## Spectrally Enhanced Lighting

### Author

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### Description

Spectrally Enhanced Lighting is a design method that capitalizes on naturally occurring gains in visual efficiency as a consequence of the spectral content of higher CCT light sources. These gains can be translated directly into improved energy efficiency by employing lamps with higher CCT and Color Rendering Index (CRI), such as the 5000K, 80-85 CRI (850) lamp (1). These lamps can be installed at lighting levels 20% lower than traditional linear fluorescent lighting without occupant acceptance issues.

### Modeler Description

Find all of the lights in the building, and reduce their powers by the user-specified fraction (default 20%) This default comes from a DOE-funded study. Do not apply this lighting power reduction in hospital operating rooms or other areas where lighting quality is not similar to that used in offices.

### Use Case Types

Retrofit, New Construction

### Arguments

No arguments

### Initial Condition Message

The initial building lighting power.

### Final Condition Message

The final building lighting power.

### Not Applicable Messages

Not applicable if SEL cannot be applied to any of the spaces in the model.

### Warning Messages

Warn if lights without any lighting power are found.

### Information Messages

List each schedule that was modified.

### Error Messages

Error if more than 100% lighting power reduction is requested.

### Code Outline

* For each space type
  + Skip if space type should not use SEL
  + Make a clone of all lights definitions and reduce lighting power
  + Replace existing lights definitions with the clone

### Tests

**This measure applies to:**

1. Large Office
2. Medium Office
3. Primary School
4. Secondary School
5. Large Hotel
6. Hospital
7. Small Office
8. Stand-Alone Retail
9. Strip Mall
10. Supermarket
11. Quick Service Restaurant
12. Full Service Restaurant
13. Small Hotel
14. Outpatient Healthcare
15. Warehouse
16. Midrise Apartment

### References

1. <http://apps1.eere.energy.gov/buildings/publications/pdfs/corporate/selpies_economics_validation_083006.pdf>