

COMBINING
ENERGY EFFICIENCY
AND QUALITY DESIGN

A knowhow™ CASE STUDY

demonstrating lighting

BAY VIEW CLOTHING

Since 1920, Bay View Clothing, located in South Boston, has identified itself as the “home of the world famous Scally Cap.” The original storeowner in the 1920’s and 1930’s manufactured and retailed the winter hats. Walter Bavineau, owner for the past 20 years, now has the hats made elsewhere, yet the Scally Caps still serve as a mainstay for the store.

The pendant fluorescent globes, in the center of the adult clothing section, mark a focal point for shoppers entering the store and lend an historical look along with the early South Boston photos on the upper walls.



During the last couple of years, Walter felt that their 2,200 square foot store’s layout had grown dated and congested. As part of the store-wide revitalization plans, Walter pared down the mix of men’s, women’s and children’s clothing. Having a more selective range has improved the visibility of the merchandise by showcasing individual items. He then enhanced the walls with a light yellow paint and hung historic South Boston photos of the 1920s, ‘30s and ‘40s on the top third of walls, which used to be loaded with merchandise.

NSTAR’s C&I Program Manager, Augustine Pimentel, then introduced Walter to the DesignLights™ Consortium’s *Small Retail Lighting knowhow™* Series guide. Using both the information and the lighting designs from the Small Retail Lighting guide as a reference, the Bay View’s lighting was upgraded to a more energy efficient system. “Customers love the lights and what we’ve done to the store,” says Walter.



PROBLEMS OVERCOME

Harsh, cold lighting from ceiling mounted fluorescent fixtures dominated the store. The 1,392 square foot adult clothing area was lit by six rows of nine bare, 8-foot, two lamp fixtures (60W fluorescent lamps) that ran the 72-foot length.

In the 812 square foot children’s area, six rows of one 8-foot, 4-foot, four lamp (40W fluorescent) wrap fixtures ran the store length along the 9-foot drop ceiling. Their prismatic plastic lenses were yellowed and cracked. In between the wrap fixtures, fifteen 100W incandescent recessed ceiling downlights created too much glare for customers.

The space had a mix of lamps and lamp colors, which highlighted one spot in cool light, and another in warm light. The lamp/fixture combinations were inconsistent. We even found different colored lamps in the same fixture. The track lighting in the display windows was also mix-matched with 150W spotlights, floodlights or plain incandescent lamps screwed into the heads. “We thought our lighting was okay until NSTAR Electric told us it was really bad,” Walter stated. “Maybe the store had the original 1920’s lights in it,” he joked.

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LIGHTING QUALITY

NSTAR, together with RISE Engineering, located in Cranston RI, applied the principles of DesignLights™ Consortium's *Small Retail Lighting knowhow™* Series guide in upgrading Bay View Clothing's lighting. Developed by the DesignLights™ Consortium, the guides outline criteria, which if followed, ensures a high quality energy efficient lighting systems.

The store now benefits from a direct/indirect lighting system. Light levels have increased throughout the store which, in general, casts a brighter light over the store's merchandise. Light levels naturally increase toward the storefront display windows.

In the adult clothing area, pendant mounted direct/indirect fluorescent fixtures provide uniform lighting. The louvers drive down most of the light to bring out the vibrant colors of the clothing. The uplighting reflects off the ceiling so it no longer appears dark.

In the children's merchandise area, parabolic perimeter lighting brightens the walls where most of the children's clothing is displayed, enhancing the colors of the merchandise. These wall-mounted luminaires also cast indirect light on the ceiling. The storewide effect is soft and subtle light instead of the former cold, blue hue.

Designed to attain the best possible illumination and visual comfort, parabolic luminaires feature louvers, which have a bowl shape. These cell louvers control the light being emitted by using accurately contoured surfaces. The louvers prevent the occupants from ever looking directly at the lamp(s), preventing the type of harsh lighting and glare experienced when exposed to bare fluorescents.

The store now has an average light level of 66 footcandles which makes the merchandise far more appealing and visible.

QUALITY LIGHTING SOLUTION

In the adult clothing section, Rise Engineering replaced the 8-foot fluorescents with six crosswise rows of pendant mounted, low-profile luminaires. The suspended luminaires draw one's eye attention 2-feet from the 12-foot high plaster ceiling to focus on the merchandise rather than on a cavernous ceiling.

Each fixture contains two T-8 lamps, with one electronic ballast per fixture. Each lamp supplies a color rendering index of 82, which is the DesignLights' Consortium's recommendation for intermediate retail applications. With a color temperature of 3700K, the lamps produce a light that is warm in appearance and casts an appropriate color over the merchandise, yet the light remains bright.

QUALITY INDICATORS	RATING		
	ACCEPTABLE	GOOD	EXCELLENT
Control of Direct and Reflected Glare			✓
Light on Walls and Ceilings			✓
Fixture Location Related to People			✓
Light Patterns and Uniformity			✓
Daylight Integration			✓
Color Rendering and Color Temperature			✓
Lighting Controls and Flexibility			✓
Quantity of Light on Horizontal Surfaces (fc)			✓



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In the children's area, 4-foot deep cell parabolic luminaires run the length of the store wall-mounted 2-feet below the ceiling. Each luminaire carries one 4-foot T-8 fluorescent lamp. To complement this light, the fifteen recessed ceiling lights were retrofit with 23W compact fluorescents. These accent lights highlight the display stands on the sales floor. In the display windows, 32W compact fluorescents, on tracks, replace the existing 150W lamps and do a great job of softening the incoming daylight. The window displays now present a uniform picture to the outside.

Accent lighting for the cash and carry area is obtained from two deep dome glass globes, lit by 23W compact fluorescent lamps. The globes, in the center of the adult clothing section, mark a focal point for shoppers entering the store and lend a historical look along with the early South Boston photos on the upper walls.

The average measured footcandle level in the store is 66. Merchandise located closer to the storefront display windows had measurements of around 80 footcandles.

IMPRESSIONS

Walter says the store feels roomier, more upscale. "The light is brighter, colors are clearer, true to the real colors of the clothing. Customers even think we changed the merchandise because of the colors, but it's the same merchandise. Customers say the lights make the store feel friendlier. They are no longer hit with harsh, cold fluorescent lights that we thought were so wonderful."

This simple main street clothing store has brought its lighting into the 21st century, and will save energy.

AND NOW THE NUMBERS

The adult clothing area has measured light levels that range from 50 to 81 footcandles. The children's section has light levels ranging from 30 footcandles at the back of the store to 55 footcandles towards the front of the store. The total connected load has been reduced by 4.9 KW. The density of lighting power has been reduced by 2.2 watts per square foot, from 4 to 1.8 watts per square foot. Electric demand has fallen from a high 8.9KW to a low of 4KW. Overall, a drastic improvement in lighting quality, energy efficiency and cost savings!



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Walter Bavineau, owner

COSTS

Total fixtures and lamps	\$8,500
Total installation labor	\$6,100
Installed system cost	\$14,600
Materials per square foot	\$3.86
Installation labor per square foot	\$2.77
Total cost per square foot	\$6.63

SAVINGS

Demand reduction	4.9 KW
Watts saved per square foot	2.2 W/SF
Annual utility cost savings ¹	\$1,237

¹Based on 2,800 hours per year usage and local utility rate of \$0.09 per kilowatt-hour.



PROJECT SUMMARY

Utility:	NSTAR Electric
Utility Representative:	Cherie Miles and Augustine Pimentel
Customer:	Walter Baveau
Facility:	Bay View Clothing
Location:	South Boston, Massachusetts
Space:	Retail
Area:	2,200 square feet
Ceiling Height:	12-foot and a 9-foot dropped ceiling
Fixtures Used:	Pendant mounted direct /indirect Lightolier CD7-8 fixtures. Wall mounted 4-foot deep cell direct /indirect fixtures, Hi-hat fixtures with 23W compact fluorescent lamps, and 32W Janmar compact fluorescent track fixtures.
Mounting:	Varies
Light Levels Achieved:	66 footcandles average (storewide)
Lighting Power Density:	1.8 watts per square foot
Lighting Specifier:	RISE Engineering
Installing Contractor:	RISE Engineering



THE LIGHTING KNOWHOW™ SERIES

The DesignLights™ Consortium publishes the *knowhow™ Series* for office, small retail, classroom and industrial/warehouse lighting. This *demonstrating lighting knowhow™ Case Study* highlights a specific installation of lighting that showcases quality, comfort and efficient use of energy. With members located throughout the Northeast and the Mid-Atlantic, the DesignLights™ Consortium is “a regional collaboration seeking to influence naturally occurring lighting events towards quality, comfort and efficiency.” The DLC includes among its members many electric utilities as active participants, as well as several other interested stakeholders. The DLC created these case studies with the intention of helping contractors and lighting specialists sell and deliver the benefits of high quality, energy efficient lighting to their customers in the commercial building market.

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Long Island Power Authority

National Grid

- Massachusetts Electric
- Narragansett Electric
- Granite State Electric
- Nantucket Electric

Northeast Energy Efficiency Partnerships, Inc.

Northeast Utilities

- The Connecticut Light and Power Company
- Western Massachusetts Electric Company

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