCE UNDERSTANDING RAPIDLY FOR TOMORROW

The need to address sustainability and to innovate is time-critical for our planet and cannot happen fast enough. SERA has been helping to lead this charge nationally for the last 20 years and has achieved both a national and international reputation for advanced sustainability initiatives. We practice a broad-based sustainability we call Civic Ecology that goes beyond just the individual building and looks at all community and district systems and studies how they interrelate to create a real sustainable community.

the model: sustainability analyses; closer coordination of work by design disciplines; the ability of multiple consultants to work directly in the same project model (through collocation); integration of specifications into model elements; 'clash detection' of models from MEP consultants or subcontractors through Navisworks to avoid conflicts in the field; and providing a building information model of the completed building to the owner for ongoing O&M.



DESIGN PROCESS

DATA DRIVEN DESIGN

BUILDING INFORMATION MODELING

SERA's highly integrated design approach relies on the use of sophisticated tools for collaboration, beginning with our adoption of Building Information Modeling (BIM) for all projects since 2004. BIM supports SERA's design approach by enabling us to integrate the work of all members of the project team and accurately convey all levels of project information. The creation of a 3-D building information model within Revit facilitates the creation of well-coordinated project documentation, but the greater benefits arise from leveraging the capabilities of the model: sustainability analyses, closer coordination of work by design disciplines, the ability of multiple consultants to work directly in the same project model (through co-location), integration of specifications into model elements, 'clash detection' of models from MEP consultants or subcontractors through Navisworks to avoid conflicts in the field, and providing a building information model of the completed building to the owner for ongoing O&M.

ENERGY MODELING

Design simulation such as energy modeling (especially when performed early in the design process) provides valuable information for design teams and helps direct the project's efforts towards the most critical areas related to energy performance. The model and the interactive recommendations that come from the energy analysis often provide the highest return on investment of any project activity because they lead to significant improvements in the building's long-term energy performance.

SUSTAINABILITY ANALYSIS TOOLS

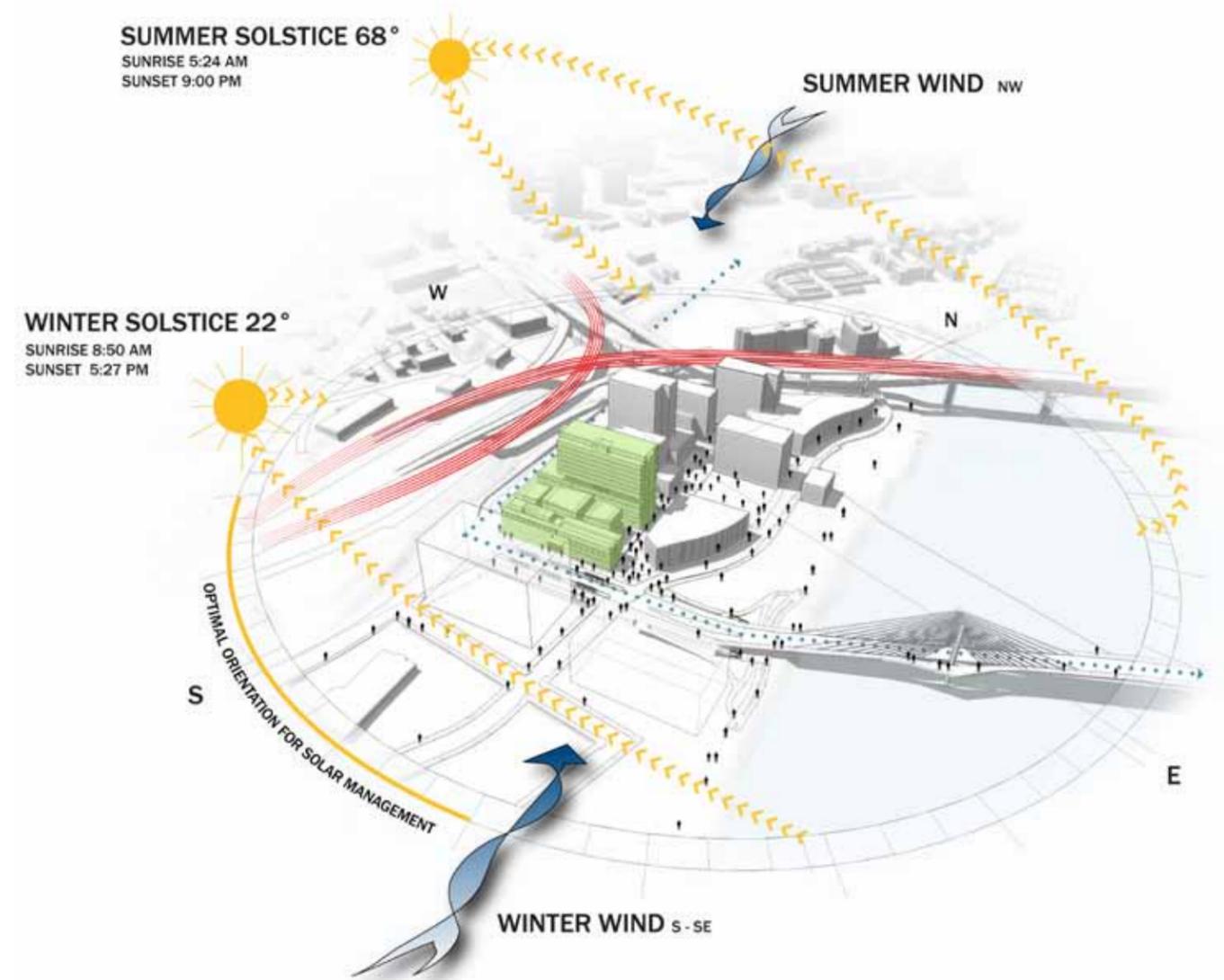
To better analyze high-performance building systems, SERA's Sustainability Resources Group has created its own software tools, including:

- Solar shading analyzer to understand the building's particular site context at the earliest concept stages
- Photovoltaic solar array calculator to assess on-site renewable energy potential
- Water-use calculator to understand water flows over time for a given building in a specific climate, looking at potable water demand, grey and wastewater generation, rainwater collection potential, and appropriate sizing of rainwater, greywater and blackwater re-use systems.

LIFE CYCLE COST ANALYSIS

SERA and its mechanical consultants have developed detailed Life Cycle Cost Analyses (LCCAs) for mechanical systems on major projects. LCCAs allow an owner to make well-informed decisions between alternate mechanical systems, considering not only the initial capital cost, but the life-time impacts of energy use, operation, maintenance and eventual replacement.

If you don't have the right tool, make the right tool.



“If you want to build a ship, don’t drum up people to collect wood and don’t assign them tasks, but rather teach them to long for the endless immensity of the sea.” - Antoine De Saint-Exupéry

STAFF ENGAGEMENT AND EDUCATION

FOSTERING KNOWLEDGE

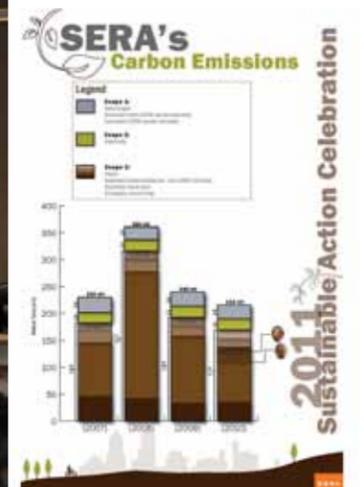
The Sustainable Action Committee (SAC) sits at the nexus of SERA's commitment to sustainability in our office, in our projects, and in our actions. SAC works to maintain and foster a culture of sustainability at SERA both in and out of the office. This effort encompasses a wide range of initiatives, ranging from the greening of internal operations and company practices to external presentations and outreach initiatives to promote sustainability through education and changes to public policy. SAC works as a bridge to encourage the dissemination of ideas by encouraging the intersection of our office culture, the Sustainability Resources Group's (SuRG) work, and the sustainability innovations within our projects. A fully sustainable workplace is the end goal, evaluated against the Four System Conditions of The Natural Step, whose values are mirrored in our products and externalized to those around us. Anyone on staff can join the Sustainable Action Committee – the only requirement is that each member participates in some way – action is key.

Since 2005, SAC has hosted the annual Sustainable Action Celebration wherein we highlight the sustainability measures that have occurred at SERA during the past year – from office operations to green initiatives on our projects to policy changing legislation. The boards and graphics that support our celebration each year are displayed throughout the year as well as bound in an informal sustainability report each year.

Educational signage is placed throughout the office so that staff and visitors alike can understand how our office functions from both an operational and a sustainable perspective. All staff are afforded (and encouraged in) the following educational opportunities:

- The Natural Step Training: Includes a TNS primer and an in-depth look at the TNS SERA case study. Key staff may attend a day-long TNS workshop.
- Materials/Building Systems/Green Design – Lunch & Learns are required attendance
- In-House Lunch & Learns: Required for all staff to disperse as much building technology and best practice information as possible.
- Recycling Primer: Yearly recycling talk at All Staff Meetings designed to highlight the variety of complex recycling/waste streams that SERA utilizes.

SERA has a variety of policies that support SERA staff and fostering their knowledge base. Staff are reimbursed for professional licensure and green building examinations, and have opportunities to attend a range of conferences, including USGBC, Living Futures, IAQ Conference, Lightfaire, GoGreen, HD Expo's Green Day and a long list of Urban Design & Planning-focused conferences including the EcoDistrict Summit and Oregon Main Street Conference. Membership dues in a professional organizations, with their community contacts and opportunities for growth, are also covered.



SERA's annual Sustainable Action Celebration is an opportunity for sharing successes, challenges, and visions with employees and clients.

Why make SERA notebooks?

- Reduces cost by making notebooks in-house
- Diverts waste from landfills
- Reuses materials first before recycling
- Contributes to SERA's brand

Components of Paper Mate Biodegradable Mechanical Pencils can be composted

- Compostable eraser & eraser cap
- Eraser
- Graphite
- Barrel

The Green Kitchen

- Durable dishware, cutlery, and organic hemp cloth napkins
- Family-style catering to avoid individual packaging
- No disposable water bottles
- Preference for locally-owned and operated businesses and products
- Composting to divert waste from landfills



“Re-examine standard procedures, rules of thumb, and corporate policies.” - Jason McLennan

SUSTAINABILITY AS BUSINESS STRATEGY

A TRULY SUSTAINABLE COMPANY

Our over-arching goal is to transform SERA into a truly sustainable company that demonstrates through products and practices that sustainable design is good design. As a company succeeds in changing its culture, it also has positive impacts that pervades the boundaries of the office as employees extend elements of the cultural and behavioral shift to their clients, families and communities. SERA's investment and immersion in sustainability have led to numerous strategies for the betterment of the business and the community and world in which we operate. Some of these include:

100% EMPLOYEE OWNERSHIP

Sixteen years ago, the founders chose to solve the thorny issue of ownership transition by reorganizing the firm as an Employee Stock Ownership Plan (ESOP). Only about 26% of ESOP's are 100% employee-owned; SERA is proud to be one of them. The ESOP provides long term viability and sustainability for a firm and is a unique solution to the difficulties of succession planning.

BACKCASTING

The leadership at SERA recognized that the future is in greener buildings and communities, but realized that to truly understand sustainable design, we needed to put our own house in order. In 2002, SERA leadership went through an intensive training in The Natural Step Framework and then instigated an extensive office-wide backcasting process. When the backcasting committee started the process, they knew that it would be critical to be able to walk our talk, but they might not have understood at the time how profound and far reaching the results would be: Significant credibility as green building experts, ever-improving sustainable in-house operations, and most importantly, by internalizing sustainability at all levels, we are able to make better places and buildings that are truly responsive to their environment.

EMBRACING DIVERSITY AS A PILLAR OF STRENGTH

SERA has always worked a little outside of the mold. We have been told multiple times by multiple marketing consultants that we need to focus. In spite of that advice, SERA has continued to embrace diversity as a pillar of strength. SERA's expertise in multiple market sectors and disciplines has enabled us to survive the recession with success. As an outcome of the backcasting process, SERA began to broaden its vision and its sphere of influence to include the development of our internal Sustainable Resources Group (SuRG), involvement in policy making, research projects, pro bono work via the 1% Solution, development of an expertise in EcoDistricts, and the vision to begin a studio focused exclusively on the needs of existing buildings' owners.

INTREPRENEURIALISM

Intrepreneur: an individual who shares the values and vision of an enterprise, and chooses to invest their energy in the enterprise and accept responsibility for their job, helping minimize risks and optimize rewards.

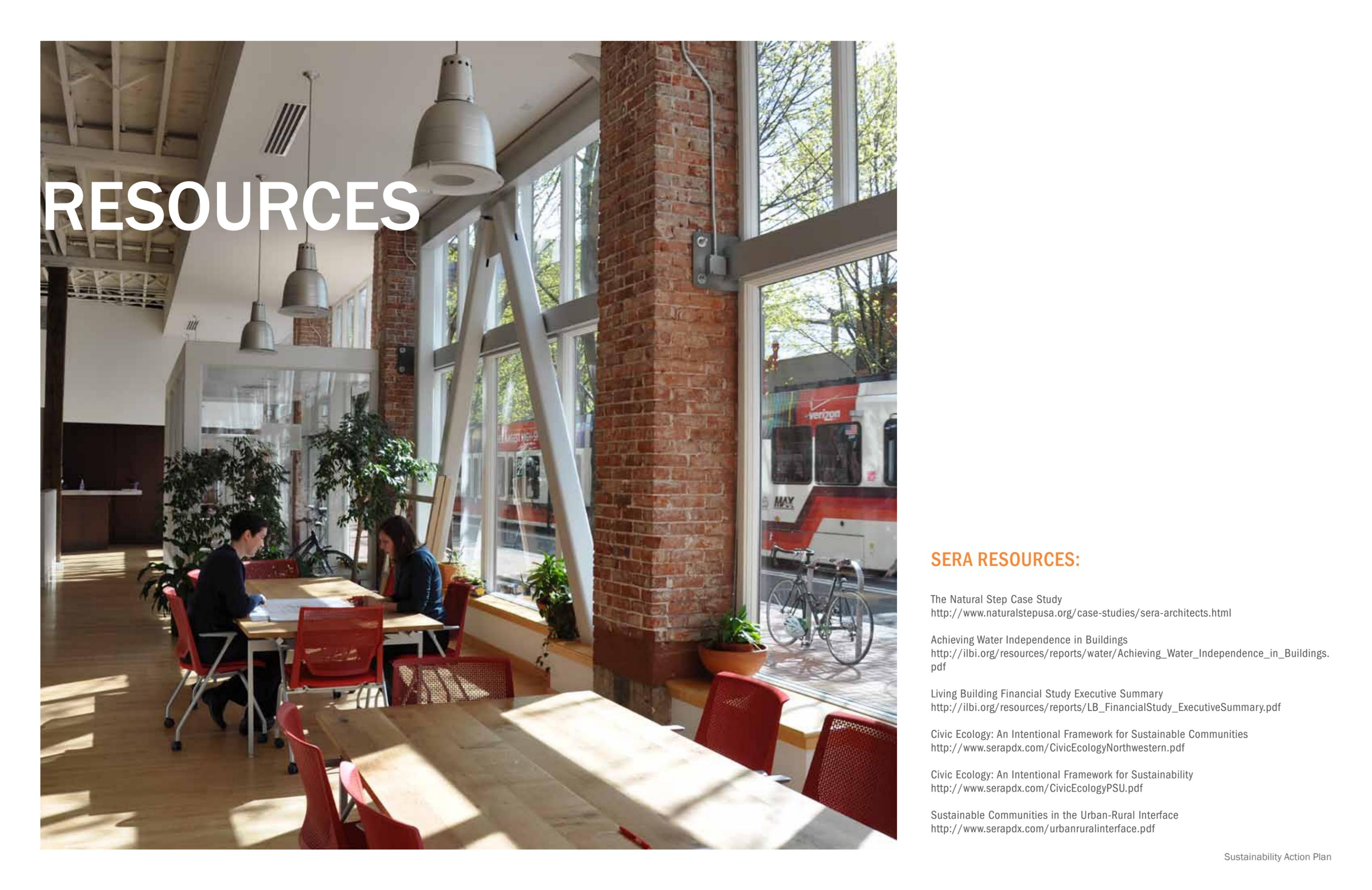
SERA is very focused on solving the problem at hand, not on traditional methods, structures, or roles. There is a strong emphasis on the intrepreneurial spirit, which leads many of our employees to less-structured career paths, and encourages development of each person's own vision of how to better the firm. As a result, SERA has a culture of creating and fostering non-traditional roles and business units within the firm. This has become such a significant aspect of SERA's culture that it is a key part of the interview process for potential hires. Individuals who are uncomfortable operating outside the bounds of structure may not enjoy this aspect of SERA.

CULTURE OF CONTINUOUS IMPROVEMENT

Rather than waiting until an idea is perfect, SERA understands the power in putting out important ideas when the moment is right, accepting that there will be ongoing iterations over time. SERA's Sustainable Resources Group (SuRG) lives in the world of continuous improvement, knowing the development of their measurement tools and expertise is never complete and that there will always be a better, more exciting solution to a problem. Creating a culture of continuous improvement requires daring leadership and bold clients



RESOURCES

A photograph of a bright, modern interior space, likely a cafe or office lounge. The room features large windows on the right side, offering a view of a street with a red and white bus and a bicycle. The interior has a high ceiling with exposed wooden beams and several large, white, industrial-style pendant lights. In the foreground, there are wooden tables and red mesh chairs. Two people are seated at a table in the middle ground, looking at documents. The overall atmosphere is bright and airy, with natural light streaming in from the windows.

SERA RESOURCES:

The Natural Step Case Study
<http://www.naturalstepusa.org/case-studies/sera-architects.html>

Achieving Water Independence in Buildings
http://ilbi.org/resources/reports/water/Achieving_Water_Independence_in_Buildings.pdf

Living Building Financial Study Executive Summary
http://ilbi.org/resources/reports/LB_FinancialStudy_ExecutiveSummary.pdf

Civic Ecology: An Intentional Framework for Sustainable Communities
<http://www.serapdx.com/CivicEcologyNorthwestern.pdf>

Civic Ecology: An Intentional Framework for Sustainability
<http://www.serapdx.com/CivicEcologyPSU.pdf>

Sustainable Communities in the Urban-Rural Interface
<http://www.serapdx.com/urbanruralinterface.pdf>



Clark Brockman, AIA, LEED AP - Principal, Director of Sustainability Resources

Clark brings over 25 years of architectural experience to SERA that spans across an array of project sizes & types. As Director of SERA Architect's Sustainability Resources Group, he works within (and outside of) SERA's office to promote sustainability, believing the Northwest must continue to provide leadership in this arena. In this capacity he speaks regularly at Natural Step workshops on workplace sustainability and is also a frequent lecturer on Green Building process and policy. Clark is the Chair of the Cascadia Region Green Building Council Board of Directors and serves on The Oregon Natural Step's Advisory Board. He has served in a green building advisory capacity to Portland's Office of Sustainable Development and Sustainable Development Commission, City Commissioner Dan Saltzman, the Portland Development Commission, Multnomah County, Clackamas County, the Oregon Business Council, the Governor of Oregon, and Oregon Congressman David Wu's office.

Contact Clark at: clarkb@serapdx.com or 503.445.7334



Lisa Petterson, AIA, LEED AP - Associate Principal, Manager of Sustainability Resources, Lighting Design Specialist

For the past 20 years, Lisa has focused her work as a project manager/designer on the development of projects with green building goals. Lisa has a broad range of design, presentation, programming, documentation and construction administration experience. Lisa is also an experienced lighting designer, with expertise in the use of natural lighting and extensive experience in the design and specification of electric lighting. At SERA, Lisa is a daylighting advocate and coordinates the office's work with the Energy Studies in Buildings Laboratory, organized an in-house learning series called "SERA Thinks Green", and chairs SERA's Sustainable Action Committee. Lisa is a member of the American Institute of Architects, the Illumination Engineering Society, and the Society for Building Science Educators.

Contact Lisa at: lisap@serapdx.com or 503.445.7317



Michael Miller, LEED AP - Senior Job Captain

Michael brings nine years of architectural experience with a focus on building renovation, from evaluation of existing conditions through construction administration. He regards building reuse as the beginning point of sustainability and focuses on appropriate solutions that provide sustainable benefits. He provides project teams with a holistic approach that considers how a structure will affect the people who use it, coupled with a comprehensive understanding of how buildings go together at a systems level and a proven ability to collaborate with clients, design teams, and contractors on complex renovation projects.

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ARCHITECTURE
URBAN DESIGN + PLANNING
INTERIOR DESIGN

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