## Solar Cogeneration and Daylighting

### Author

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### Description

Solar cogeneration and daylighting refers to using a concave concentrating mirror on the roof to focus light into a fiber optic cable, which is run from the roof to light fixtures throughout the building to provide an alternative to electric lighting during sunny times. Additionally, the light in the IR spectrum is directed onto a PV cell to generate electricity. See http://www.jxcrystals.com/old\_Solar/munich2.pdf for a more detailed description.

### Modeler Description

Reduces runtime fraction of lights by user-specified amount (default 50%) during the user-specified time period (typically daytime, default 9am-4pm). This is an attempt to represent the impact of using the light collected on the roof instead of electric lighting. This modeling approach does not capture the impact of using a PV cell to turn the IR spectrum of the captured light into electricity.

### Use Case Types

Retrofit, New Construction

### Arguments

No arguments

### Initial Condition Message

### Final Condition Message

The number of schedules that were edited to reflect solar cogeneration.

### Not Applicable Messages

Not applicable if no lights are found in the model.

### Warning Messages

### Information Messages

List each schedule that was modified.

### Error Messages

### Code Outline

* Find all lights
* Get their fractional schedule
* Reduce the schedule by the specified percentage on the specified days

### 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://www.jxcrystals.com/old_Solar/munich2.pdf>