



# Energy Strategies for Office Buildings - Brick by Brick, Building the Foundation

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- Measure, Monitor, Verify
- Meters
- Lighting
- Controls and Variable Frequency Drives
- Energy Management Systems (EMS)/Building Automation Systems (BAS)
- Demand Load Shed
- Benchmarking & Disclosure
- Procurement Strategy
- Resources

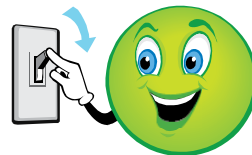
## Is the Landlord Measuring? Monitoring? Is the Tenant?

### 1) Property Managers/ Building Operation Engineers

- Avid/UBAR- automated reporting
- Monthly Reports – automated downloading
- Building Reports – creating energy plans

### 2) Mid Size Tenant Issue –

- Ability to save \$1/psf off of \$3/psf on energy cost by turning things off or down – does mid-size tenant on the East Coast care; should they?
- 70B feet of built space in USA x \$3 psf for energy = \$210B spent a year in energy;
- if we could reduce consumption by 30% via behavior change we could save \$70B each and every year






# Meters

- Does the building have a meter?
- Is it a building meter (1) or are there sub-meters by floor/by tenant space?
- Who is looking at the meter vis-à-vis consumption?
- Do I have or can I get 15 minute interval data and when I get this information who is looking at it to identify consumption reduction opportunities?
- Who is able to hook up a meter and what is the cost?



# LIGHTING

	INCANDESCENT	CFL	LED
<b>ANNUALIZED LIFECYCLE COST 12 Hours Per Day</b>			
<b>Wattage:</b>	60	13	8
<b>Lifetime (Hours):</b>	1500	12000	35000
<b>Hours of Usage Per Day</b>	12	12	12
<b>Cost Per kWh</b>	\$0.12	\$0.12	\$0.12
<b>Cost To Buy:</b>	\$0.50	\$2.00	\$20.00
<b>Annual Energy Cost:</b>	\$31.54	\$6.83	\$4.20
<b>Annual Bulb Replacement Cost:</b>	\$1.46	\$0.73	\$2.50
<b>Annual Maintenance Labor Cost:</b>	\$36.50	\$4.56	\$1.56
<b>Total Annualized Cost:</b>	\$69.50	\$12.13	\$8.27

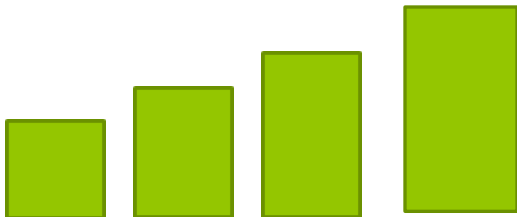


- Shortest available payback with highest amount of incentive dollars
- T-12s to T-8s → T-8s to T-5s; LEDs in parking lots, lobbies, elevators
- Average Home 4 Story colonial – how many lights???

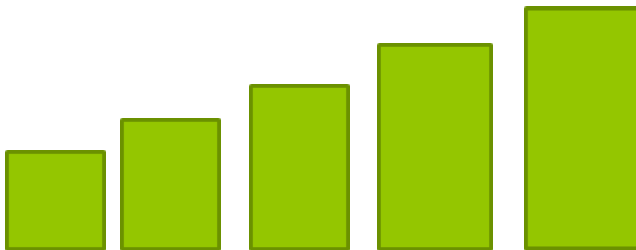


- **Benchmarking & Disclosure**

- 7 Cities (NYC, Philly, DC, Austin, Seattle, San Francisco, and Minneapolis; and 2 States (CA & WA)
- 29 additional Cities Considering (e.g., Chicago and Boston)
- Energy Disclosure- Mandates -NY, Philly, DC, Austin, Seattle, Minneapolis, San Francisco

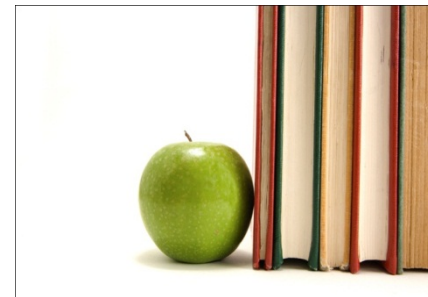
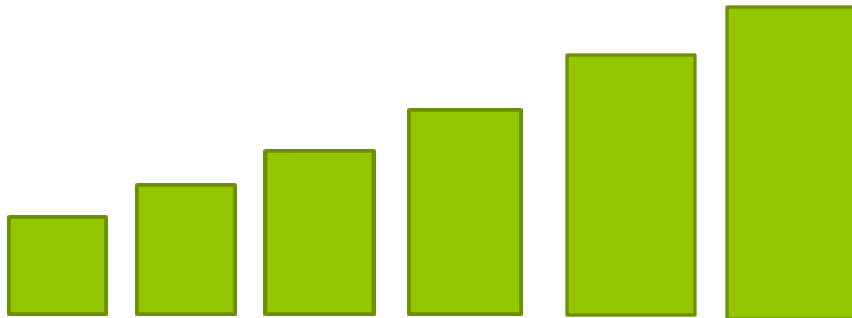


- How am I buying energy and is there an opportunity to buy in larger quantities and aggregate load and reduce cost via e.g., High Tension Rate in PA vs. General Services Rate
- What is the User really consuming and can we purchase better
- If I am a tenant, by not having a sub-meter am I subsidizing the larger consumer
- Incentives- NJ Clean & Green, NYSERDA, Federal – 179D up to \$1.80/psf in tax deduction - Lights, VFD's, HVAC, CHP, etc.
- \$\$\$ decrease the payback period



# Resources

- [www.dsireusa.org](http://www.dsireusa.org) - fed and state incentives for energy efficiency and renewables
- [www.GBIG.ORG](http://www.GBIG.ORG) – green real estate attributes by market
- Green Real Estate Sustainability Benchmarking (GRESB)
- Green Lease Library -[www.Greenleaselibrary.com](http://www.Greenleaselibrary.com)
- Institute For Market Transformation- [www.imt.org](http://www.imt.org)
- Green Button- Energy Data- [www.greenbuttondata.org](http://www.greenbuttondata.org)
- Carbon Disclosure Initiative (CDI)







**QUESTIONS?**