

What can I choose in the calculator?

The calculator lets you choose the energy efficiency of lighting in Switzerland in the selected year (2035 or 2050).

Lighting Energy Efficiency



National Gallery of Art LED Tunnel. Heidi, via Flickr, under CC BY-SA 2.0

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IMPACT - What is the impact of increasing the energy efficiency of lighting?

In Switzerland, increasing the energy efficiency of lighting has the following impacts:

Energy system

- 😊 Reduces final energy demand, though the saving in electricity will be partly offset by an increased need of heating in the heating season.
- 😊 Reduces total electricity consumption.
- 😊 Likely to reduce peak loads on grid.
- 😊 Likely to increase energy independence and energy security.

Environment & Climate

- 😊 Very likely to reduce global CO2 emissions.
- 😞 CFLs contain mercury and require dedicated end of life treatment which is hard to enforce.

Society & Economy

- 😊 Likely to have limited impact on the cost of the energy transition.
- 😊 Reduces total cost of lighting.

GLOBAL MARKET - What is the global potential for increasing the efficiency of lighting?

Lighting represents almost 20% of global electricity consumption. This consumption is equivalent to the amount of electricity generated by a nuclear power. IEA estimates show the total savings potential in residential and services lighting at more than 2.4 EJ per year by 2030.[1]

DEFINITION / CONSTRAINTS

DEFINITION - What is Lighting Efficiency?

The switch to lighting devices that require less electrical energy per unit of light intensity (measured in lumens) provides immediate gains. Compact fluorescent lamps (CFLs) and light emitting diodes (LEDs) are the two most efficient technologies. Compared with a traditional tungsten-filament (incandescent) bulb, CFLs offer a 75% electricity saving and LEDs 80%.

CFLs and LEDs are available in different forms, with the latter not being suitable for replacement of fluorescent tubes in most settings, though the latter are already quite efficient. Both offer much longer lifetimes than incandescent bulbs.

In some countries, the sale of some incandescent bulbs is no longer permitted (Switzerland only banned light bulbs of the energy efficiency class F and G).

Lighting management systems can also reduce electricity consumption in commercial and industrial buildings by switching off lights according to predefined patterns, or in response to occupancy

sensors.

Passive building measures may also improve daylighting through, for example, window size and orientation, inclusion of light wells and light tubes for rooms without windows. This will reduce electricity demand.

CONSTRAINTS - What are the key barriers facing the increase of Lighting Efficiency?

Consumers are reluctant to higher purchase costs (without subsidy) despite lower lifetime costs.

'Rebound effects' may counteract the energy savings from more efficient appliances. The financial savings from lower running costs can lead to purchase of more appliances, or changes in lifestyle (e.g. wash more often).

Replacement of old incandescent bulbs before their failure is perceived by the customers to be an economic incongruity.

Not all light fittings can accommodate more efficient bulbs.

Some LEDs and CFLs cannot be dimmed, so wiring is incompatible.

LEDs and CFLs provide light of a different colour temperature than incandescent or halogen bulbs, which is sometimes felt less attractive and comfortable for the sight.

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#content .bloc.single { width: 295px; } #wrapper #content .bloc.double { width: 610px; } #wrapper
#content .bloc.triple { width: 915px; } #wrapper #content .bloc.bgWhite { background: #fff; }
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float: left; width: 480px; } #wrapper #content .intro .txt h1 { font-family: 'ProximaNovaCond-Semibold'; font-size: 44px; color: #1d1d1b; text-transform: uppercase; margin-bottom: 6px; }
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#newsWrapper { background: #fff; } #wrapper #content #newsWrapper .news { padding: 20px; }
#wrapper #content #newsWrapper .news .img { float: left; /*width: 280px;*/ width: 220px; }
#wrapper #content #newsWrapper .news .txt { float: left; width: 100px; padding-left: 10px; }
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font-family: 'ProximaNovaCond-Regular'; font-size: 28px; margin-bottom: 15px; } #wrapper #content
#newsWrapper .news p { font-size: 16px; margin-bottom: 20px; } #wrapper #content
#newsWrapper.detail { margin-bottom: 20px; } #wrapper #content #newsWrapper.detail img {
width: 440px; float: left; margin: 0 20px 20px 0; } #wrapper #content #faqWrapper h2 { text-align: center; font-family: 'ProximaNovaCond-Semibold'; font-size: 26px; text-transform: uppercase; color: #1d1d1b; margin-bottom: 20px; } #wrapper #content #faqWrapper .blocWrapper .bloc { height: 200px; position: relative; } #wrapper #content #faqWrapper .blocWrapper .bloc .content { padding: 20px; } #wrapper #content #faqWrapper .blocWrapper .bloc h3 { font-family: 'ProximaNovaCond-Semibold'; font-size: 26px; text-transform: uppercase; color: #1d1d1b; text-align: left; } #wrapper #content #faqWrapper .blocWrapper .bloc h4 { font-family: 'ProximaNovaCond-Light'; font-size: 19px; text-transform: uppercase; color: #1d1d1b; margin-bottom: 20px; } #wrapper #content #faqWrapper .blocWrapper .bloc .bluecornerlink { position: absolute; bottom: 20px; } #wrapper #content #faqWrapper .blocWrapper .bloc .bluecornerlink a { color: #fff; } #wrapper #content #faqWrapper.detail { margin-bottom: 40px; } #wrapper #content #faqWrapper.detail li { background: #fff; padding-top: 20px; border-bottom: 1px solid #c2c2c2; cursor: pointer; } #wrapper #content #faqWrapper.detail li .number { float: left; width: 30px; height: 30px; margin: 0 35px 15px 15px; text-align: center; background: #fe6b00; border-radius: 15px; line-height: 30px; color: #fff; } #wrapper #content #faqWrapper.detail li .question { float: left; font-family: 'ProximaNovaCond-Regular'; font-size: 28px; line-height: 30px; width: 840px; padding-bottom: 20px; padding-right: 20px; } #wrapper #content #faqWrapper.detail li .question p { font-size: 28px; line-height: 30px; } #wrapper #content #faqWrapper.detail li .answer { display: none; background: #fff; padding: 20px 20px 20px 80px; font-size: 16px; line-height: 20px; } #wrapper #content #faqWrapper.detail li .answer p { margin-bottom: 20px; } #wrapper #content #faqWrapper.detail li.active { background: #fe6b00; } #wrapper #content #faqWrapper.detail li.active .number { background: #fff; color: #fe6b00; } #wrapper #content #faqWrapper.detail li.active .question { color: #fff; } #wrapper #content #faqWrapper.detail li.noborder { border-bottom: none; } #wrapper #content #lexiqueWrapper .ulWrapper { text-align: center; } #wrapper #content #lexiqueWrapper .ulWrapper ul li { display: inline-block; *display: inline; zoom: 1; border-right: 1px solid #c2c2c2; padding: 0 11px; } #wrapper #content #lexiqueWrapper .ulWrapper ul li.noborder { border: none; } #wrapper #content #lexiqueWrapper .ulWrapper ul li a { color: #535559; font-family: 'ProximaNovaCond-Light'; font-size: 18px; } #wrapper #content #lexiqueWrapper .ulWrapper ul li a.active { color: #000; } #wrapper #content #lexiqueWrapper #listWrapper { margin: 20px 0; } #wrapper #content #lexiqueWrapper #listWrapper ul li { background: #fff; padding: 20px; border-bottom: 1px solid #c2c2c2; } #wrapper #content #lexiqueWrapper #listWrapper ul li h4 { font-family: 'ProximaNovaCond-Regular'; font-size: 24px; margin-bottom: 6px; } #wrapper #content #lexiqueWrapper #listWrapper ul li p { margin-bottom: 20px; } #wrapper #content #map { width: 100%; height: 550px; background: #e8e8e8; } /* TEXTE PAGES ET ADMION */ #content.text, .redactor_box { font-family: Arial, Helvetica, Sans Serif; font-size: 16px; color: #333333; padding: 20px; } #content.text body, .redactor_box body { background: none; } #content.text h1, .redactor_box h1, #content.text h3, .redactor_box h3 { font-family: 'ProximaNovaCond-Light'; color: #535559; font-size: 32px; text-transform: uppercase; } #content.text h3, .redactor_box h3 { font-
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size: 20px; } #content.text h2, .redactor_box h2, #content.text h4, .redactor_box h4 { font-family:
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bottom: 10px; } #content.text h4, .redactor_box h4 { font-size: 26px; } #content.text p,
.redactor_box p { color: #333333; margin-bottom: 20px; } #content.text #wysiwyg, .redactor_box
#wysiwyg { margin-bottom: 80px; } #content.text ul li, .redactor_box ul li { margin-bottom: 10px;
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23px; color: #797a7f; } .pagination ul li a.active { color: #000; } .pagination ul li.prev, .pagination ul
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{ border-left: 0; } .paddedContent { padding: 20px; } #sponsorsWrapper { margin: 40px 0 30px
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div.page { overflow: auto; }

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VALUE RANGE - WHAT RANGE OF VALUES CAN I CHOOSE?

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.bloc h2 { font-size: 20px; font-family: 'ProximaNovaCond-Light'; color: #535559; font-weight: normal;
text-transform: uppercase; margin: 0; } #wrapper #content .bloc.bgWhite { background: #fff; }
#wrapper #content .intro .txt h2 { font-family: 'ProximaNovaCond-Light'; font-size: 32px; color:
#535559; text-transform: uppercase; margin-bottom: 6px; } #wrapper #content #newsWrapper
.news h2 { font-family: 'ProximaNovaCond-Regular'; font-size: 28px; margin-bottom: 15px; }
#wrapper #content #faqWrapper h2 { text-align: center; font-family: 'ProximaNovaCond-Semibold';
font-size: 26px; text-transform: uppercase; color: #1d1d1b; margin-bottom: 20px; } /* TEXTE PAGES
ET ADMION */ #content.text, .redactor_box { font-family: Arial, Helvetica, Sans Serif; font-size: 16px;
color: #333333; padding: 20px; } #content.text body, .redactor_box body { background: none; }
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bottom: 10px; } #content.text p, .redactor_box p { color: #333333; margin-bottom: 20px; }
#content.text #wysiwyg, .redactor_box #wysiwyg { margin-bottom: 80px; } hr { background: none;
border: none; border-top: 1px solid #c2c2c2; } hr.marged { margin: 40px 0; } .pagination { margin:
20px auto 40px auto; height: 20px; } .pagination ul li { float: left; padding: 0 10px; border-left: 1px
solid #c2c2c2; } .pagination ul li a { font-family: 'ProximaNovaCond-Light'; font-size: 20px; line-
height: 23px; color: #797a7f; } .pagination ul li a.active { color: #000; } .pagination ul li.prev,
.pagination ul li.next { width: 11px; height: 20px; } .pagination ul li.prev, .pagination ul li.nobl,
.pagination ul li.next { border-left: 0; } .paddedContent { padding: 20px; } #sponsorsWrapper h2 {
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div.page { overflow: auto; }

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The expected future value ranges for the average [lighting performance](#) are:

- 2035 → 0.6 – 0.9 kWh/m²
- 2050 → 0.4 – 0.6 kWh/m²

In 2011 the average electricity consumption per square meter in terms of lighting was 3.2 kWh/m² [2].

REFERENCES

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text-transform: uppercase; margin: 0; } #wrapper #content .bloc.bgWhite { background: #fff; }
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font-size: 26px; text-transform: uppercase; color: #1d1d1b; margin-bottom: 20px; } /* TEXTE PAGES
ET ADMION */ #content.text, .redactor_box { font-family: Arial, Helvetica, Sans Serif; font-size: 16px;
color: #333333; padding: 20px; } #content.text body, .redactor_box body { background: none; }
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'ProximaNovaCond-Semibold'; font-size: 44px; color: #000; text-transform: uppercase; margin-
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#content.text #wysiwyg, .redactor_box #wysiwyg { margin-bottom: 80px; } hr { background: none;
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.pagination ul li.next { width: 11px; height: 20px; } .pagination ul li.prev, .pagination ul li.nobl,
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font-family: 'ProximaNovaCond-Regular'; font-size: 14px; text-transform: uppercase; } .dokuwiki
div.page { overflow: auto; }
```

[1] [International Energy Agency](#)

[2] [PROGNOS 2012, Die Energieperspektiven für die Schweiz bis 2050, Energienachfrage und Elektrizitätsangebot in der Schweiz 2000-2050.](#)

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