



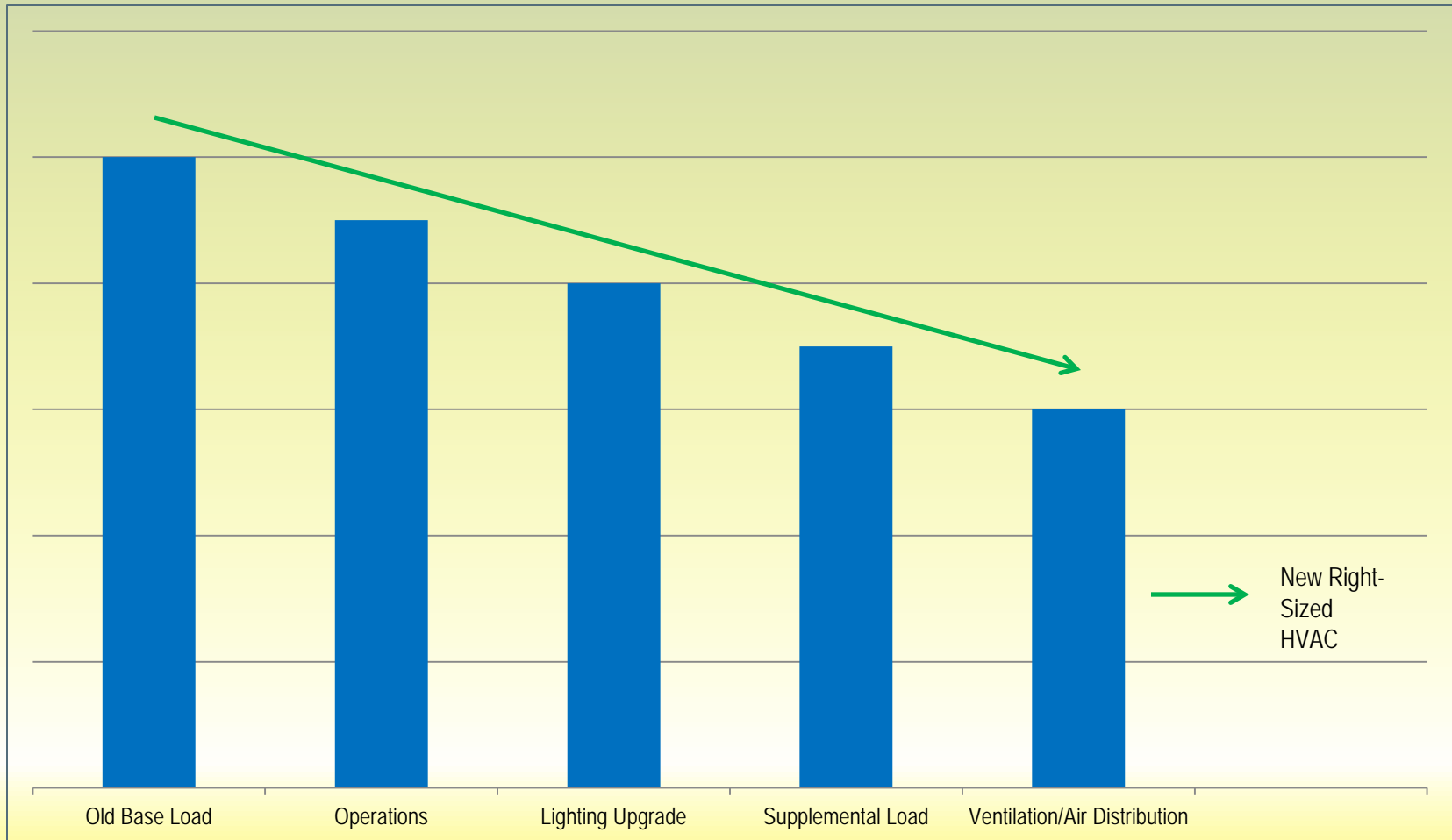
DVRPC Indoor Lighting Workshop Successful Lighting Projects



PRESENTED BY:

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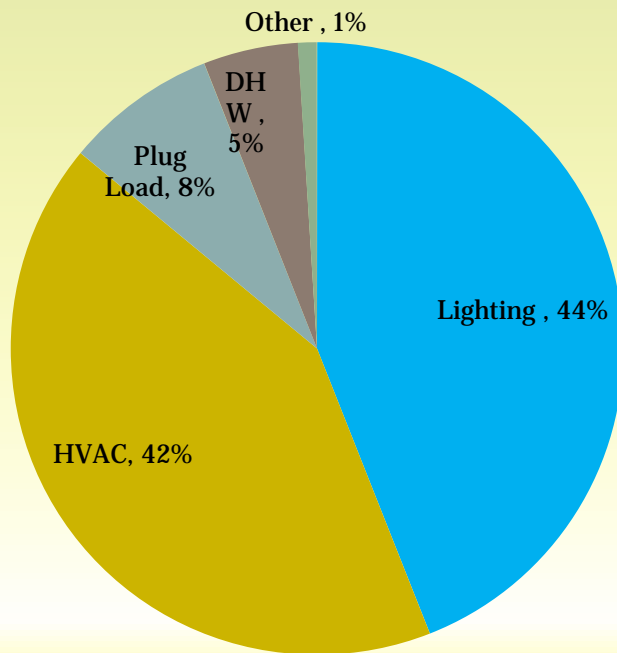
Successful Lighting Projects Efficiency Project Sequence



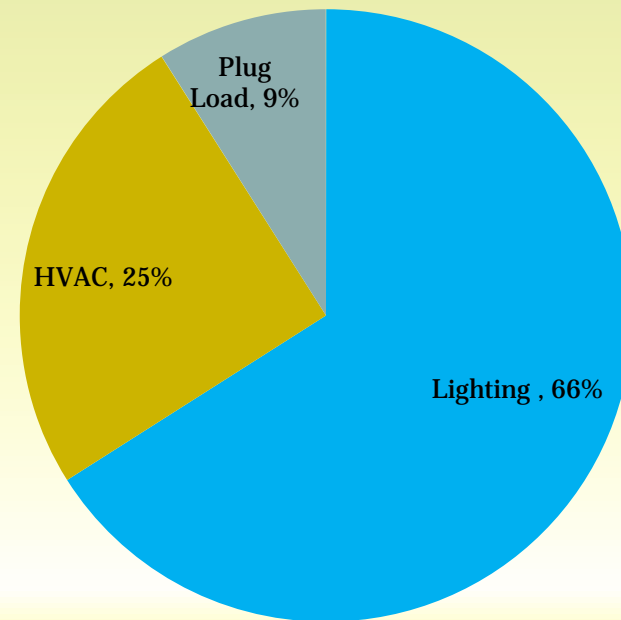


Local Admin Buildings

Load Profile, No Police



Load Profile, With Police

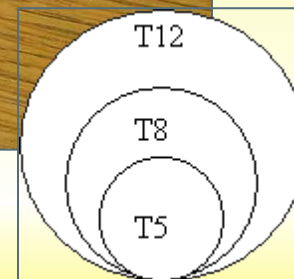


Successful Lighting Projects

T-12 → T-8



There are an estimated 900M T-12 fluorescent lamps still in use.



Successful Lighting Projects

T-12 → T-8



Municipal T-12 → T-8 Lighting Projects in Delaware County

Municipality	Building	Projected Annual Savings (\$)	Payback without Grant or PECO Rebate
A	Admin	\$ 2,982	2.4
B	Admin/Police	\$10,245	1.2
C	Admin/Police	\$ 4,491	2.6
	Library	\$ 3,312	3.0
	Firehouse/Admin	\$ 1,996	3.4
D	Admin/Police	\$ 4,700	2.8
E	Admin/Police	\$ 5,507	1.5
F	Admin/Police/Fire/Community	\$ 6,383	3.6



Rules of Thumb

- Replace using a 2:1 ratio
- Use 28W T-8s (not 32W)
- Use white reflectors to maximize output, minimize glare
- Consider high-efficiency/high output ballasts; can improve efficiency 5% vs standard ballasts
- Buy new lenses



Successful Lighting Projects

T-12 → T-8



Remember to Delamp



Admin Building Occupancy Sensors

Total Lighting Load	78,552
(%)	38.5%
Savings Due to Occ Sensors	6,284
(%)	8%
\$ Savings @ \$0.12/kWh	\$752
Project Cost	\$3,023
Watts Controlled	16,268
PECO Rebate	\$1,627
Total Project Cost	\$1,396
Payback	1.8 years



Admin Building Occupancy Sensors

- Passive infrared sensors detect body temperature; require clear line of sight to operate within their 15-foot field of view. Best for small enclosed spaces like private offices.
- Ultrasonic sensors can “hear” around corners, through walls, and through other objects, but are sensitive to false triggers by vibrations (e.g., HVAC). Well suited for larger spaces with multiple obstructions and low-motion areas like restrooms.
- Dual technology sensors reduce false triggering; good for conference rms, large offices.

LED Application: 24-7 Fleet Shop



- 186 fixtures
- 50-70% kWh reduction
- Floor illumination doubled with 20% fewer fixtures
- 4-year payback with PECO rebate
- \$30K savings/year



LED Application: 24-7 Fleet Shop

- Don't assume 1:1 (position or quantity)
- Layout is critical
- 24-7 applications (like police departments) are best
- Consider cost and quality (Design Lights Consortium rating)



Successful Lighting Projects

High Bay Considerations



	T5	LED
Fixture Cost (n=100)	\$16,000	\$65,000
Maintenance Costs (3X replacement + 1 ballast replacement)	\$25,000	--
Energy Cost Difference	\$19,000	
TOTAL	\$60,000	\$65,000

Considerations:

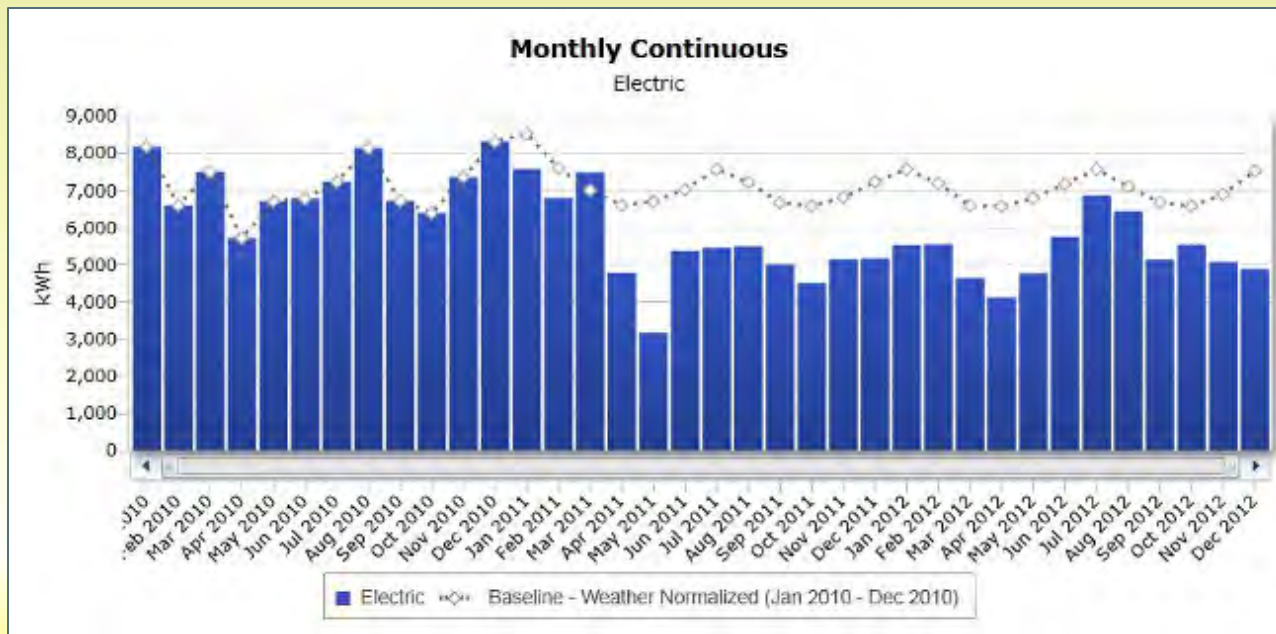
- o Cost of maintenance: Are you paying an electrician?
- o Number of fixtures/operating hours: Fewer = T5 (10-25)
- o Most local municipal facilities: Go fluorescent unless incentives/pricing give you an advantage
- o Keep watching

Successful Lighting Projects High Bay Considerations



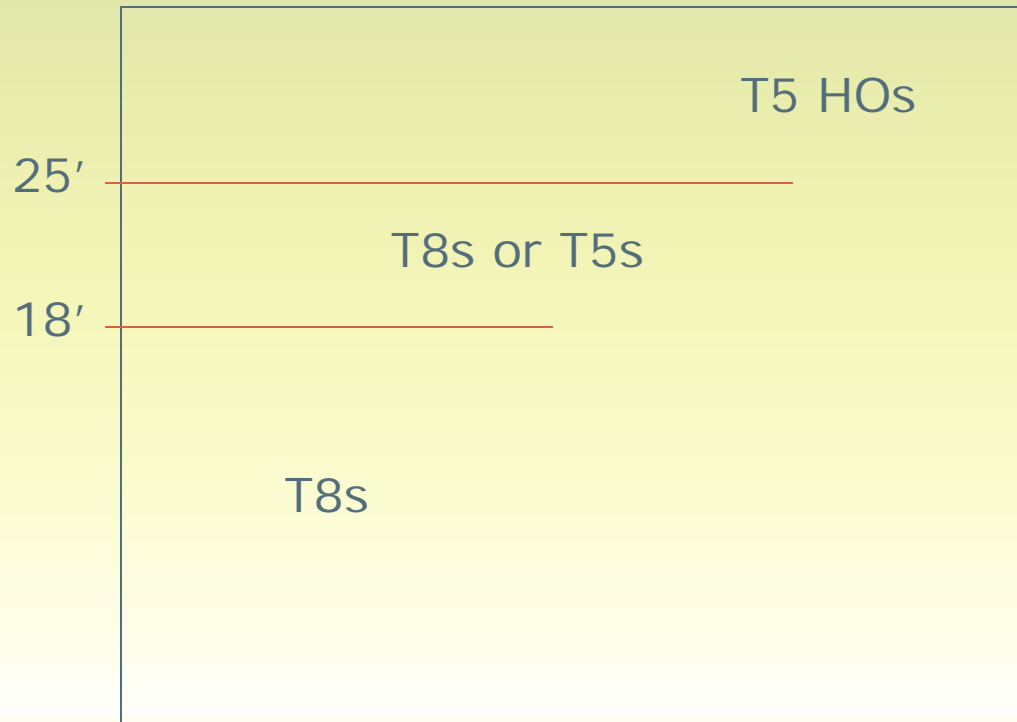
4,700 sf Maintenance Building

400 W metal halide HID → high bay fluorescent T5 HO with occupancy sensors = 25% reduction in utility cost





T5 vs T8 Rule of Thumb





Recessed Floods

90W → 18 W

4-year payback

Ideal in areas where lift is needed to change bulbs



Successful Lighting Projects Working With a Consultant



- **Independent**/represents many product lines = Best product for your needs
- **Experienced** = Many considerations, few presumptions
- **Practical** = No upselling
- **Accurate** = No inflation of savings





THANK YOU!

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