

# L.E.D. CITY

SIGNS & LIGHTS

## Case Study

Facilities: Dr. Pepper Stars Center Valley Ranch Rink and Plano

January 17, 2013

Locations: Irving, TX. and Plano, TX.

The Dr. Pepper Stars Center Ice Rink in Irving, Texas has two ice rinks, a complete work out facility, large viewing room between the two rinks and numerous locker rooms. The facility including the parking lot was completely converted to LED lights in October 2012. The Metal Halides that they use to have over the rinks were 1000 watt bulbs with 135 watt ballasts and they were all replaced with the 364 watt LED High Bays that were set up with bi-level switching, so you can turn on 50% of the LEDs on each fixture and run it at half power or run it at full power. The 364 watt High Bays with the drivers run at 420 watts total when running at 100% or full power.

Here are some before and after pictures of the two rinks.

### ALLIANCE ICE RINK



Before



After

You will notice in the before shots, the light and dark spots on the ice. With Metal Halide bulbs there can be what they call the halo effect where directly below the bulb will be a dark spots or shadows. Notice the boards and signs on the boards, what a difference with the LED Lighting. Photos taken with the LED Lights will show colors and clarity much better than with Fluorescents or Metal Halides. In addition with the LED Lighting, the consistency of the lighting is very even over the ice with very little variance throughout the rink.



Before



After

Again, please notice the huge improvement in the lighting with the LED Lights. At these rinks, they run the LED Lights at 50% the majority of the time for all practices and open skates. Only for games and tournaments is when the lights are turned on at 100% which is significantly brighter and has what we call the **WOW** factor. Every time they turn on the lights from 50% to 100% everyone looks at amazement on how much brighter it gets. It is really difficult to show in pictures the difference between 50% and 100% because the cameras self-adjust to compensate for the lighting. At 50% the lumens range from 550 to 650 and at 100% the lumens are 1100 to 1200 on the Alliance rink. On the Stars rink they were 380 to 480 lumens at 50% and 850 to 950 lumens at 100%. The main reason for the difference in lumen readings between the two rinks is because the Alliance rink has 30 lights over the ice and the walls are much closer to the rink for the lighting to bounce off and onto the ice. In the Stars rink, they only have 27 lights over the ice and the walls are further away because of the bleachers

around the rink. Over all a vast improvement on what they had in the past. The pictures taken when the LED Lights are set at 50% look exactly the same as the pictures when the LED Lights were set at 100% because the cameras will self-adjust to compensate for the lighting.

Also you may notice that the signs in the ice are not as sharp or bright in the pictures with the LED Lighting and that is because when the pictures were taken with the Metal Halides, about 3 months earlier, the ice was fresh and brand new. They had just put in new ice when we took the first set of pictures. Over time with the Zamboni adding more water, minerals and air bubbles into the ice, the clarity of the ice gets worse. Bottom line is that the LED Lighting is the future for all ice rinks with incredible savings.

#### DALLAS STARS ELITE ICE RINK



Before



After



Before



After



Before



After

## THE CALCULATIONS

Over the Alliance rink, they originally had 30 Metal Halides (3 across and 10 deep) and on the Dallas Stars Elite rink, they had 27 Metal Halides (3 across and 9 deep) plus 5 lights over the bleachers. A total of 62 lights for both rinks. The metal halides run at 1135 watts each and with 62 lights, they burned at 70,370 watts. The LED Lights at 50% would run at 210 watts for a total of 13,020 watts an 81% or more savings in wattage consumption. The reason we say 81% or more is because we did not take into account the HVAC differential load from the excessive heat the Metal Halides produce. Bottom line is that the customer, Jim Lites, President of the Dallas Stars NHL Team, is ecstatic with the quality and output of the lights. Even more excited about the savings where we exceeded their expectations because they were able to run the lights at 50% the majority of the time and the ability to instantly turn the lights on and off, which they could not do with the Metal Halides.

## THE BOTTOM LINE

When we originally did the Energy Savings Analysis (ESA), we did it for two different locations. There is not enough data on the Valley Ranch rink yet since that was the second rink we completed. The first ice rink facility we did was the Dr. Pepper Stars Center in Plano which is very similar to the Valley Ranch ice rink and we completed it in July of 2012. We converted every bulb in the building and parking lot to a LED bulb or fixture. At this location we estimated the savings to be around \$2,865.00 per month with a return on investment of 3.1 years. After a few of months, the actual savings have ranges from \$6,000 to \$10,000 per month which exceeded everyone's expectations and will bring their ROI to less than a year and a half and possibly to less than a year. Together with their help, we have exceeded the savings expectations. The calculations we provided did not include the effects the LED Lights would have on the HVAC air conditioning and refrigeration of the ice because with the LED Lights, they produce very little to no heat compared the Metal Halide and Florescent lights they had. In addition, the brightness levels of the lights over the ice rink are bright enough to run the lights at 50% the majority of the time creating additional major savings. The policy at the rink is to run the lights at 50% over the rink for hockey practices, open skating and figure skating practices. They only run the lights at 100% for hockey games and figure skating events, so with all these additional factors, the savings are two to three greater than what was originally projected. Bottom line is that LED Lighting is the future and there will be significant savings once the conversion is completed.



Panorama View of the Alliance Rink in Irving TX.