



## Seattle Tacoma International Airport

### Energy Facts

#### Abstract:

Low reliability and future maintainability identified opportunities to improve light equipment and gain lower cost through reduced energy consumption and maintenance by using newer T5 lighting technology.

#### Scope:

Replace hangar lighting in two facilities and introduce improved zonal control to reduce operational usage, while achieving maximum lighting benefits.

#### System Statistics:

366 high bay light fixtures

#### Annual Savings:

526,746 KWH = \$46,000 per year, plus reduced parts and labor, improved reliability

#### Project Completion:

January 2010

### *ELS Reduces Facility Power Consumption by More Than 526,746 Kilowatt Hours Annually!*

In 2002 Alaska Airlines upgraded their Seattle Tacoma International Airport aircraft maintenance hangar lighting to 400W metal halide fixtures. To satisfy the lights' needs for a daily cooling period a control system was installed and programmed to shut off the lights within individual hangar zones for 10 minutes per day. As the facility maintenance partner for Alaska Airlines, ELS began to see a worrying failure rate for individual lights within this system. Between the period 2008 and 2009 this meant as many as 4 to 6 fixtures per month needed replacement. After several failed attempts to engage the manufacturer to support parts and technical requirements, ELS determined this situation was untenable and began to investigate alternate lighting systems that would not only bring in advanced, maintainable technology but also provide lower total cost of operation that would be aligned to Alaska Airlines Green Movement initiative. ELS discussed options with lighting engineers and experts and found that we could achieve the 75 lumens at 3 feet off the ground with new T5 high bay fixtures mounted at a height of 65 feet.



The new T5 fluorescents provide enhanced full spectrum light that is designed to increase productivity by improving light quality. Rated at 35,000 hour lamp life with 90% lumen maintenance, it was predicted they would provide significant energy savings compared to metal halide, with 75% longer life and increased light output. Prior to any final recommendation, ELS visited the nearby Boeing plant

where they had recently completed a similar change from metal halide to the T5 bulb to see in practice that lighting levels would hit the desired marks. Based on the product assessment and the benefit analysis provided by ELS, Alaska Airlines decided to move forward with the recommendation and between December 2009 and January 2010 ELS began replacement of the 366 fixtures.

Once installed, a somewhat disappointing 7% back-to-back reduction in electricity usage was achieved, which was less than had been estimated at project start. However, consistent with our continuous improvement initiatives, ELS began discussion with Alaska Airlines aircraft maintenance to determine opportunities to reduce the KWH demand by shutting down specific zones during lower hangar maintenance activity. Since the new lighting system does not require a cooling period each day we now had the opportunity to use the existing control system to provide lighting to where it was specifically needed but still allow override capability if more light was needed in other areas of the hangar. After analysis and system demonstration, revised usage hours and light levels in non-critical areas were introduced that lowered total running time by 12 hours each day, for a 526,746 reduction in KWH hours or approximately \$42,000 (@ \$ 0.08 / KWH.) ELS plan further refinement with the daylight harvest sensors, which we estimate will provide an additional 15% decrease in KWH during the summer months.

With improved reliability, light output, lower maintenance, reduced energy consumption and lower utility charges, Alaska Airlines is very happy with the success of the program achieved by converting their hangar to a T5 fluorescent bulb system.



## OUR ENERGY MISSION

ELS is dedicated to saving energy whenever possible. We actively seek ways to perform more efficiently to leave a smaller carbon footprint during and after our maintenance services. Our increased efficiency equates to significant cost savings to our customer and a corporate responsibility to our planet.