

## **Adobe Systems Incorporated**

### **Three Platinum Certified Green Buildings**

by George Denise, CFM, CPM, FMA, RPA

Driven by a core belief that corporations have a responsibility to their local community and the global environment, Adobe Systems Incorporated has consistently taken a strong, pro-active approach to resource conservation, waste reduction, environmental protection, and sustainability with its use of state-of-the-art technology. Over the past five years, Adobe Systems Incorporated and Cushman & Wakefield, their facilities management partner, have undertaken a program to further enhance Adobe's operating efficiency and to reduce its environmental footprint.

Adobe's headquarters consist of three high-rise office towers located in downtown San Jose, California. The three buildings, known as Almaden, East, and West Towers, are respectively 17, 16, and 18 stories high, and 3, 9, and 11 years old. Combined, they total 989,358-square feet of office space, resting atop 938,473-square feet of enclosed parking garage. With approximately 2,300 employees locally, Adobe is one of the larger employers in downtown San Jose.

On June 9, 2006, Adobe's West Tower became the first building in the world to be certified by the U.S. Green Building Council in their permanent Leadership in Energy and Environmental Design (LEED) Green Building program for Existing Buildings at the platinum level, the highest level achievable. On December 1, Almaden and East Towers joined West Tower, completing the set; and Adobe achieved a second first; the first organization in the world to have three Green Buildings certified at the Platinum level.

To date, Adobe has completed 64 projects, spent approximately \$1.4 million on energy conservation and related projects, received \$389,000 in rebates from local and state agencies, and reduced annual operating costs by \$1.2 million. This is a 9-month payback with a return on investment of 121 percent.

In the process, Adobe has made significant reductions in the following areas:

- electricity use per occupant down 35 percent
- natural gas use per occupant down 41 percent
- domestic water use down 22 percent
- landscape irrigation water use down 76 percent

In addition, the company has seen impressive results in reducing pollution through a variety of initiatives:

- Adobe has reduced pollution from all sources by 26% and reduced CO<sup>2</sup> emissions 16%
- through composting and recycling programs, Adobe diverts up to 95% of its solid waste
- 20% of Adobe employees use public transit, versus a county-wide average of just 4%
- Adobe purchases 30% of its electricity from alternative, sustainable energy sources

Adobe has earned the EPA Energy Star label for each of its three buildings, with scores of 98, 100 and 100 (on a scale of 1 to 100)—all the more remarkable considering chillers must run 24 /7 to cool three data centers and 28 software labs.

While total project cost came to \$1.4 million, this was accomplished over the course of five years, and spread out over 64 projects. That is an average of only \$19,000 per project, but many of the projects cost nothing at all, or just the time of in-house staff.

Projects can be broken down into lighting, load management, equipment retrofits, monitoring & controls, water management, waste management, recycled content in office purchases, and direct Green Building certification costs. Following is a table summarizing the types of projects that were undertaken, the costs, rebates, and return on investment.

| Description             | No. Projects | Cost               | Rebate           | Savings            | ROI         |
|-------------------------|--------------|--------------------|------------------|--------------------|-------------|
| Load Mngmt              | 26           | \$445,248          | \$205,437        | \$729,185          | 304%        |
| Lighting                | 19           | \$300,701          | \$ 44,918        | \$155,616          | 61%         |
| Equipment               | 6            | \$298,439          | \$122,575        | \$107,976          | 61%         |
| Monitor & Controls      | 1            | \$ 39,472          | \$ 11,000        | \$ 12,001          | 42%         |
| Water Management        | 3            | \$145,732          | \$ 5,396         | \$ 31,287          | 22%         |
| Waste Stream            | 1            | \$ 0               | \$ 0             | \$137,380          | immediate   |
| Recycled Office Supplie | 1            | \$ 0               | \$ 0             | \$ 8,700           | immediate   |
| Sustainable Janitorial  | 1            | \$ 0               | \$ 0             | \$ 0               | n/a         |
| Indoor Air Quality      | 1            | \$ 0               | \$ 0             | \$ 0               | n/a         |
| Alternative Trans       | 1            | \$ 0               | \$ 0             | \$ 0               | n/a         |
| Compostable Paper       | 1            | \$ 0               | \$ 0             | \$ 0               | n/a         |
| Purchase Alter Energy   | 1            | \$ 16,000          | \$ 0             | \$ 0               | n/a         |
| LEED Consultant         | 1            | \$105,000          | \$ 0             | \$ 0               | n/a         |
| Regis/Certification     | 1            | \$ 12,000          | \$ 0             | \$ 0               | n/a         |
| <b>Total</b>            | <b>64</b>    | <b>\$1,362,592</b> | <b>\$389,326</b> | <b>\$1,182,145</b> | <b>121%</b> |

As the table above shows, “Load Management” projects are the largest expense and had the greatest return on investment, fully 304% ROI. This is followed by “Lighting” and “Equipment” with a 61% ROI, followed by “Monitoring and Controls” with a 42% ROI, then “Water Management” with a 22% ROI. These divisions are not clearcut, however. There is some overlap, and there are also additional savings that can’t be measured easily. Some of the “equipment” costs are for equipment related to “monitoring and controls”. Some of the “lighting” costs are related to “load management”. “LEED Consultant” costs include retro-commissioning, which has increased the efficiency of operations, and which should equate to reduced operating costs, but these are difficult to identify and quantify. The consultant costs are the costs for certifying three buildings; consultant fees to certify a single building would have cost between \$35,000 and \$45,000.

The original goal was simply to reduce electricity costs. In 2002, then Governor Gray Davis asked all large electricity users to reduce their electricity use 10% below 1999 levels. We had already accomplished this, so we decided to try for 20%.

About this same time, Cushman & Wakefield requested all of its managers to benchmark their properties with the EPA Energy Star program for comparing energy efficiency in commercial office buildings. It takes an Energy Star score of 75 or higher to earn the Energy Star label. When we benchmarked the then two Adobe Towers (East and West), we discovered that with scores of 76 and 74, one already qualified for the Energy Star label and the other was only one point below the threshold. It was only logical to reach a little higher, find additional energy savings in order to obtain that last point and the Energy Star label for both towers.

When the third tower (Almaden) was built, Adobe worked closely with PG&E (our local utility provider) and their *Savings By Design* program, a program developed to incentivize owners and architects to build energy savings into their buildings. It takes a year to establish a baseline with Energy Star and obtain an Energy Star score. Almaden Tower was built with all the “bells and whistles” with regard to energy management, so it was somewhat of a shock when we finally obtained our score and saw it was only “50”. One of the lessons we learned is just because a building is designed to **be** energy efficient, doesn’t mean it **is** energy efficient. Accordingly, we set out to see

what we could do to achieve energy savings in our new building to match our two older, “less energy efficient” ones.

That was in the spring of 2004. Shortly after that, at the suggestion of Adobe’s Director of Real Estate, Randy Knox III, we began the process of certifying the buildings as Green Buildings. Part of the certification process was retro-commissioning the three buildings. When we performed a self-audit of our buildings using the LEED Green Building checklist for Existing Buildings (LEED-EB), we discovered we already qualified at the gold level, second from the highest level possible. As with Energy Star, we were so close, it made sense to see what it would take to achieve platinum, the highest level possible.

Up to that point, we had already undertaken 30 energy conservation and related projects. We had spent \$888,912, earned rebates of \$277,092, and were reducing annual operating costs by \$647,747; a return on investment of 106%. Third-party energy management firms had performed audits, and told us there wasn’t much more we could do to reduce energy costs. We didn’t expect to find much additional savings either. We saw Green Building certification as more of an “acknowledgement” for what we had already achieved, rather than a means to improve operations. But the certification process is a rigorous and methodical process of reviewing all aspects of a building’s operations. It is a process of discovery, and followed up on correctly, the end result is a more efficiently operating building with even greater reductions in operating costs.

During the certification period, we completed another 42 projects, spending \$473,680 in the process, earned another \$112,234 in rebates, and further reduced operating expenses an additional \$534,398 per year. See table following.

| <b>Description</b>              | <b>No. Projects</b> | <b>Cost</b>             | <b>Rebate</b>           | <b>Savings</b>          | <b>ROI</b>         |
|---------------------------------|---------------------|-------------------------|-------------------------|-------------------------|--------------------|
| <b>Before Registering</b>       | <b>30</b>           | <b>\$888,912</b>        | <b>\$277,092</b>        | <b>\$647,747</b>        | <b>106%</b>        |
| <b><u>After Registering</u></b> | <b><u>34</u></b>    | <b><u>\$473,680</u></b> | <b><u>\$112,234</u></b> | <b><u>\$534,398</u></b> | <b><u>148%</u></b> |
| <b>Total</b>                    | <b>64</b>           | <b>\$1,362,592</b>      | <b>\$389,326</b>        | <b>\$1,182,145</b>      | <b>121%</b>        |

The return on investment for projects undertaken after we began the certification process was actually better than before, 148%.

One and one-half years later, all three buildings have been certified as Green Buildings at the platinum level and Adobe’s operating expenses are \$1.2 million less per year than they would have been had these projects not been undertaken. The numbers have all been verified by 3rd party authorities and speak for themselves: \$1.4 million spent, \$389,000 in rebates returned, and \$1.2 million in annual savings. Energy Star scores are now 98, 100, and 100, excluding data centers.

One other achievement came out of the “platinum challenge”. Adobe and Cushman & Wakefield went much further down the road toward what is called the “intelligent building”.

Already, in June 2004, we had added real-time electric meters to show us how electricity use changed as projects were implemented. This was a tremendous help in confirming the savings realized from each measure undertaken.

Then, in the summer of 2004, Adobe signed on to participate in PG&E’s voluntary Demand Response Program, developed to cut electricity demand during critical peak demand periods, thus helping prevent rolling blackouts and keeping spot market energy prices down. When curtailment was called for, we turned off decorative fountains and overhead lighting in perimeter offices (offices on the windows, corridor lighting, and garage lighting, except for emergency lighting). We found it took two engineers 45 minutes to turn everything off manually. This led to the development of a web-based

interface that allows these systems to be curtailed with a single global command. It now takes one engineer one or two minutes to do this job.

These changes pointed the way toward something more comprehensive: a unified system of monitoring and control. By the time this system is finished (it is currently about 90% complete), our building operating engineers will be able to access any portion of the complex from anywhere they have connectivity, and monitor lighting, temperature, electricity use, natural gas use, water use, and do this by individual office, floor, building, or globally. Upon completion, Adobe will have spent almost \$250,000 on this system; yet with its aid, we have already corrected several previously undiscovered problems, saving Adobe almost \$96,000 per year. This is a 30-month payback and a 38% ROI; not quite as good as the overall averages for Adobe's energy projects, but still a pretty decent investment! These numbers are not in addition to, but are also included in the above summaries.

New technologies enhance our ability to do more with less. They reduce labor, increase our productivity, give us access to information we didn't have before, and improve our reporting ability. But the real news is that the majority of the cost savings were realized through applying basic practices and principles of property and facilities management. We tried to look at every component of every system and ask: "What can we do here to improve efficiency and reduce costs?" If we came up with a savings idea, we calculated the total cost and the payback period. If it made sense, we did it: 55 times so far, and with another eight projects pending. What was unique about what we did at Adobe was not necessarily the quality of the projects implemented, but their quantity. Most properties implement some of these over the course of time; Adobe implemented all of the.

I stated at the outset that the facility manager's job is to provide a neat, clean, safe, healthy, productive, and uninterrupted work environment at the lowest cost possible. These are the fundamentals of our job. But with increasing competition, rising energy and other resource costs, and advances in technology being made daily and accelerating, the mission is expanding. I like what Teena Shouse, CFM says in *The Certified Facility Manager, Exam Review*, published by IFMA: "Along with all his other roles, [the facility manager] must also be a futurist." Energy Star rating, LEED Green Building certification, commissioning, and increasing use of technology - intelligent buildings, are the future of our industry.

Following is a detailed summary of projects undertaken:

**Energy and Resource Conservation Savings**

December 31, 2006

Cushman &amp; Wakefield of California, Inc.

(Savings initiated since February 2000, when C&amp;W started at Adobe.)

Following is a list of specific measures that have been taken to reduce electricity, gas, and water usage and to increase building operating efficiency.

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Annualized |           |                    |              |        |                               |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|-----------|--------------------|--------------|--------|-------------------------------|
|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Cost       | Rebate    | Savings            | Payback (yr) | ROI    | Vendor                        |
| 1 Aug-01   | Turned off lamps, de-lamped, or reduced wattage by switching to compact fluorescent lamps, East & West Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Li  | \$ 11,088  | \$ -      | \$ 98,495          | 0.1          | 888%   | In-house                      |
| 2 Aug-01   | Installed approx. 1,750 Watt-stopper surge protectors with motion sensors, x \$3.14 savings per month x 12 months, East & West Towers. (PGE DVP7445 & 7957)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lo  | \$ 104,750 | \$ 78,750 | \$ 65,520          | 0.4          | 252%   | In-house                      |
| 3 Aug-01   | Reduced run-time for garage exhaust fans, All Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Lo  | \$ 100     | \$ -      | \$ 48,204          | immediate    | 48204% | In-house                      |
| 4 Aug-01   | Reduced "on" time for outside lights East & West Towers,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Lo  | \$ 25      | \$ -      | \$ 292             | immediate    | 1168%  | In-house                      |
| 5 Mar-02   | Adjusted Office motion sensors to turn off after 5 to 7 minutes of no movement (some were set as high as 18 minutes), East & West Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Li  | \$ 2,750   | \$ -      | \$ 1,055           | 2.6          | 38%    | In-house                      |
| 6 Apr-02   | Converted 63 elevator lobby lamps and cross-over bridge lamps from 65 watt incandescent flood lamps to 16 watt fluorescent lamps, East & West Towers,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Li  | \$ 519     | \$ -      | \$ 2,456           | 0.2          | 473%   | In-house                      |
| 7 Aug-02   | Converted 131 high-ceiling lobby lights from 75 watt incandescent flood lamps to 16 watt fluorescent floods, East & West Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Li  | \$ 2,411   | \$ -      | \$ 6,080           | 0.4          | 252%   | In-house                      |
| 8 Apr-03   | Had JCI modify cooling tower staging and sequencing to obtain roughly a 50% decrease in energy consumption from the cooling towers. Decrease from 45 amps to approximately 20 amps, West Tower.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lo  | \$ 575     | \$ -      | \$ 12,220          | 0.0          | 2125%  | Johnson Controls, Inc.        |
| 9 May-03   | Optimized Boiler Control Function Programming and run times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lo  | \$ 600     | \$ -      | \$ 59,606          | immediate    | 9934%  | In-house                      |
| 10 Sep-03  | Garage Lighting Retrofit, East and West Towers. (SPC2K3PGEL128)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Li  | \$ 156,878 | \$ 40,558 | \$ 86,198          | 1.3          | 74%    | T. Marshall Associates        |
| 11 Oct-03  | Installed VFD (variable frequency drive) on West Tower Supply Fan (East Tower already has), West Tower. (SPC2K3PGEL128)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Eq  | \$ 126,960 | \$ 51,968 | \$ 48,256          | 1.6          | 64%    | Air Systems Inc.              |
| 12 Nov-03  | Installed AFD (adaptable frequency drive) on West Tower Chiller (East Tower already has), West Tower. (SPC2K3PGEL128)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Eq  | \$ 65,000  | \$ 41,207 | \$ 38,719          | 0.6          | 163%   | Trane                         |
| 13 Jan-04  | Installed motion sensor controls for HVAC in all conference rooms. At the measured average occupancy of 29%, we are saving 310,440 kWh/year, East & West Towers. (SPC2K3PGEL128)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Lo  | \$ 37,500  | \$ 8,714  | \$ 40,357          | 0.7          | 140%   | Integrated Building Solutions |
| 14 Mar-04  | Garage Lighting Retrofit. (No rebate due to building being less than 1 year old at time of installation), Almaden Tower.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Li  | \$ 51,949  | \$ -      | \$ 23,887          | 2.2          | 46%    | T. Marshall Associates        |
| 14a Apr-04 | West Tower Cooling Fan Motor VFD installation for Fans 2 and 3. Project REJECTED due to poor ROI, due to original configuration of the two speed motor controls and tower sequencing is already energy efficient; there did not appear to be adequate payback, West Tower.                                                                                                                                                                                                                                                                                                                                                                                                           | n/a | \$ -       | \$ -      | \$ -               | n/a          | n/a    | Cal Air                       |
|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |            |           |                    |              |        |                               |
|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Cost       | Rebate    | Annualized Savings | Payback (yr) | ROI    | Vendor                        |
| 15 Jun-04  | GE Lighting Panel Enhancement/Demand Load Curtailment, All Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Lo  | \$ 20,350  | \$ -      | \$ -               | n/a          | 0%     | Integrated Building Solutions |
| 16 Jun-04  | Real Time Electric Meter Installation, All Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Eq  | \$ 19,969  | \$ -      | \$ -               | n/a          | 0%     | Integrated Building Solutions |
| 17 Jul-04  | Balancing Major Rotating Equipment, All Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lo  | \$ 2,500   | \$ -      | \$ 1,820           | 1.4          | 73%    | Precision Balance             |
| 18 Mar-04  | Installed digital boiler control operator for enhanced temperature control, East Tower.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Lo  | \$ 800     | \$ -      | \$ -               | n/a          | 0%     | Cal Air                       |
| 19 Aug-04  | Completed re-lamping all light fixtures throughout the campus, but with more energy efficient lamps than were originally taken out when we de-lamped (see August 01). Annual Cost in additional energy usage, \$73,870, All Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Li  | \$ 10,000  | \$ -      | \$ (73,870)        | (0.1)        | -739%  | In-house                      |
| 20 Feb-05  | Programmed lighting in all three garages to turn off from midnight to 6:00 am. Inspected lighting levels in all areas of garage and installed additional emergency/night lighting to accommodate dark areas and rewired some zoning circuits. The purpose was to be able to remove the garage lighting from a 24 hour lighting operation and maintain adequate safety. Full lighting was reduced from 168 hours per week to 126 hours per week. All Towers. Also rewired East & West office tower perimeter and interior lighting zones to accommodate demand response and rescheduled corridor zones. Enabled approximately 260 kW toward Demand Response capacity. (SPC 2K5-L-689) | Lo  | \$ 75,504  | \$ 25,636 | \$ 29,829          | 1.7          | 60%    | In-house & IBS                |
| 21 Feb-07  | Install HVAC occupancy control in file storage rooms, Library & 1 W2 conference room                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lo  | \$ 2,100   | \$ 1,113  | \$ 1,810           | 0.5          |        | Integrated Building Solutions |
| 22 Jan-05  | Installed 850 Watt-stopper surge protectors with motion sensors, Almaden Tower \$3.14 savings per month each (PGE 2K4-L-269)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lo  | \$ 48,345  | \$ 12,750 | \$ 31,998          | 1.1          | 90%    | In-house                      |
| 23 Mar-05  | Rescheduled parking garage lighting to achieve additional reduced operating hours. Previously 126 hrs per wk, new schedule is 75 hours per week.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | lo  | \$ 100     | \$ 0      | \$ 19,393          | immediate    |        | In-house                      |
| 24 Apr-05  | Reduced run time for Garage Exhaust Fans, East & West Towers. From 2236 hours annually to 871 hours annually.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lo  | \$ 100     | \$ -      | \$ 50,614          | immediate    |        |                               |
| 25 Mar-05  | Relocated IDC Closet thermostats from the ceiling plenum to the closet walls so they would not be reading higher temperatures in the ceiling, West Tower.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Lo  | \$ 3,220   | \$ -      | \$ 2,519           | 1.3          | 78%    | Integrated Building Solutions |
| 26 Mar-05  | Installed ET Web Based Weather Station and Automated Drip Irrigation System, East & West Tower. (2 separate water savings projects combined)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Eq  | \$ 3,610   | \$ -      | \$ 9,001           | 0.4          | 249%   | Jensen Landscape              |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |            |           |                    | Annualized   |       |                                        |  |  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|-----------|--------------------|--------------|-------|----------------------------------------|--|--|
|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Cost       | Rebate    | Savings            | Payback (yr) | ROI   | Vendor                                 |  |  |
| 27 Apr-05 | Install state-of-the-art digital water treatment monitoring and control stations with incoming and bleed-line water meters for calculation of evaporation for reduced sewer charges, All Towers. ( Billing disputed and resolution occurred October 2006, a refund of \$23K was received for the 2005 & 2006 sewer billings. SJ Sewer Dept annual billing adjustment reduction of 33%, approx. \$12K annually.)                                                                                                                                                                                                                                      | Mo  | \$ 39,422  | 11,000    | \$ 12,001          | 2.4          | 42%   | Inserve                                |  |  |
| 28 Apr-05 | Purchase, install & program server for PML real time electric metering system. To be used for energy use & power quality tracking and reporting as well as for DR performance monitoring applications                                                                                                                                                                                                                                                                                                                                                                                                                                                | Eq  | \$ 6,500   | 0         | \$ -               |              |       | Integrated Building Solutions          |  |  |
| 29 Apr-05 | Installed Automated Faucets and Toilet Flush Valves, All Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Wa  | \$ 110,358 | -         | \$ 24,949          | 4.4          | 23%   | Technical Concepts                     |  |  |
| 30 Apr-05 | Installed Waterless Urinals throughout, All Towers. Annualized saving takes into account filter cartridge replacement costs of \$5057.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Wa  | \$ 35,374  | \$ 5,306  | \$ 8,338           | 4.7          | 21%   | Falcon Water free Urinals              |  |  |
| 31 n/a    | Item moved up to Project #21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | n/a | \$ -       | \$ -      | \$ -               |              |       |                                        |  |  |
| 32 May-05 | Install web based controls & reschedule fountain pump for reduced run time. Was 112 hours per wk. Now 50 hrs per wk or M-F 8AM-6PM, West Tower. (SPC 2K5-L-689)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lo  | \$ 4,400   | \$ 925    | \$ 5,449           | -            | 157%  | In-house                               |  |  |
| 33 May-05 | East and West Towers sign on to PG&E CPP & CPA/DRP Demand Response Programs, East & West Towers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Lo  | \$ -       | \$ 37,684 | \$ 2,893           | (13.0)       | -8%   | PG&E, EnerNoc & IBS                    |  |  |
| 34 Jun-05 | Almaden Tower, Install corridor lighting override switching (Devcon Construction error correction), tie overhead lighting in break areas to the emergency lighting circuit, and set up GE lighting relay control program with normal daytime schedule when previously it ran 168 hours per week. These items were needed in order to set up a reduced operating schedule for the corridor lighting and include the Almaden Tower corridors in PG&E Demand Response Program and the CPA-DRP program. The newly installed schedule is M-F, 7:30 AM-6 PM or 52.5 hours per week with 30 minute interval override capability, Almaden Tower. (35kW load) | Lo  | \$ 4,500   | \$ -      | \$ 27,327          | -            | 607%  | In-house / Integrated Building Systems |  |  |
| 35 Jun-05 | Initiated State sponsored building tune-up engineering study. 6 month study period with energy savings measures recommendations, All Towers. ( final numbers pending)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Lo  | \$ 19,870  | \$ 10,964 | \$ 208,009         |              |       | Quantum Consulting                     |  |  |
| 36 Jun-05 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 16 (W16 completed 6/05, 18% energy savings) completed by Devcon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Li  | \$ 2,700   | \$ 165    | \$ 402             | 6.3          | 16%   | Devcon                                 |  |  |
| 37 Jul-05 | Located and corrected chilled water pump control issue in the West Tower.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Lo  | \$ 1,200   | \$ -      | \$ 51,112          | immediate    | 4259% | In-house                               |  |  |
| 38 Sep-05 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 14 (W14 completed 9/29, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Li  | \$ 5,100   | \$ 349    | \$ 908             | 5.2          | 19%   | Nutek Lighting                         |  |  |
|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Cost       | Rebate    | Annualized Savings | Payback (yr) | ROI   | Vendor                                 |  |  |
| 39 Oct-05 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 7 (W7 completed 10/27, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Li  | \$ 5,092   | \$ 349    | \$ 908             | 5.2          | 19%   | Nutek Lighting                         |  |  |
| 40 Oct-05 | Install motion sensors in garage storerooms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Lo  | \$ 10,212  | \$ 888    | \$ 4,429           | 2.1          | 48%   | Integrated Building Solutions          |  |  |
| 42 Nov-05 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 8 (W8 completed 11/18, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Li  | \$ 5,092   | \$ 349    | \$ 908             | 5.2          | 19%   | NuTec Lighting / Grainger's            |  |  |
| 43 Nov-05 | Installed motion sensor controls for HVAC for all Almaden Tower office floors conference rooms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Lo  | \$ 19,899  | \$ 7,905  | \$ 13,000          | 1.0          | 108%  | Integrated Building Solutions          |  |  |
| 44 Nov-05 | Install motion sensors/dimmers in freight elevator alcoves and stairwells, and stairwell alcoves.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Lo  | \$ 84,034  | \$ 20,108 | \$ 46,853          | 1.4          | 73%   | T-Marshall                             |  |  |
| 45 Dec-05 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 10 (W10 completed 12/16, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Li  | \$ 5,092   | \$ 349    | \$ 908             | 5.2          | 19%   | Nutek Lighting / Grainger's            |  |  |
| 46 Jan-06 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 11 (W11 completed 1/31, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Li  | \$ 5,092   | \$ 349    | \$ 908             | 3.9          | 19%   | Nutek Lighting / Grainger's            |  |  |
| 47 Feb-06 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 12 (W12 completed 2/28, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Li  | \$ 5,092   | \$ 349    | \$ 908             | 3.9          | 19%   | Nutek Lighting / Grainger's            |  |  |
| 48 Mar-06 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 15(W15 completed 3/31, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Li  | \$ 5,092   | \$ 349    | \$ 908             | 3.9          | 19%   | Nutek Lighting / Grainger's            |  |  |
| 49 May-06 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 16(W16 completed 5/18 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Li  | \$ 4,905   | \$ 332    | \$ 863             | 3.9          | 19%   | Nutek Lighting / Grainger's            |  |  |
| 50 May-06 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 17 (W17 completed 5/19, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Li  | \$ 4,639   | \$ 316    | \$ 822             | 3.9          | 19%   | Nutek Lighting / Grainger's            |  |  |
| 51 May-06 | East Tower Chiller 2 VFD retrofit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Eq  | \$ 73,000  | \$ 29,400 | \$ 12,000          | 3.6          | 28%   | Trane Mechanical                       |  |  |
| 52 Oct-06 | Overhead lighting retrofitted with GE Nexgen T-8 Lamps and Ballasts, West Tower 2nd, 9th, 13th floors and service areas ( completed -----, 18% energy savings)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Li  | \$ 17,210  | \$ 1,104  | \$ 2,872           | 6.0          | 18%   | Nutek Lighting / Grainger's            |  |  |
| 53 Dec-06 | Almaden CBC lighting tie into GE Lighting Control System & place on schedule. Previously on 24/7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Lo  | \$ 100     | \$ -      | \$ 1,016           | 0.1          | 1016% | In-house                               |  |  |
| 54 Jun-06 | West Tower main chilled water valve operation programming improved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Lo  | \$ 4,364   | \$ -      | \$ 4,200           | 1.0          | 96%   | In-house                               |  |  |
| 55 Jun-06 | West Tower identified and tuned out morning chiller hunt spike                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lo  | \$ 100     | \$ -      | \$ 715             | 0.1          | 715%  | In-house                               |  |  |

|               |                                                                                                                     |      | Cost                | Rebate            | Annualized Savings  | Payback (yr) | ROI         | Vendor                      |
|---------------|---------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------|---------------------|--------------|-------------|-----------------------------|
| 54 Nov 07     | Install IAQ (CO2) sensors for Almaden Tower office tower.                                                           | Eq   | \$ 3,400            | \$ -              | n/a                 |              |             |                             |
| pending       | Conduct PG&E audit of kitchen systems and practices, West Tower.                                                    | Lo   | IP                  |                   |                     |              |             |                             |
| pending       | Install HVAC and lighting occupancy sensors for Gallery                                                             | Lo   | IP                  |                   |                     |              |             |                             |
| pending       | Install photocells for patio landscape lighting/emergency lighting                                                  | Lo   | IP                  |                   |                     |              |             |                             |
| pending       | Thermal window film installation, South & East exposure of East & West Towers                                       | Lo   | tbd                 | tbd               | tbd                 |              |             |                             |
| pending       | CO sensors / fan controls for garage; buildings                                                                     | Eq   | tbd                 | tbd               | tbd                 |              |             |                             |
| Pending       | Install Soft Start Motor Controllers for all hydraulic lift elevator motors                                         | Eq   | tbd                 | tbd               | tbd                 |              |             |                             |
| Pending       | Early retirement of larger (40hp and above standard efficiency electric motors. Replace with high efficiency motors | Eq   | tbd                 | tbd               | tbd                 |              |             | Shindler & Mitsubishi       |
| Pending       | Replace kitchen dishwasher with more efficient model.                                                               | Eq   | tbd                 | tbd               | tbd                 |              |             |                             |
|               | Waste Stream Management                                                                                             | Ws   | \$ -                | \$ -              | \$ 137,380          |              |             | BFI / Allied waste Services |
|               | Janitorial Service Upgrade                                                                                          | Ja   | \$ -                | \$ -              | \$ -                |              |             | ACME Janitorial             |
|               | IAQ Testing                                                                                                         | Iaq  | \$ -                | \$ -              | \$ -                |              |             | Sterling & Associates       |
|               | Recycled Content Office Supplies                                                                                    | Of   | \$ -                | \$ -              | \$ 8,700            |              |             | Office Max                  |
|               | Sustainable Products & Materials                                                                                    | Alt  | \$ -                | \$ -              | \$ -                |              |             |                             |
|               | LEED Certified Professional Consultant (3 Buildings)                                                                | AP   | \$ 105,000          | \$ -              | \$ -                |              |             | CTG Energetics              |
|               | LEED Registration & Certification                                                                                   | Cert | \$ 12,000           | \$ -              | \$ -                |              |             | USGBC                       |
| <b>Totals</b> | Totals do not include "pending" projects.                                                                           |      | <b>\$ 1,346,542</b> | <b>389,326.00</b> | <b>\$ 1,182,145</b> | <b>0.81</b>  | <b>123%</b> |                             |