BIG 2 GREAT
From big data to great value

Calculating saving potentials

Big2Great
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Outcome today

Show two models

- One bottom up model where we need a lot of data to use it
- One top-down model where we use a lot of assumption
- Get input to how the get better data / assumptions

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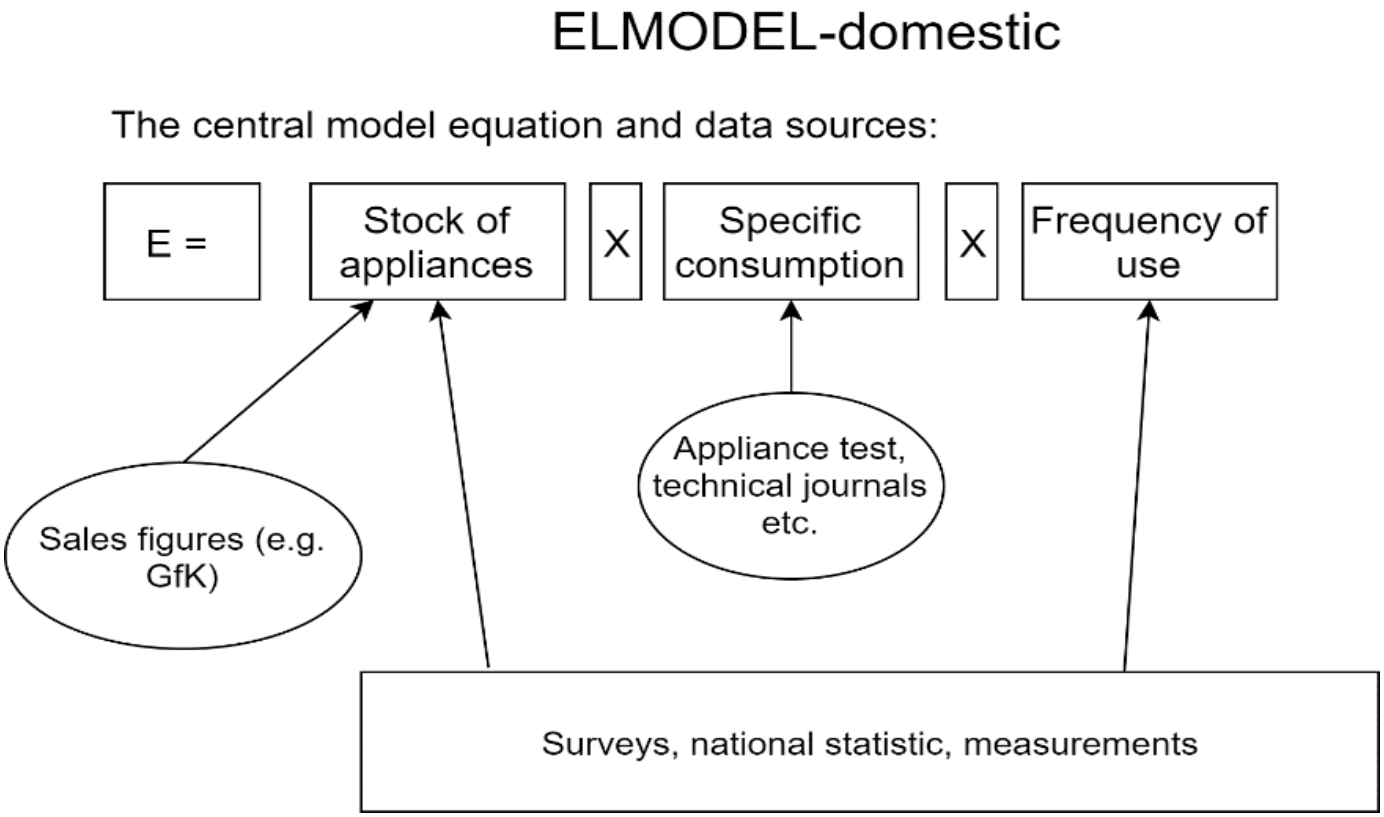
Elmodelbolig



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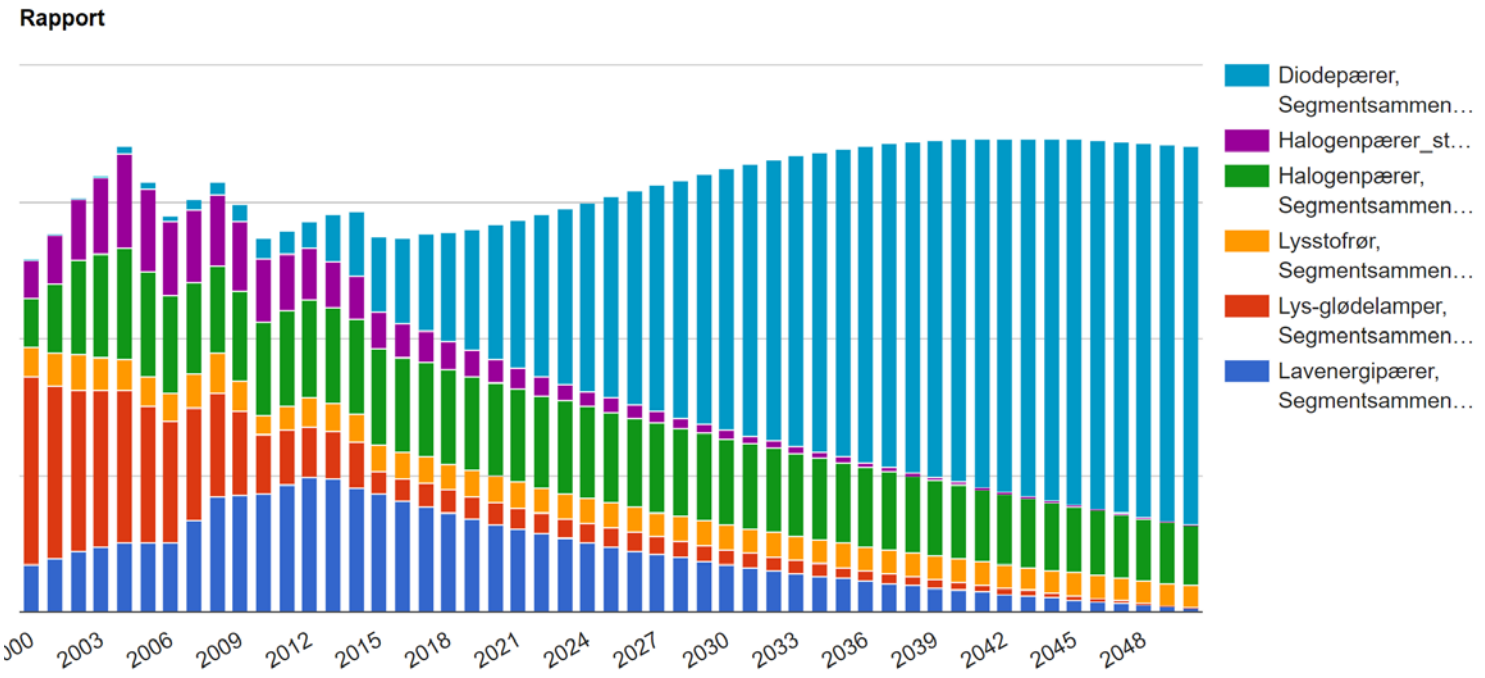
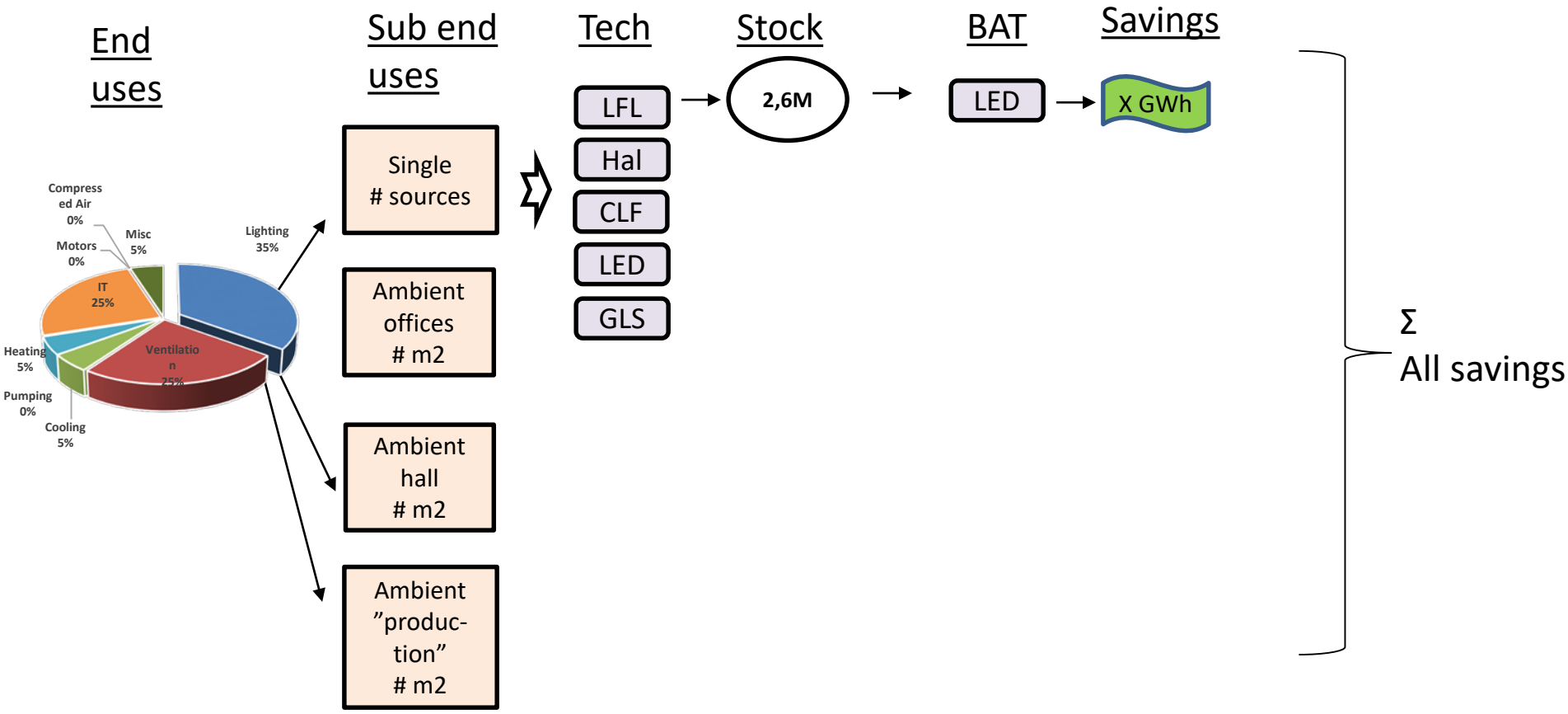
Elmodelbolig



Top-down - detailed



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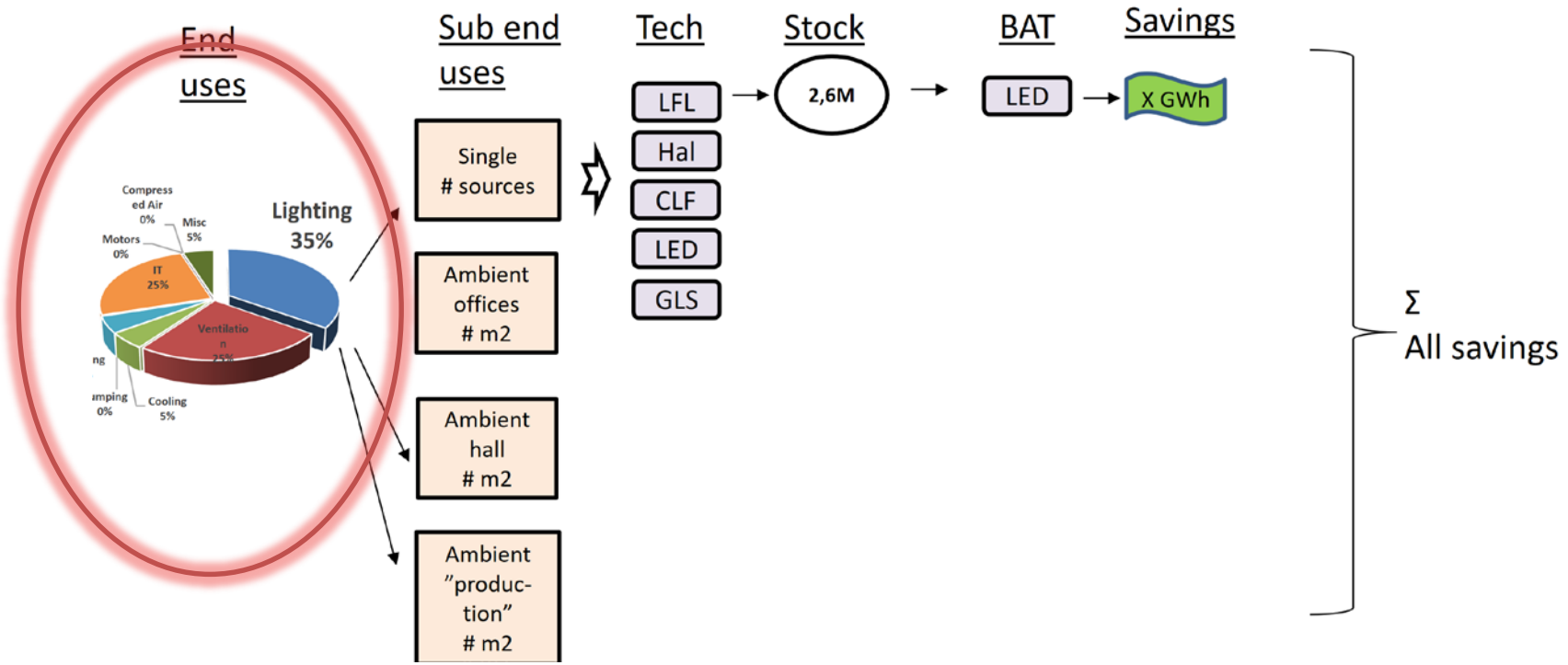
Top-down

Step 1: From ”Total” => ”End uses”



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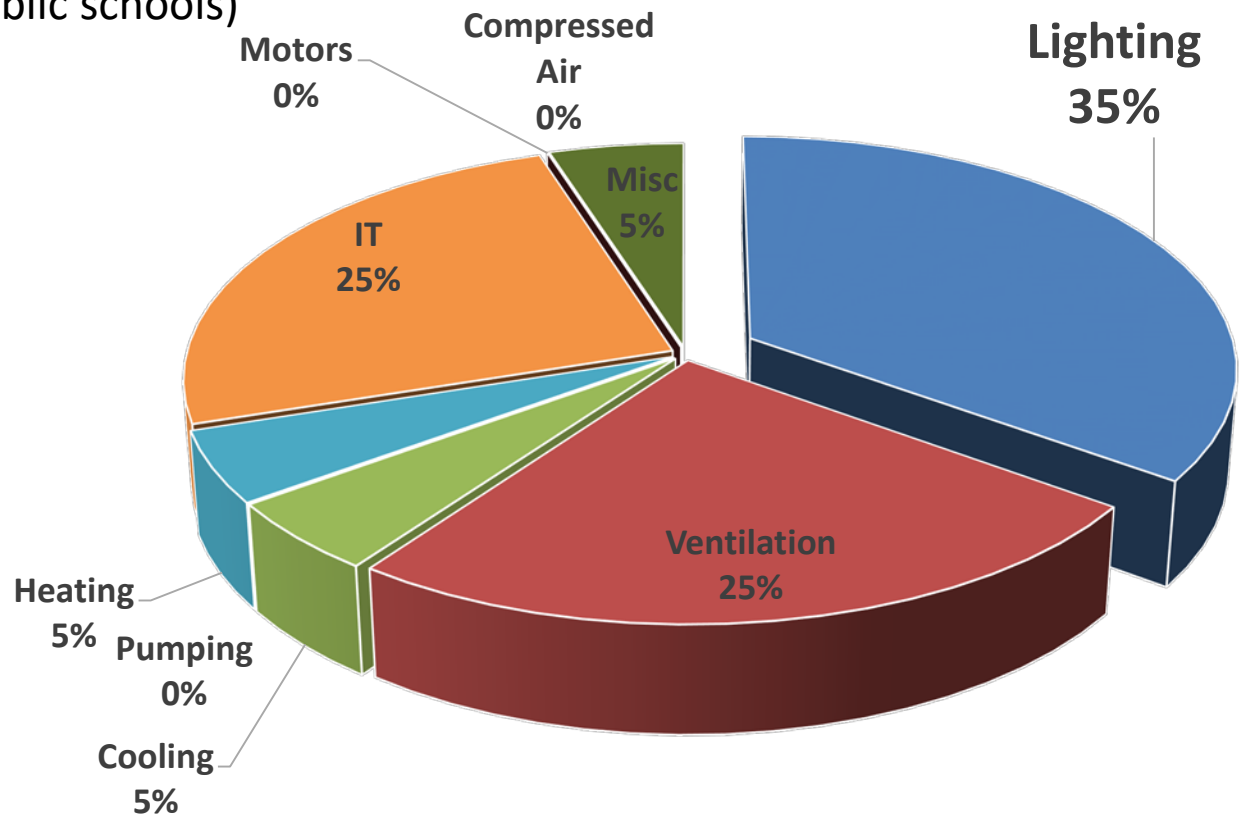
Top-down – step 1

This step is based on this assumption (förutsättning)

- End-use distribution (Public schools)
- Total **1076** GWh/yr
- Light **376** GWh/yr



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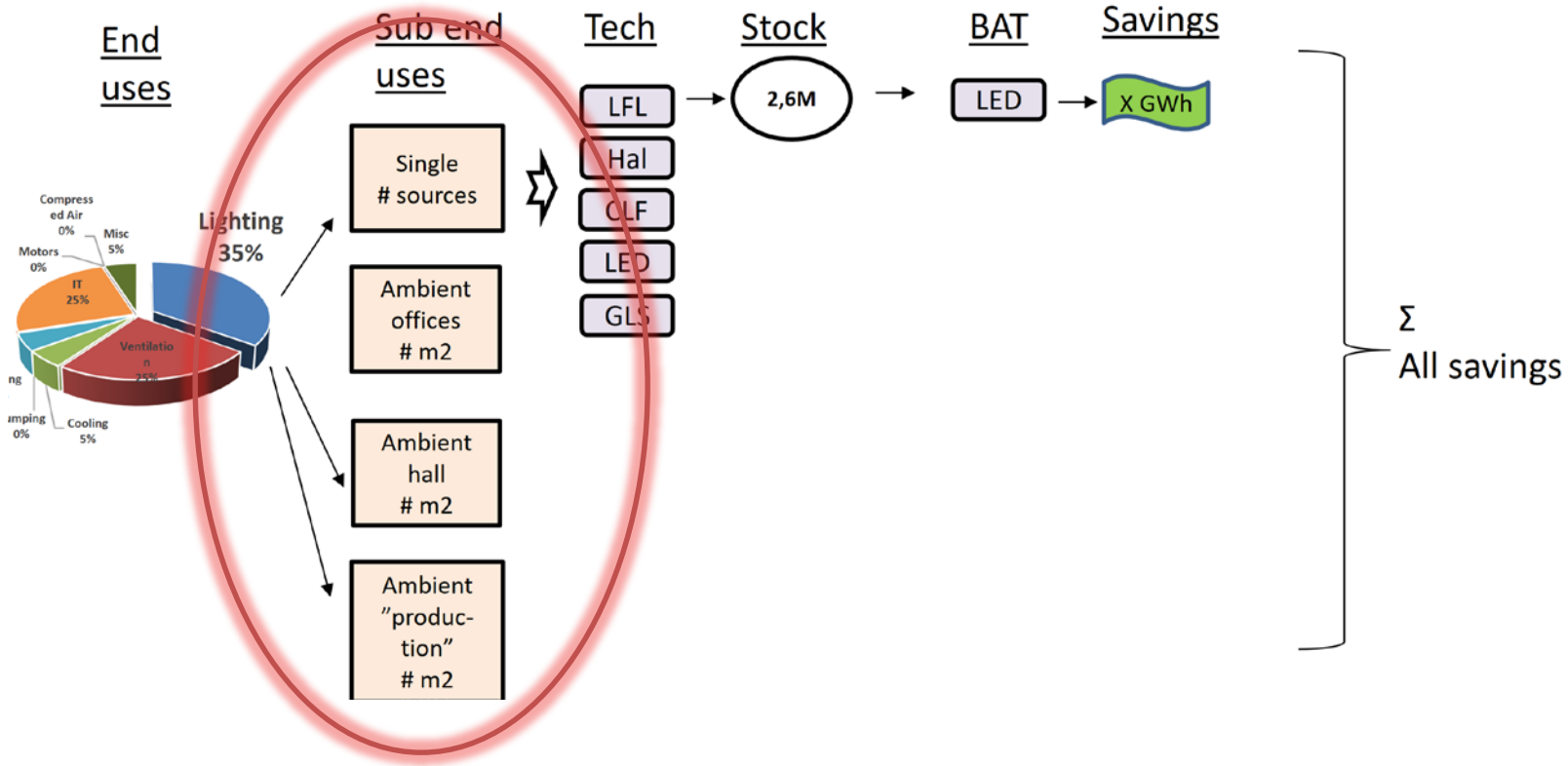
Top-down

Step 2: From ”End uses” => ”Sub end uses”



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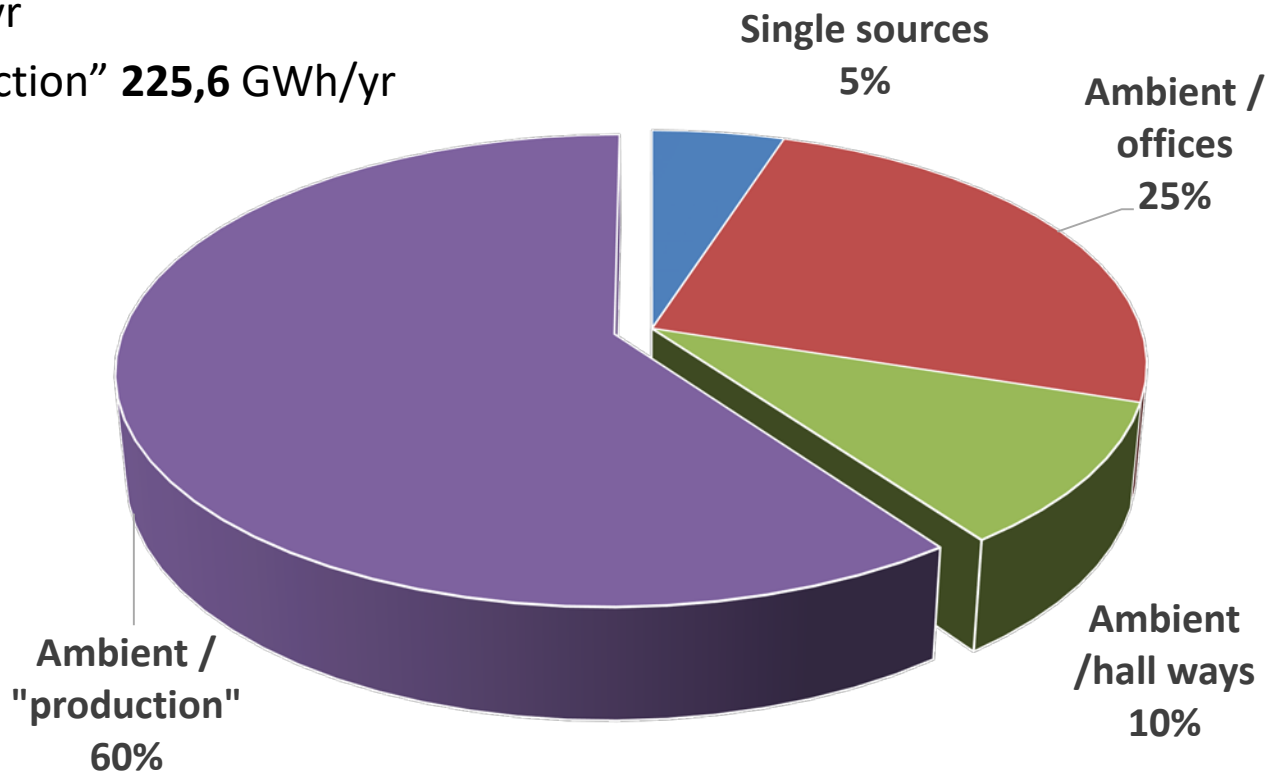
Top-down – step 2

This step is based on this assumption (förutsättning)

- Sub end-uses distribution (where does the light come from) (Public schools)
- Light **376** GWh/yr
- Ambient ”production” **225,6** GWh/yr



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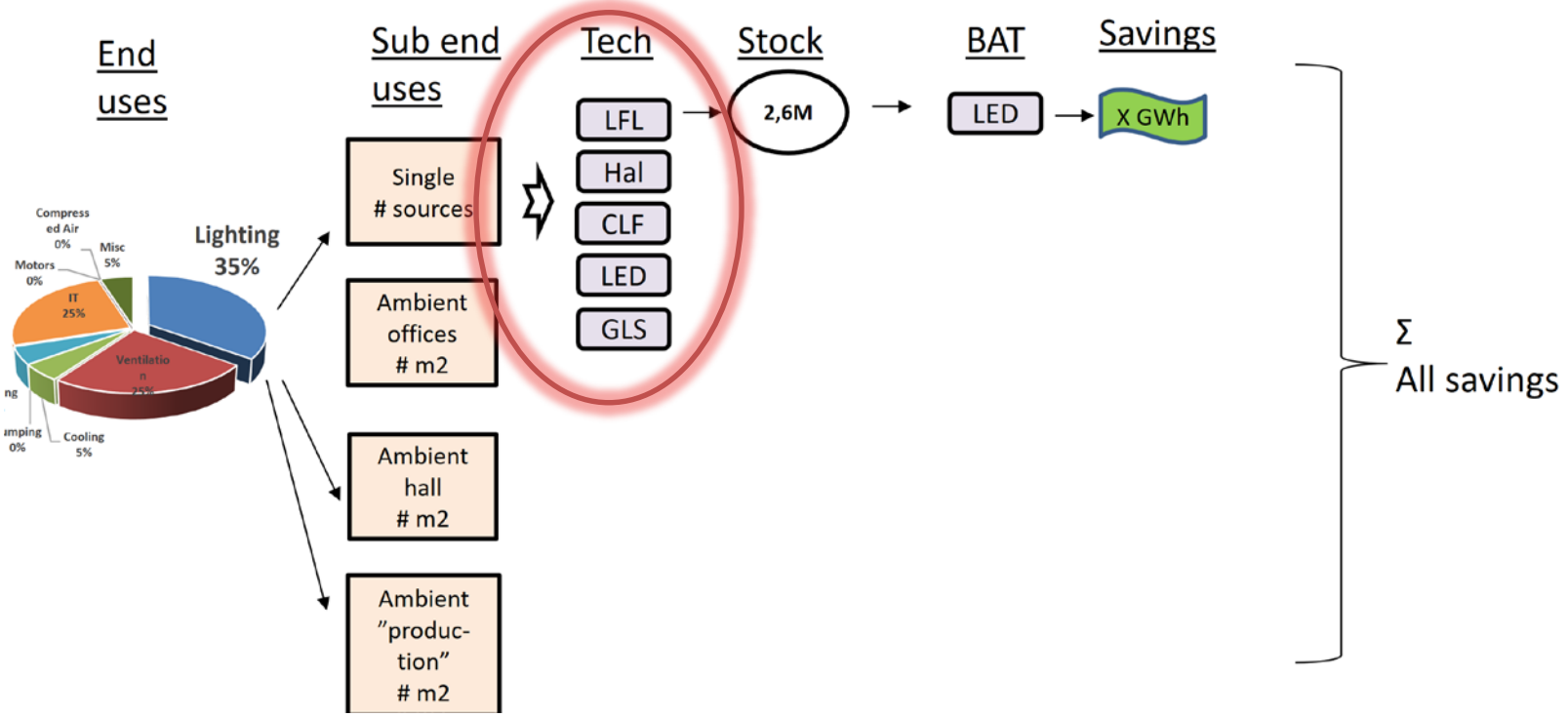
Top-down

Step 3: From ” Sub end uses” => ”Technology”



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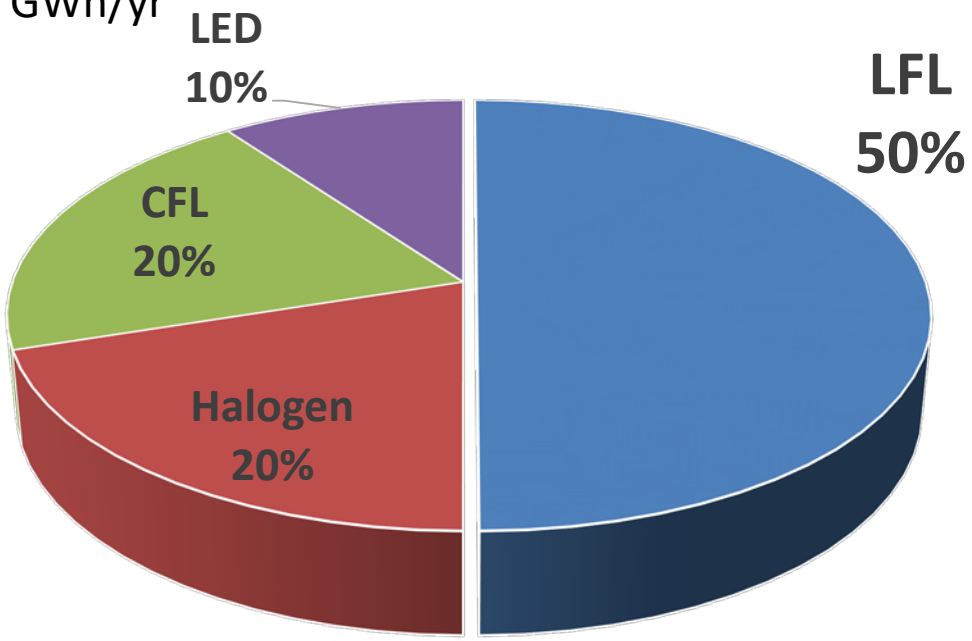
Top-down – step 3

This step is based on this assumption (förutsättning)

- Technology distribution (public school)
- Ambient ”production” **225,6** GWh/yr
- Linear fluorescent light (LFL)
  112,8 GWh/yr



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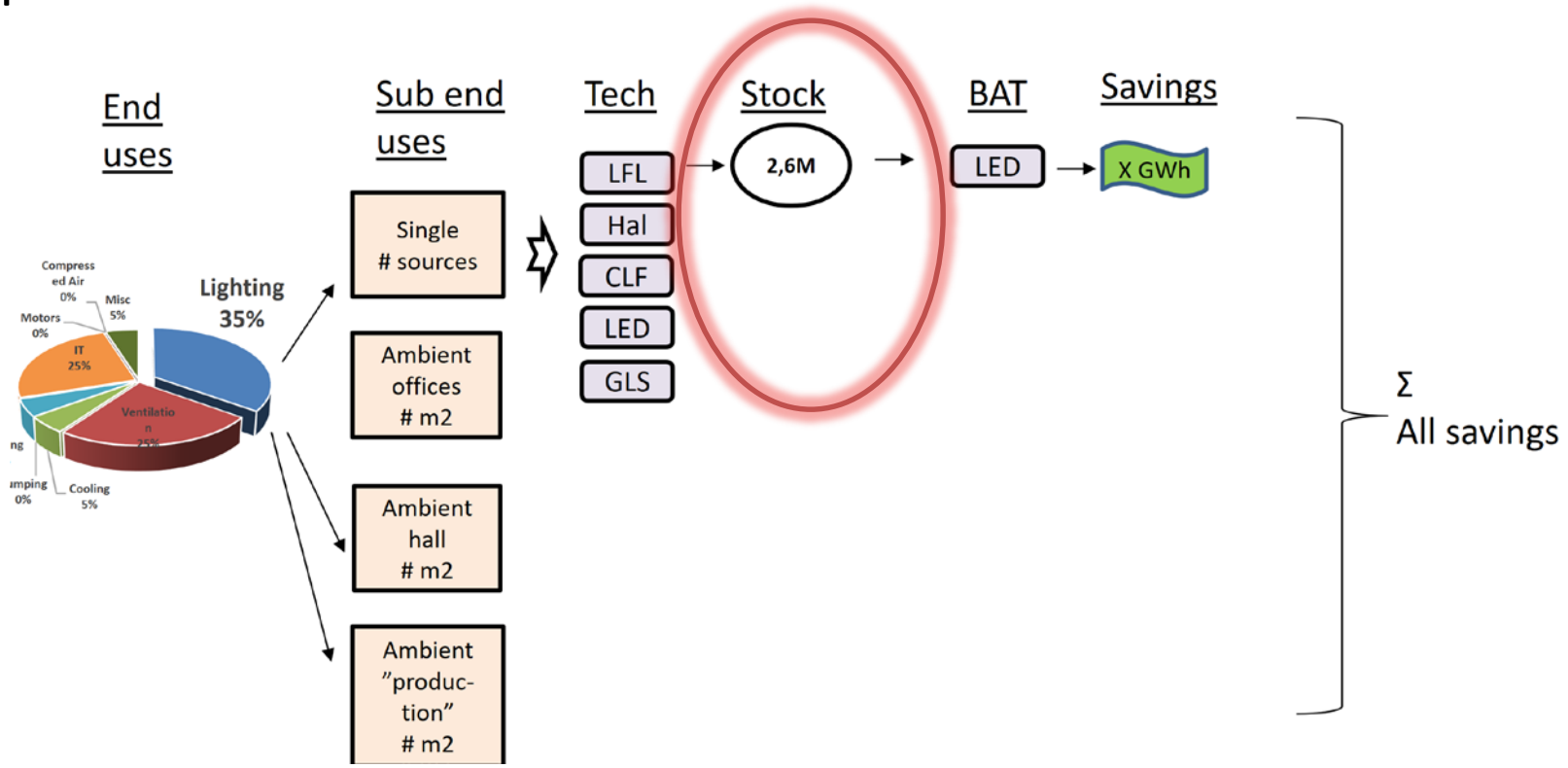
Top-down

Step 4: Calculation stock



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Top-down – step 4

This step is based on this assumption (förutsättning)

For single sources

- $Stock = \frac{Total\ Consumtion}{Consumption\ unit}$
- $Consumption\ unit = Power(watt)\ per\ unit\ \times Running\ hours$

For ambient (upplyst område)

- $Stock\ (m^2) = \frac{Total\ Consumtion}{Consumption\ m^2}$
- $Consumption\ m^2 = Installed\ power\ (watt)\ per\ m^2\ \times Running\ hours$

Top-down – step 4

For ambient (upplyst område)

- $Stock\ (m^2) = \frac{Total\ Consumtion}{Consumption\ m^2}$
- $Consumption\ m^2 = Installed\ power\ (watt)\ per\ m^2\ \times Running\ hours$

$$Consumption\ m^2 = 8\ (watt) per\ m^2\ \times 3744\ hours\ \approx 30\ kWh/yr$$

$$Stock\ (m^2) = \frac{112.800.000\ kWh\ yr}{30\ kWh\ yr\ m^2} = 3.760.000\ m^2$$

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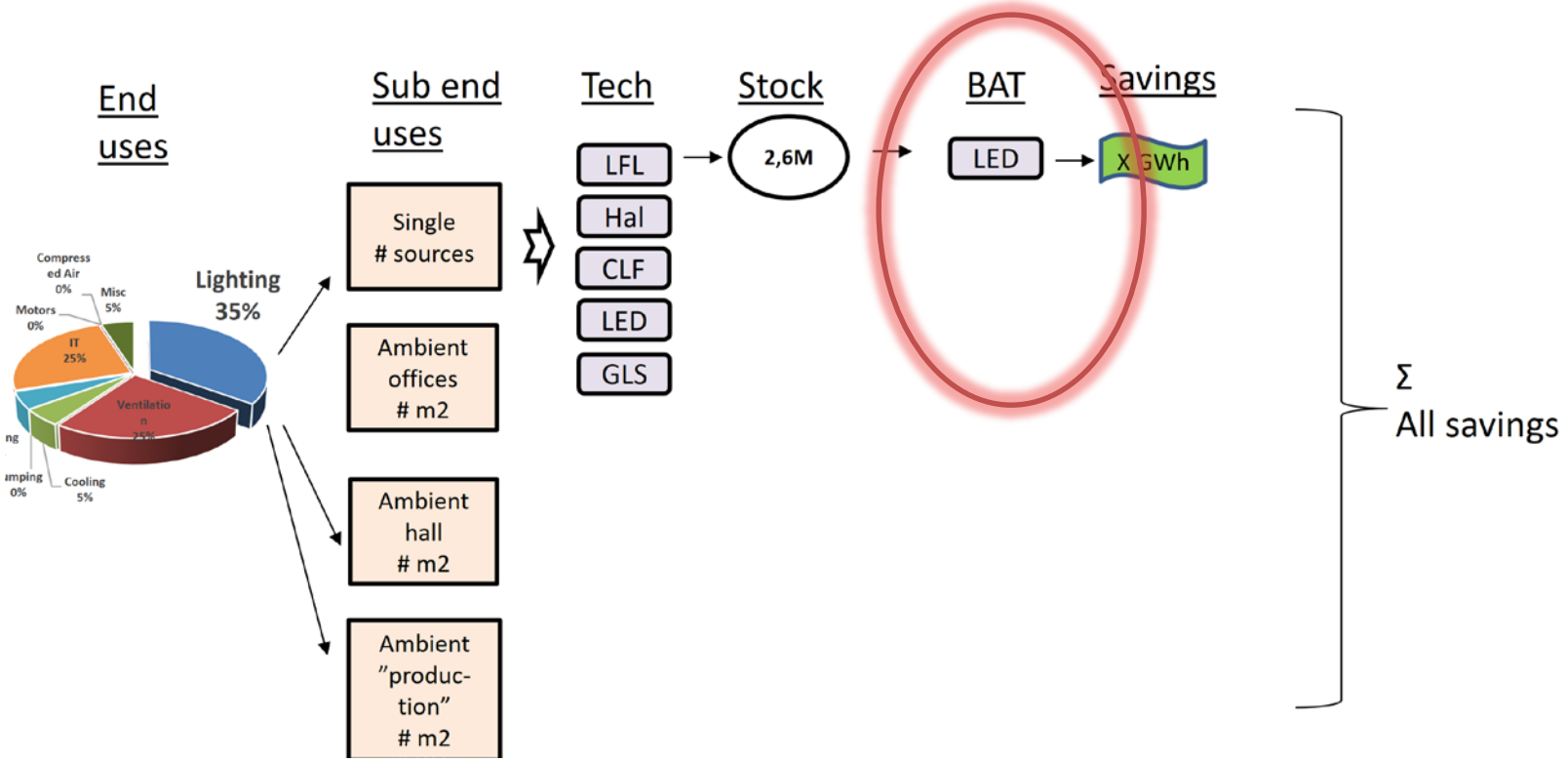
Step 5: Best available technology



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Top-down – step 5

Assume that all light replaces with best available technology => LED

Old	watt /m2	LED watt/ m2
LFL	8	4
Halogen	15	4
CFL	10	4
GLS	20	4

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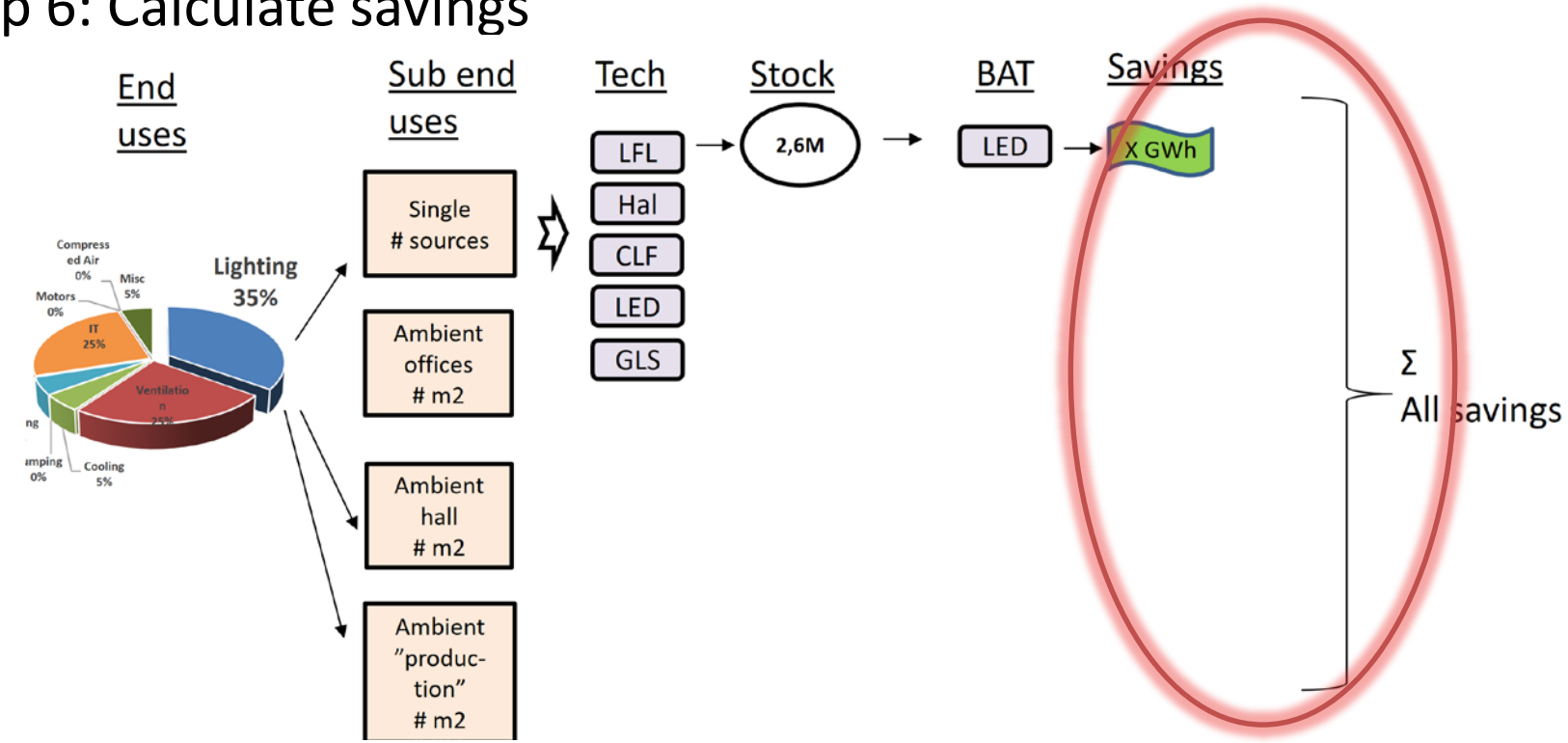
Step 6: Calculate savings



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Top-down – step 6

Calculate savings

$$Savings = Old\ consumption - BAT\ consumption$$

$$BAT\ consumption = Consumption\ per\ unit\ (LED)\ \times Stock$$

$$Consumption\ per\ unit\ (LED) = Running\ hours\ \times power\ (LED)(watt)$$

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Top-down – step 6

Calculate savings our example (public schools)

$$Consumption\ per\ unit\ (LED) = 3744\ hours\ \times 4\ watt = 15\ kWh\ m^2$$

$$BAT\ consumption = 15\ kWh\ m^2 \times 3.760.000\ m^2 = 56{,}4\ GWh$$

$$Savings = 112{,}8\ GWh - 56{,}4\ GWh = 56{,}4\ GWh$$

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Discussion