

Sam Nunn Atlanta Federal Center
Atlanta, Georgia
One of the Largest Federal Office Buildings



LED Egress-Lighting Project

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Facility Overview

24 story tower
Mid-Rise
Bridge

7/3 story garage
1924 building

2 million ft²
4400 workers

36 GWh/yr - energy usage
\$1.5 million/yr - energy cost
4.2 cents/kWh

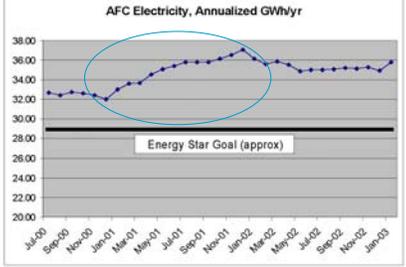
~20% reduction in energy usage needed to attain **Energy Star**



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Energy Management - Not at its Best

AFC Electricity, Annualized GWh/yr



81.9 kBtu/ft²

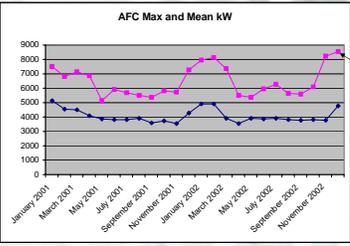
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Driving Forces

Reliability-centered capacity of the transformer = 8 MVA

Actual limit = 10 MVA

AFC Max and Mean kW



Both have been exceeded!

AND...the building next door is



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Measurement Project - 15th Floor

Egress lighting energy reduction and lighting improvement

Plugload control

Overhead lighting controls

Measurement



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LED Egress Project (Retrofit Case)

Before	After
42 (2x4) 3-T8 lamp troffers on emergency circuit	42 (2x4) troffers moved to main overhead circuit
8760 hours/yr	3875 hours/yr
106 watts/each	106 watts/each
39,000 kWh/year	17,251 kWh/year
	93 White LED egress strips at 3.3 watts/each on emergency circuit
	8760 hours/year
	2,688 kWh/year

19,939 kWh

LED Egress Project
(Retrofit Case)

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19,059 kWh/year reduced

13 TPY CO2 reduction

\$800/year - 14 year payback
[@4.2 cents/kWh (actual rate)]

\$1,429/year - 7.7 year payback
[@7.5 cents/kWh]

LED Egress Project
(New Construction Case)

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42 emergency troffers/floor using 39,000 kWh/yr
\$1,638/yr

Or

93 LED strips/floor using 2,688 kWh/yr
\$113/yr

7.2 year payback at 4.2 cents/kWh

Project cost - reasonable and customary
~ \$50-60/ white LED fixture = \$5500
~ same cost for installation = \$5500

LED Egress Project -
Other Benefits/Cost Savings

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Ancillary Benefits:

Emergency backup power usually means a Gas or Diesel Generator
(1st Cost, maintenance staff, fuel, and clean air regulations)

LED system can be run on an uninterruptible power supply (UPS)

General maintenance on the system should be near zero for 8-10 years.

I hypothesize that:
LED emergency lighting will penetrate smoke much better
than fluorescent lighting

LED Egress Project -
Before

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Measured -
18 fc under
0.2 fc between
1.7 fc intermediate

Fire Code -
1.0 fc avg at floor
min. of 0.1 fc



LED Egress Project -
After

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Measured -
1.7 fc under
0.2 fc between
on 10 foot ctrs.

Fire Code -
1.0 fc avg at floor
min. of 0.1 fc



LED Egress Project -
After

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Suggested spacing:

8-10 foot on center

LED's throw an 8 foot
circle from 9-10 foot
ceiling height





Energy Star logo
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LED Egress Project - Discussion

Price issues:
Installation performed in house will reduce cost.
Install a demo area to fine-tune installation methods and to reduce labor costs.

Product issues:
Amber LED cost 50% less, use more energy, and last longer
Spend time - learn/practice how to cut the ceiling tile
learn/practice installing properly/consistently
24/7 runtime = 10 years expected life
UL listing preferred in future installations

