VISUALIZING SUSTAINABILITY

Graphic Design Strategies for Communicating Metrics
CHALLENGE

#1

Daunting Data Sets
• **HUGE** sets of data
• **Complex** data
• **Incomplete** sets of data
• **Information not tracked**
• **Information that is constantly changing**
CHALLENGE
#2

Communicating Clearly
• Know your audience
• Know the medium
• Know your desired outcomes/takeaways
• Make sure the data is digestible
• Create visual intrigue
SOME DESIGN
“RULES OF THUMB”
Hierarchy is everything
Less is more
Green ≠ Green
White space is your friend
5 colors or less
SAMPLES OF SUCCESS
TAKE ACTION
Ayers Saint Gross strives to improve our project performance on an annual basis with a long-term goal of designing regenerative buildings. At minimum all of our projects are designed to meet LEED Silver requirements, regardless of whether the project is submitted for certification.

With strong employee expertise and a firm foundation in sustainability, Ayers Saint Gross is able to create designs for the built environment that address the social, environmental, and economic realities inherent in each project.

We seek to advance our clients’ traditions, values, and cultures through the built environment. Buildings, landscapes, and master plans require a significant investment of time, resources, and money. Ayers Saint Gross is sensitive to our clients’ budgets for constructing, operating, and maintaining these environments.

At present, we are actively pursuing LEED certification for 70 percent of our projects. At minimum we design all of our buildings to LEED Silver standards, regardless of whether the project is submitted for certification. Ayers Saint Gross aims to decrease our projects’ energy use intensity by 50 percent below baseline (as defined by the AIA 2030) committed by 2015 and achieve net-zero energy use by 2030.

In order to meet our goals we have developed and implemented an annual review of our project performance. The results are used to identify new strategies to reduce the environmental impact of our designs. Targeted strategies are evaluated internally and approved strategies are pushed out to the offices for implementation. Understanding the impact of our efforts will help us continuously refine our work. This assessment cycle keeps our design process fresh and innovative, and our projects continually striving for excellence. Setting advanced goals for our projects will guide the creation of internal resources and lead our efforts.

Designing sustainably is a core principle at Ayers Saint Gross. Our projects represent the largest impact we can make on creating a sustainable future and we are committed to making a positive impact.

**Energy Use Intensity Goals**

- **2006**: Baseline
- **2015**: 50% below baseline
- **2030**: Net-zero energy use

*Percent of our Projects Pursuing LEED Certification* 70%
At Ayers Saint Gross, sustainability starts with our people. Through education and corporate culture, we maintain a community of excellence in sustainability that allows us to create the highest quality built environment. Ayers Saint Gross' sustainability goals for employees include both learning and lifestyle initiatives.

Community Involvement
Ayers Saint Gross is involved with various community organizations sharing a common mission of sustainability. Our involvements vary from staff serving on the board of the local USGBC and Moth May Foundation to contributing to healthy food drives for less fortunate members of the community and educating neighborhoods about solar planning and resources management.

Communication
Ayers Saint Gross keeps sustainability front of mind with various communication outlets, including our blog, white papers, seminars, and newsletters. These efforts are designed to educate our clients and the public on the benefits of sustainability and the latest developments in the field.

Company Culture
Ayers Saint Gross works to inspire sustainable practices for our employees. Creating a firm culture rooted in sustainability is synonymous with our firm’s goals, which is why we take pride in our policies and programs that promote sustainability on both the professional and personal level. Our firm culture includes a range of initiatives, from green building practices to sustainable transportation and waste management programs.
Rain Gardens
Gray Water Recycling

Black Water

Gray Water

Sewage

Constructed Wetland

Mechanical Treatment System

Aquifer

Irrigation
## Gray Water Recycling

<table>
<thead>
<tr>
<th>On-Campus Freshman Housing Village</th>
<th>Turman Hall</th>
<th>Few &amp; Evans</th>
<th>Oxford Road</th>
<th>Longstreet Means</th>
<th>Hamilton Holmes</th>
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<tbody>
<tr>
<td>% Overall Water Reduction</td>
<td>46%</td>
<td>51%</td>
<td>46%</td>
<td>48%</td>
<td>51%</td>
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<tr>
<td>Dual Flush Toilets</td>
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<td>✔️</td>
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<tr>
<td>Low-Flow Lavatory Faucets</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Low-Flow Showers</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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</tr>
<tr>
<td>Low-Flow Kitchen Faucets</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Waterless Urinals</td>
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<td>✔️</td>
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<tr>
<td>No Permanent Irrigation</td>
<td>✔️</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternate Irrigation</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Gray Water Recycling</td>
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<td></td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Rainwater Harvesting</td>
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<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
</tbody>
</table>
How to Use a Dual Flush Toilet

Dual flush toilets only conserve water if we use them correctly!

Turn the handle like this for liquid wastes

Turn the handle like this for solid wastes
Daylighting Sustainably

**Daylighting Without a Light Shelf**

Daylight enters a room through windows and bounces off surfaces such as desks and floors. This light reflects up into a student’s eyes causing glare and only reaches partway into the depth of a room.

**Daylighting With a Light Shelf**

In a room with a light shelf, daylight bounces off a reflective exterior shelf, up onto the ceiling, and back down onto surfaces such as desks and floors. This light is even and diffused, minimizing glare and reaching more deeply into a room.
Daylighting in Dorms

**Good Daylighting**

- Dorm Room Elevation
- Dorm Room Plan
- 100% of total room area is daylit

**Fair Daylighting**

- Dorm Room Elevation
- Dorm Room Plan
- 82% of total room area is daylit

**Poor Daylighting**

- Dorm Room Elevation
- Dorm Room Plan
- 60% of total room area is daylit
Did you know learning during daylight significantly improves test scores?*

Move your desk near the window, study during the day, turn the lights off, and see if it boosts your grades.

*Save energy and make the grade!


Work Smarter, Not Harder
Partnership for Action Learning in Sustainability

PALS 2014-15

Over 350 students participating

50,000 hours of student work equivalent to nearly three million dollars in consultant fees

Action Learning

PALS is in good company! 7 of the 17 universities doing similar programs started in 2014. The first program similar to PALS began in 2010.

10 colleges, schools, & programs joining in the 2014-2015 partnership with Frederick, MD

DURING ITS INAUGURAL YEAR

Boasts the most number of courses among similar US action learning initiatives

30 courses customized specifically toward challenges and goals specified by the City of Frederick
Solar Insolation

Radiation Gain Map

Most Critical Areas

Select Vertical + Horizontal Louvers
Farm to Table
PRACTICE MAKES PERFECT

Break-out Session
Determine your desired outcome

Determine your audience

Determine your medium
Radiant Heating & Cooling
Energy Cost Savings

<table>
<thead>
<tr>
<th></th>
<th>Proposed Energy Costs</th>
<th>Baseline Energy Costs</th>
<th>% Cost Savings</th>
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</thead>
<tbody>
<tr>
<td><strong>John &amp; Frances Angelos Law Center</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interior Lighting</strong></td>
<td>$32,143</td>
<td>$43,458</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Exterior Lighting</strong></td>
<td>$571</td>
<td>$1,528</td>
<td>63%</td>
</tr>
<tr>
<td><strong>Space Heating</strong></td>
<td>$25,142</td>
<td>$88,548</td>
<td>72%</td>
</tr>
<tr>
<td><strong>Space Cooling</strong></td>
<td>$22,834</td>
<td>$54,576</td>
<td>65%</td>
</tr>
<tr>
<td><strong>Pumps</strong></td>
<td>$13,316</td>
<td>$21,743</td>
<td>38%</td>
</tr>
<tr>
<td><strong>Heat Rejection</strong></td>
<td>$857</td>
<td>$13,753</td>
<td>88%</td>
</tr>
<tr>
<td><strong>Fans – AHUS</strong></td>
<td>$6,647</td>
<td>$18,688</td>
<td>63%</td>
</tr>
<tr>
<td><strong>Service Water Heating</strong></td>
<td>$312</td>
<td>$370</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$186,190</td>
<td>$327,822</td>
<td>46%</td>
</tr>
</tbody>
</table>
Why Won’t the Window Open?

Windows at the John & Frances Angelos Law Center are designed to work with the radiant heating and cooling system to save energy.

When the light on a window is green, you can open it. When the light on a window is red, windows will close and lock to prevent you from opening them and maintaining temperature and energy efficiency.
THANK YOU FOR TUNING IN!

We hope you learned something