

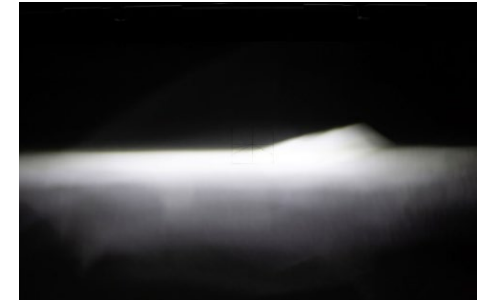
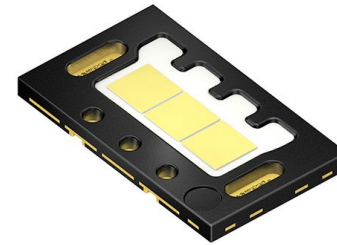
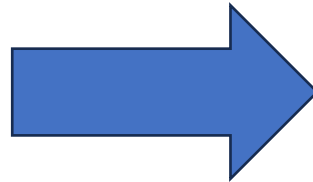
Sustainability considerations for LED technology

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Sustainability benefits of LED technology

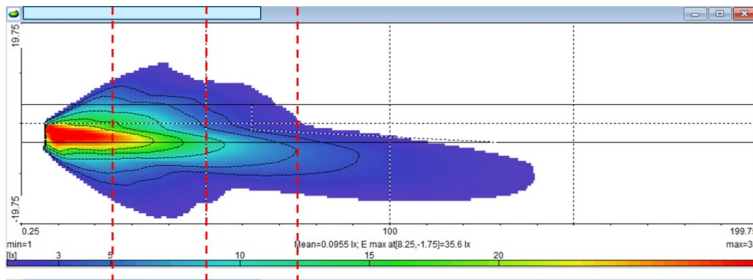
Technology transition
WHILE keeping / improving beam performance



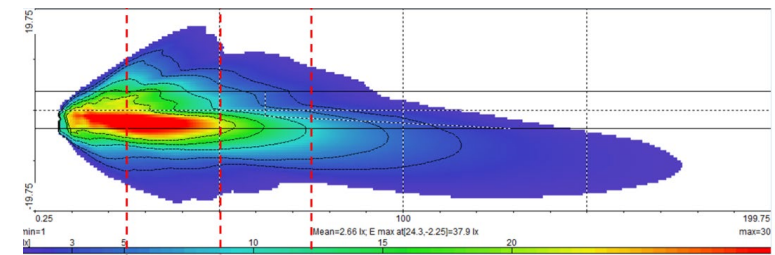
~ 25 lumen / Watt
~ 500 hours lifetime

~Faktor 4
> Faktor 4

~ 100 lumen / Watt
> 2000 hours lifetime



Figures taken from GRE-89-06

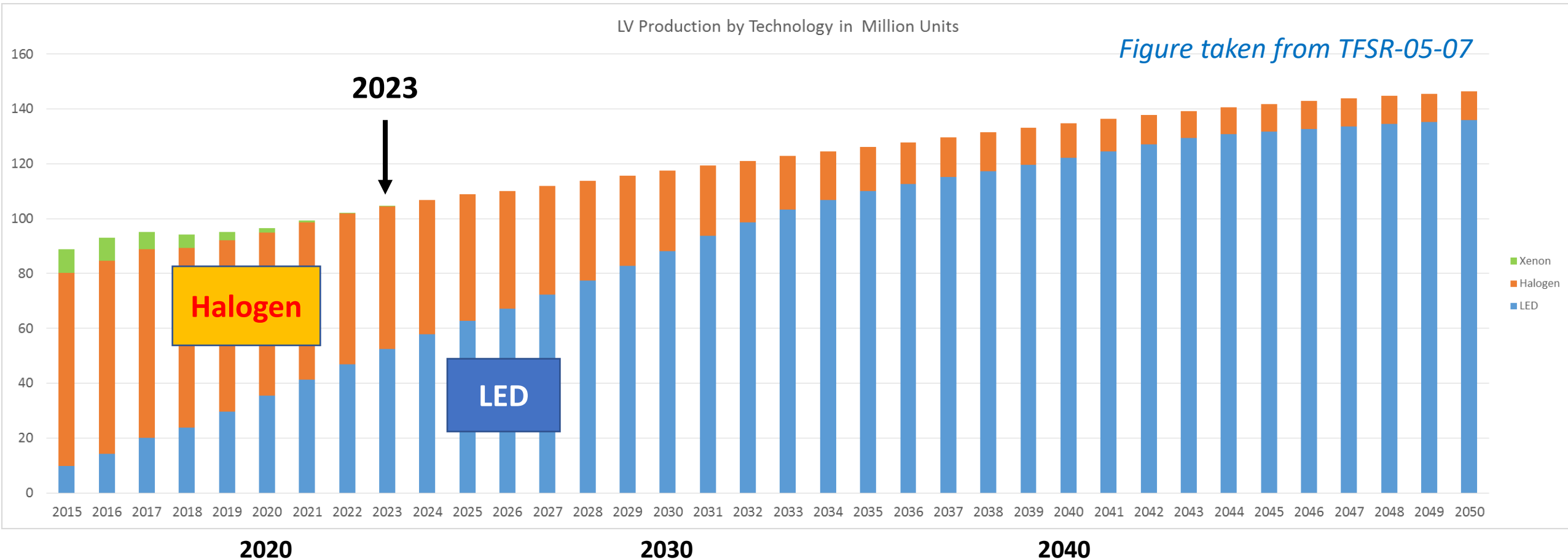


A quantitative estimation – per vehicle

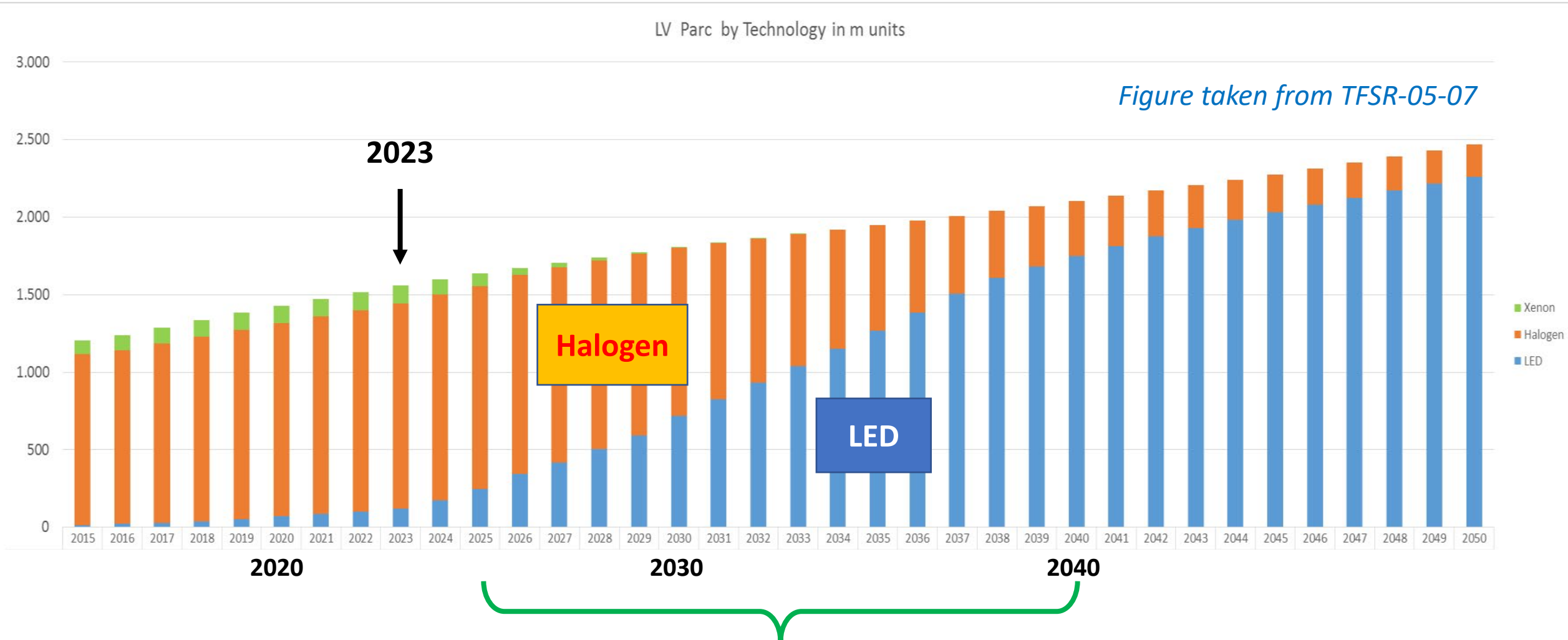
- Example of low-beam
 - Baseline technology (= Halogen): consumption of 137 W
 - Innovative technology (= LED): consumption of 40 W**
 - Usage factor of low-beam function: 33% (assumption: during night only)
- ⇒ **Resulting CO₂ savings: 0,85 g/km**
- ⇒ **Based on a car life of 200.000 km this means ~170kg CO₂ (or ~68 l fuel)**

** Note: the basis of the calculation uses typical OEM solutions, but the same holds for H7-LED products as currently approved in Germany or France

New vehicle production – Projection of LED transition



→ As a consequence ... –
Projection of LED transition in the carpark



⇒ But, this transition can be accelerated by LED replacement solutions for vehicles in use