As a demonstration of its commitment to sustainability and to create a model for the community, VSP Vision Care (VSP) sought to significantly reduce its energy and water use as well as its waste stream at its California headquarters. The building houses 600 of the campus’ 1,750 employees who provide comprehensive eye care benefit plans to more than 52 million members.

The process started in 2006 when VSP assembled a team to see how one company could make a difference. The team set goals to achieve operational excellence at the VSP facility by improving in three key areas:

**Energy** 20% reduction from current use levels

**Water** 50% reduction from baseline

**Waste Stream** 95% diversion rate

After researching several systems and approaches, the team decided to pursue Platinum certification under the U.S. Green Building Council’s (USGBC) LEED® for Existing Buildings (LEED-EB) at the campus headquarters main building, HQ1, in Rancho Cordova, Calif. The building was constructed in 1992. We used the LEED-EB version 2.0 rating system as a road map to provide a framework and validation for our sustainability goals.

**Overview of Points**

The LEED-EB 2.0 system has 85 total credits available. To achieve Platinum, VSP set a goal to obtain 70 points. The cut-off for Platinum certification is 64 points. We ultimately pursued 65 points:

<table>
<thead>
<tr>
<th>LEED-EB 2.0 POINTS</th>
<th>Sustainable Sites</th>
<th>Water Efficiency</th>
<th>Energy &amp; Atmosphere</th>
<th>Materials &amp; Resources</th>
<th>Indoor Environmental Quality</th>
<th>Innovation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>3</td>
<td>20</td>
<td>16</td>
<td>14</td>
<td>5</td>
<td>65</td>
</tr>
</tbody>
</table>

**Over the course of several years**...
ENERGY STAR Score
As a prerequisite, we needed an ENERGY STAR® score of at least 60. We needed an even higher score to give us more LEED points so we could meet our Platinum goal. When we initially surveyed the building, our ENERGY STAR score was 29. We thought our building operated efficiently, but our ENERGY STAR score did not reflect that.

When we initially surveyed the building, we could meet our Platinum goal. When we realized we needed an even higher score, we learned a lot of opportunities existed for improvement. The following areas gave us the highest payback:

Retrocommissioning
VSP implemented a retrocommissioning program to identify areas where the building systems were not operating as intended or could be optimized. Through this process, we learned a lot of opportunities existed for improvement. The following areas gave us the highest payback:

- Lighting Controls
  - The lighting control panel was not operating correctly. Lights were running 24/7, and more than 50% of the relays were running.
  
- Sequences of Operations
  - The sequences of operations for our HVAC systems were not operating correctly. By making relatively minor adjustments, we achieved great savings.

VSP found through submetering that its data center was a high-intensity energy use area, accounting for approximately 70% of total energy use.

Energy Savings
At the time of certification, the building’s annual energy use was approximately 70,400 Btu/ft². While this represents an efficient building, we wanted to continue to improve. With smart approaches to daily operations, we found we could save energy and money. A few of the ways we increased energy savings included:

- Daytime Janitorial
  - Our janitors cleaned the building at night when it was largely unoccupied. This meant that our building was lit when it was occupied by very few people. Moving our cleaning schedule to daytime hours enabled us to shut down the building by 7 p.m. instead of late night/early morning.

- Optimizing Lighting and HVAC Controls
  - Through retrocommissioning, we identified areas where we could optimize our controls to operate more efficiently and effectively.

- Metering
  - We installed submeters to monitor electricity use of our data center, lighting panels and plug loads.

Through submetering, we found that our data center was a high-intensity energy use area, accounting for approximately 70% of our total energy use. Sub-metering allowed us to separate the data center energy load from the rest of the building. After implementing energy-saving measures, our new ENERGY STAR score was 93, qualifying us for the LEED prerequisite as well as eight additional LEED points.

## Retrocommissioning

### VSP found through submetering

<table>
<thead>
<tr>
<th>Metric</th>
<th>Energy Savings Measures</th>
<th>Metric</th>
<th>Lighting Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Cost</td>
<td>$457,361</td>
<td>Annual Cost</td>
<td>—</td>
</tr>
<tr>
<td>Implementation Cost</td>
<td>$123,254</td>
<td>Implementation Cost</td>
<td>$4,865</td>
</tr>
<tr>
<td>Rebates</td>
<td>$0</td>
<td>Rebates</td>
<td>$4,865</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>$64,030</td>
<td>Annual Savings</td>
<td>$5,557</td>
</tr>
<tr>
<td>Energy Savings</td>
<td>14%</td>
<td>Energy Savings</td>
<td>—</td>
</tr>
<tr>
<td>Simple Payback</td>
<td>2 Years</td>
<td>Simple Payback</td>
<td>0 Years</td>
</tr>
</tbody>
</table>

### Simple Payback

- 2 Years

**A new Certification from ASHRAE:**

The Standard Setter for Building System Design and Operation

Today’s complex buildings can fade from green to gray when building operators don’t realize the full potential of the systems they manage. Staying current with the latest facility operational strategies and technologies can reduce energy use in buildings by 10% to 40%.

ASHRAE’s Operations & Performance Management Professional (OPMP) certification assesses a candidate’s understanding of how to design and execute an effective building operations and maintenance plan based on optimizing HVAC system performance. The certification was developed in collaboration with APPA and the GSA.

If you want to prevent your building from fading from green to gray, put it in the hands of industry professionals who have earned ASHAE’s Operations & Performance Management Professional certification.

Visit [www.ashrae.org/opmp](http://www.ashrae.org/opmp) to learn more.

*Membership in ASHRAE is not a requirement for certification.

Optimize your facility’s operation and performance.
## Sequences of Operations Retrocommissioning

<table>
<thead>
<tr>
<th>Metric</th>
<th>Economizers</th>
<th>Heating</th>
<th>Morning Warm-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Cost</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Implementation Cost</td>
<td>$360</td>
<td>$1,440</td>
<td>$360</td>
</tr>
<tr>
<td>Rebates</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>$3,980</td>
<td>$6,109</td>
<td>$2,801</td>
</tr>
<tr>
<td>Energy Savings</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Simple Payback</td>
<td>1 Month</td>
<td>0 Months</td>
<td>2 Months</td>
</tr>
</tbody>
</table>

## Metric Economizers Heating Morning Warm-Up

<table>
<thead>
<tr>
<th>Metric</th>
<th>Retrocommissioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Cost</td>
<td>—</td>
</tr>
<tr>
<td>Implementation Cost</td>
<td>$44,418</td>
</tr>
<tr>
<td>Rebates</td>
<td>$13,247</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>Est. $31,000</td>
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<tr>
<td>Energy Savings</td>
<td>—</td>
</tr>
<tr>
<td>Simple Payback</td>
<td>1 Year</td>
</tr>
</tbody>
</table>

## Overall Cost of Commissioning

- **Metric Water Efficiency**
  - **Annual Cost**: $11,376
  - **Implementation Cost**: $39,597
  - **Rebates**: —
  - **Annual Savings**: $5,111
  - **Energy Savings**: —
  - **Simple Payback**: 7.8 Years

## Water Use Reduction

In 2006 VSP Vision Care began reducing its energy use, water use and waste at its California headquarters. It reduced energy use by 14% including the data center and 27% without it, decreased water use to 42% below baseline and increased its waste stream diversion rate from 40% to 82%.

## Lighting Survey

We conducted a thermal comfort survey of employees as required by ASHRAE Standard 55. An 80% satisfaction rating was required to obtain the LEED point for thermal comfort. Our proactive approach paid off; we achieved an 84% satisfaction rating.

To implement sustainable choices, VSP selected a new vendor for its café, which serves about 600 people a day. Now the café uses locally grown and pesticide-free produce.
Water Efficiency

Water is a precious resource in our country, and even more so in our northern California climate. In addition to earning LEED points for increased water efficiency, VSP wanted to reach a level of significant water savings. We started by auditing our irrigation and domestic water use through submetering. To improve our ability to determine where our water was being used in the building, we installed submeters on our cooling towers and café. We then began auditing the plumbing fixtures. To VSP’s surprise, the plumbing fixtures were not as efficient as we thought. We ended up replacing several toilets and installed aerators on the restroom lavatories to reduce water use.

Determining our irrigation efficiency was more difficult. The LEED present based on our purchased lighting. We wanted to reduce the amount of mercury in the building. The building lighting primarily uses T-8 fluorescent tubes and compact fluorescent bulbs. We worked with a vendor to conduct the initial survey of existing fixtures. Another vendor developed a replacement plan for new fluorescent fixtures that contained a lower level of mercury.

<table>
<thead>
<tr>
<th>Metric</th>
<th>Recycling Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Cost</td>
<td>$42,828</td>
</tr>
<tr>
<td>Rebates</td>
<td>—</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>$21,888</td>
</tr>
<tr>
<td>Energy Savings</td>
<td>—</td>
</tr>
<tr>
<td>Simple Payback</td>
<td>2 Years</td>
</tr>
</tbody>
</table>

VSP installed aerators on the restroom lavatories, installed dual flush valves on water closets and replaced 50 water closets with low-flow water closets. These changes plus other water-saving measures resulted in annual savings of $5,111.

ASHRAE GreenGuide

The Design, Construction, and Operation of Sustainable Buildings

Since its first printing, the ASHRAE GreenGuide has been invaluable reference for architects, building owners, building managers/operators and contractors—everyone in the building industry who needs to understand the technical issues of high-performance design. Using an integrated building systems perspective, the ASHRAE GreenGuide covers the entire building life cycle step-by-step, from the planning stages all the way through construction, operation, maintenance and eventual demolition. It emphasizes teamwork and close coordination between interested parties—factors that are both critical to effective and efficient execution but typically overlooked “in the heat of things”.

With almost four hundred pages, the second edition of the ASHRAE GreenGuide has been significantly improved. Representing the collected experience and knowledge of a host of field experts, it includes:

- A new chapter on LEED guidance for mechanical engineers
- A new chapter on building systems’ effect on the local indoor and outdoor environment
- 20 new greentips (39 in all), including a new version of the greentip focusing on specific building types
- Chapters reorganized to mirror an actual project’s path, from pre-design to post-occupancy
- Added content in every chapter, with significant updates in building automation systems, renewable energy options, CHP and GSHP systems, and construction issues
- New graphs, photographs, renderings, and diagrams providing a more complete overview of subject matter
- Green design techniques for related technical disciplines, such as plumbing and lighting
- A discussion of the interactions and cross influences of mechanical systems, electrical systems and architectural design
- References, for further information

Order Toll-Free at 1-800-527-4723 (US/Canada) (404) 636-8400 (Worldwide) or visit www.ashrae.org/bookstore
We currently recycle all metals, fluorescent lights, batteries and construction waste. In addition to paper, plastic, glass and aluminum, VSP recycles all metals, fluorescent lights, batteries and construction waste.

### Materials & Resources

#### Sustainable Purchasing

We worked with VSP’s purchasing department to audit current purchase practices on all office supplies, equipment, and furniture to determine what qualified as a sustainable purchase. For example, we looked for items containing at least 70% salvaged materials, 10% post-consumer content or 20% post-industrial content. Our goal was to increase the percentage of our sustainable purchases to at least 50% of our total purchases. We achieved 54%. Examples of our qualifying purchases include recycled paper, office equipment and recycling containers.

To meet the indoor air quality requirements, our goal was to purchase low- or no-VOC products. Our goal was to achieve 90% compliance. We achieved 100%. Examples of our qualifying purchases included paint, carpet and carpet adhesive.

To meet the sustainable products and cleaning requirements, our goal was that 90% of our cleaning products would comply. We achieved 96%. Our compliant materials included cleaning products, paper towels, trash can liners, toilet paper and seat covers. Our non-compliant items included hand soap, degreaser and disinfectant.

#### Recycling

Our goal was to achieve at least a 50% diversion rate for our waste stream to obtain the maximum number of LEED points. However, we set our own more aggressive goal of 95% diversion. We were already recycling cans, bottles and paper throughout the campus and thought we were doing very well. When we performed an audit of all of our waste, we found that, despite our efforts, we were still throwing away many things that could be recycled. We currently recycle all metals, fluorescent lights, batteries and construction waste. Through these efforts, we achieved a 70% diversion rate at the time of certification and are currently at 82% diversion.

### Summary of Sustainability Highlights

<table>
<thead>
<tr>
<th>Metric</th>
<th>Energy Savings</th>
<th>Lighting</th>
<th>Retrocommissioning</th>
<th>Overall</th>
<th>Water Efficiency</th>
<th>Sustainable Purchasing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Cost</td>
<td>$457,361</td>
<td>$44,418</td>
<td>$11,376</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Payback</td>
<td>2 Years</td>
<td>0 Years</td>
<td>1 Year</td>
<td>1 Month</td>
<td>2 Months</td>
<td>7.8 Years</td>
</tr>
</tbody>
</table>

- Installing 0.5 gpm aerators on lavatory faucets;
- Installing dual flush valves on water closets;
- Replacing 50 water closets with low-flow water closets;
- Replacing shrubs with decomposed granite; and
- Replacing spray irrigation with bubblers.

When we submitted the building for certification in March 2008, our domestic water use was at 31% below baseline. As of December 2008, our domestic water savings was at 42% below baseline.

- VSP stepped up education and added recycling bins after a trash audit revealed that despite the availability of recycling bins throughout the facility, recyclable items were still being thrown away.

#### Water Efficiency

- In addition to paper, plastic, glass and aluminum, VSP recycles all metals, fluorescent lights, batteries and construction waste.
Healthy People Impact Profits
VSP has implemented several programs and measures targeted at employee health and wellness.

New Café Vendor
VSP’s café serves approximately 600 people each day. A new vendor was selected that could provide freshly prepared menu options every day, using locally grown and pesticide-free produce.

No/Low-VOC Finishes
VSP created a standard which includes specifying and purchasing finishes and fabrics that have either no- or low-VOC content.

Green Cleaning Products
The team researched and implemented a green cleaning program that now uses healthier cleaning practices to clean our buildings.

Green Guardians
VSP developed a task force of management and key division employees to champion the achievement of our sustainability goals.

Wellness Program
VSP’s wellness program includes diet and nutrition education, on-site exercise opportunities and gym memberships, team sports, and health and wellness evaluations.

Improved Air Filtration
VSP upgraded our level of air filtration to help improve the overall air quality in the building by reducing dust, pollen and particulate transfer.

Improved Indoor Air Quality
VSP installed CO2 sensors to ensure optimal indoor air quality for the people in our buildings. Through these programs, we are working to reduce employee sick time. If we can reduce absenteeism by one day per employee per year, we can save an average of $105,000 each year! (Based on 1,750 employees, average cost $60/employee).

Conclusion
We started this journey with our minds set toward making a difference in our community and achieving LEED Platinum certification. In our everyday operations, we wanted to achieve operational excellence. Through our improvement in operational practices and our LEED Platinum certification, we are well on our way.

LESSONS LEARNED
Education
To meet our goals, we realized that we needed to engage our employees in our efforts to save energy, save water, and use our resources wisely. We set up a campaign to educate our employees in what they could do during their work day to help us meet our goals. We focused on straightforward measures such as turning off lights, putting on a sweater instead of using a personal space heater and making sure computer equipment was turned off at night. We also developed a task force of management and key division employees to champion the achievement of our sustainability goals.

Team Perseverance
The biggest hurdle we faced was the amount of documentation required for LEED certification. Even the smallest things, such as purchasing practices, must be documented. Facility managers and building engineers must be engaged in the process and motivated to spend time in addition to their normal workdays. If possible, hire an additional team member who can handle the documentation.

Overall Improvements
Submetering water and energy-consuming systems provides monthly data, which has allowed VSP to identify abnormalities and fine-tune the building. This data documents our continued progress and helps to justify the cost of implementing energy- and water-saving strategies.

Energy
Our goal was 20% reduction. We are at 14% including the data center, 27% without.

Water
Our goal was 50% reduction. We are at 42% and continue to improve.

Waste Stream
Our goal was 95% diversion rate. We are at 82% and continue to improve.

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