



Breakthrough Light Transmission



**Why do we have
to sacrifice display
viewability for a
longer battery?**



**One side of this
sign consumes
46,000 kwh/yr,
more than that of 4
households
combined**

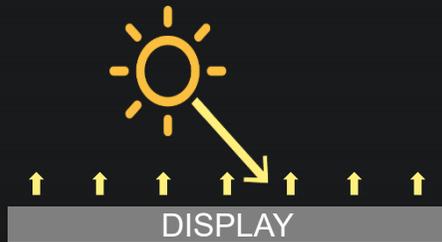
Sources: "Digital Billboard Use", Nathaniel Taylor, San Diego Gas & Electric Company (SDG&E), 2014. Use for a 14'x48" LED Billboard. Average household Energy use from EIA.gov at 10,399 kwh/home



Three Main Types of Displays

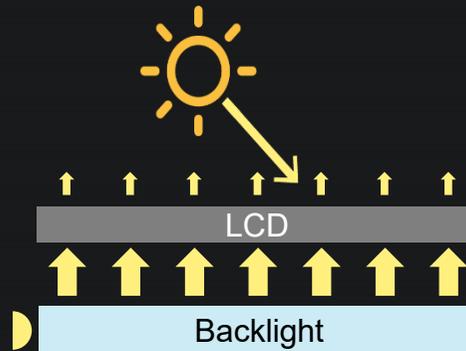
Emissive

(OLEDs, MicroLEDs, etc.)



Transmissive

(Traditional LCDs)



Reflective

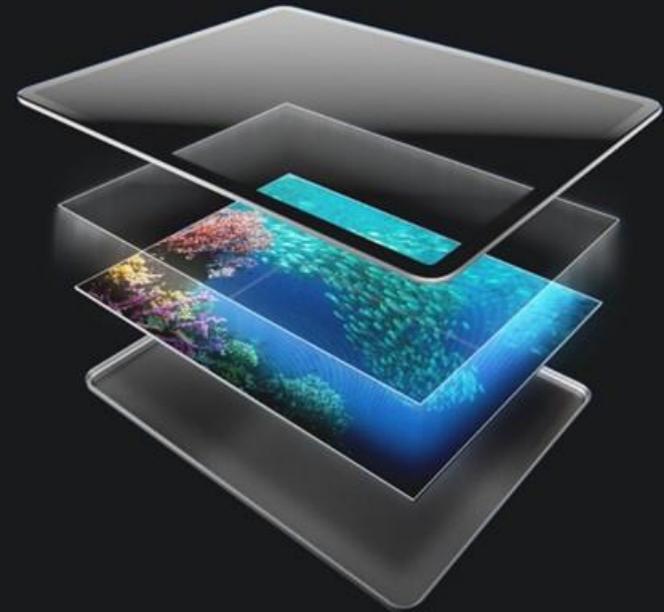
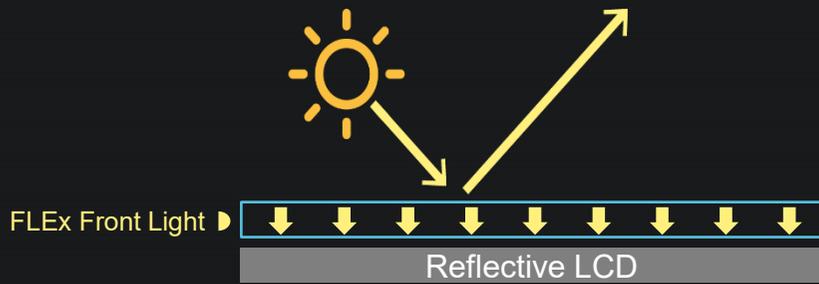
(Reflective LCDs, e-paper, etc.)



FLEx's embedded front light combines the best of the three

Reflective w/FLEx

(reflective LCDs, e-paper, etc.)



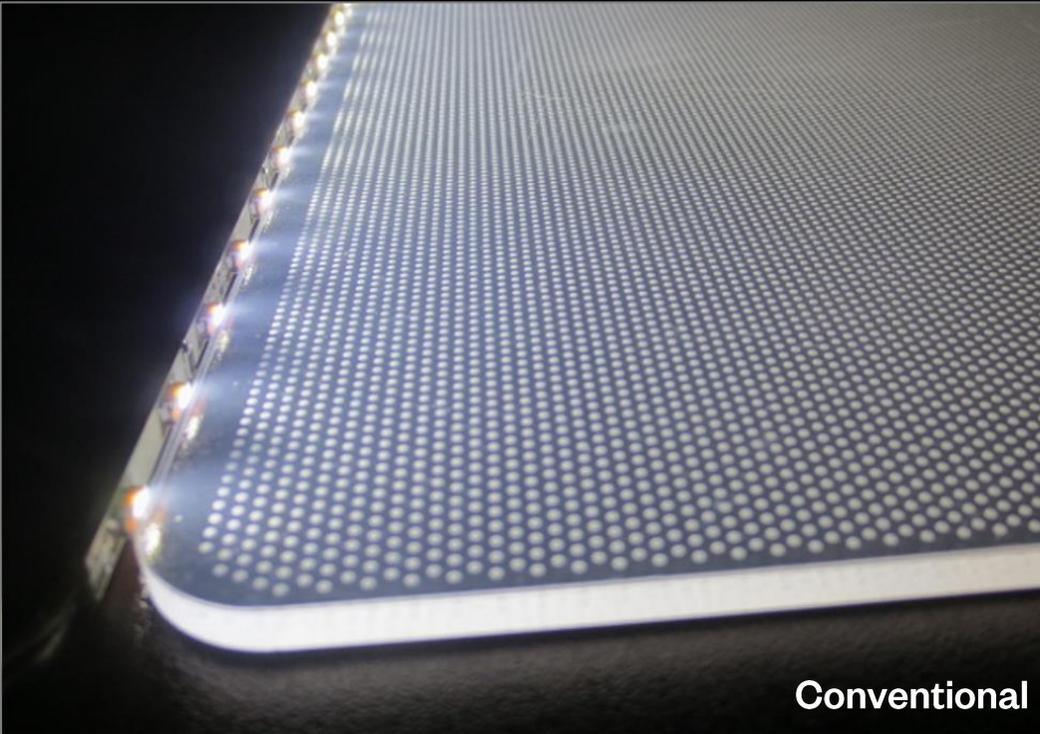
Solution

FLEEx Lighting introduces a better light source.

FLEEx is light transmission technology, comprising a **LED light engine and light guide**, that provides beautiful, efficient illumination from **ultra thin transmissive material**



Lightguide Comparison



Conventional

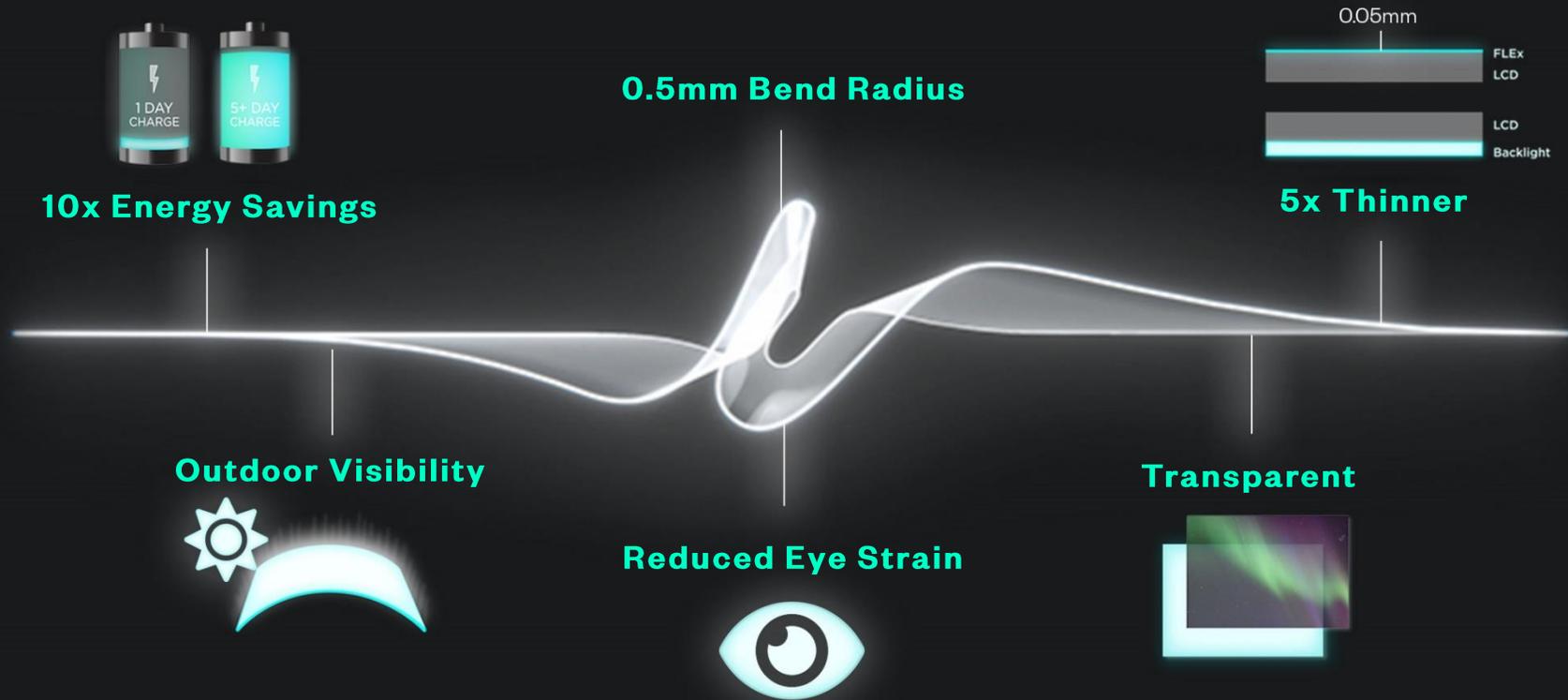


FLEx Lighting

Thick: >200 microns
Rigid and bulky
Visible Features
More Power - Many LEDs
Hot Spotting/Distortion

Ultrathin: <50 microns
Flexible and edgeless, 0.5mm bend radius
No visible Features
Less Power - just one LED
Uniform - diffuse light

Superiority of FLEx Lighting



Extensive IP Estate



Light Management

Patent Numbers:

9110200, 9102956, 8959902, 8905610, 8714781, 8434909, Japan
5535923, Mexico 321142, China 2561903, Europe EP2197649



Manufacturing Methodologies

Patent Numbers:

8917962, 8764262, 8167461, Allowed A, Allowed B



Product Applications

Patent Numbers:

9028123 Frontlight, 8128271 InvisiSign, 8167461 InvisiSign,
7237396 InvisiSign-Icelight, Allowed GI/Frontlight

○ Patent portfolio

- 36 issued patents
- 23+ pending patents, others under development
- Filed in US, EU, Asia and Americas

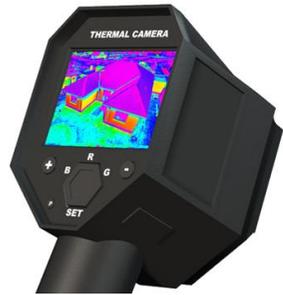
○ Trade secrets

- Fabrication processes
- Manufacturing methods

○ Proprietary Design SW

Commercialization Roadmap

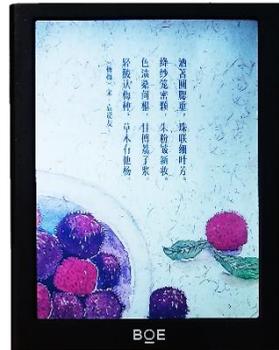
\$3B TAM



Industrial, Medical, & IoT
1"-5" Displays

Shipping product now

\$10B TAM



Education & Consumer
5"-15" Displays

Pre-Production

\$1B TAM



Signage
20"-60" Displays

>1B units



Flexible, Automotive,
ESLs, other

\$13B TAM

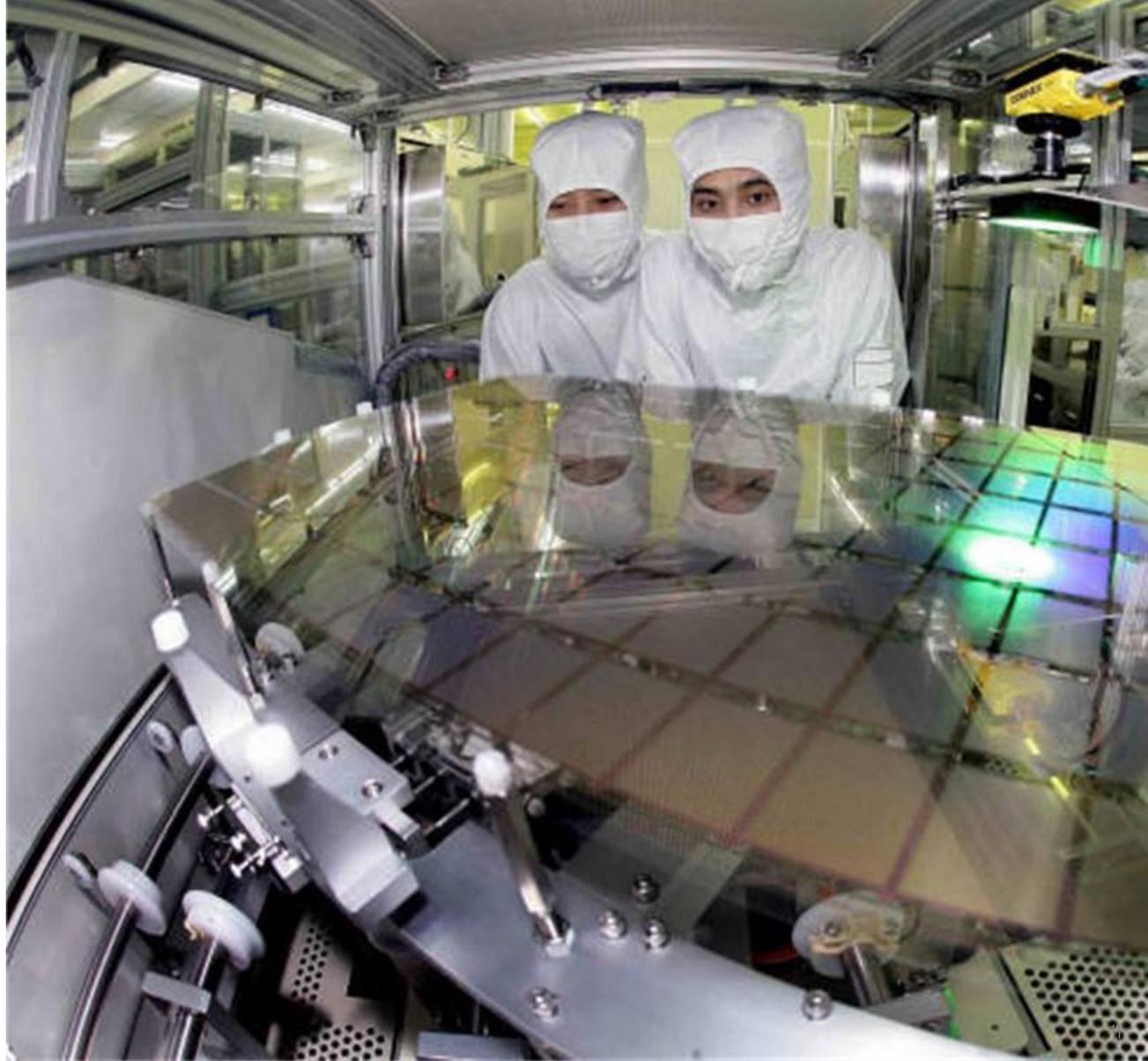


Lighting

*Market size display numbers provided by DSCC in "Reflective Display Market Forecast for FLEEx Lighting" report and represent units in 2023 and FLEEx ASPs. Lighting based on industry reports and mgt estimates.

Why is FLEx interesting for LCD Manufacturers?

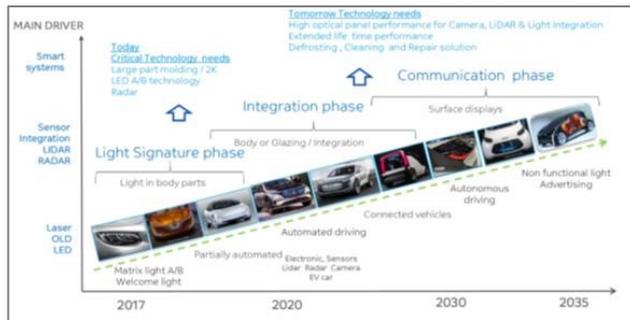
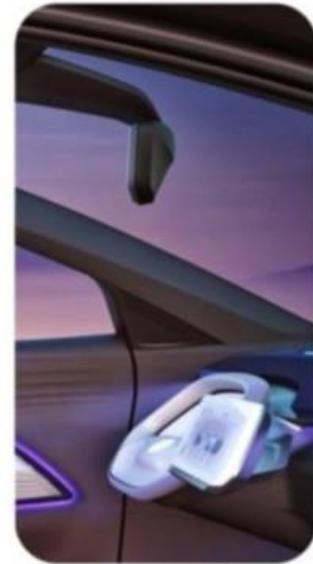
1 Billion ft² of underutilized LCD fab capacity, looking for a way to differentiate



Automotive

Trends in autonomous and electric vehicles demand new component requirements to meet shifting user experience

- Lighter weight
- Lower power
- More windows



Who We Are

Employees: **23**



Our Team



Mike Casper, CEO

- 15+ years sales / marketing
- Engineer at 3M
- MBA from Kellogg



Dr. Tony Nichol, CTO

- PhD from MIT in Optics and Nano-fabrication
- NSF Research Fellow
- Researcher in 3M's Optical Systems



Mo Azim, COO

- 30+ years in specialty web / electro-mechanical industries
- PE-backed transaction experience
- Multiple exits



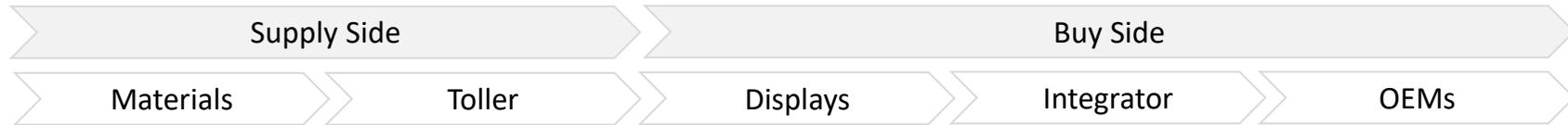
Tom Klopcic, Global Sales

- 25+ years in display sales
- Sharp
- Hitachi

Investors



Business Model



FLEx contracts with its suppliers to manufacture its front lighting system to the specifications of customers, which include the display companies, integrators and device OEMs.



Poised For Growth

FLEEx has built a strong foundation to support current and future customers:



Built a full supply chain for 1"-8" displays



Integrated 70,000+ devices to 100s of customers in market



Cultivated 3 years of sales activity with strong pipeline of design wins



Limited technology risk with 36 issued patents and growing

We're investing in growth to accelerate market penetration and maintain product leadership:



Expanding presence in Asia



Scaling supply chain for larger displays (10"+)



Expanding integration support



Accelerating development of higher performance front lights

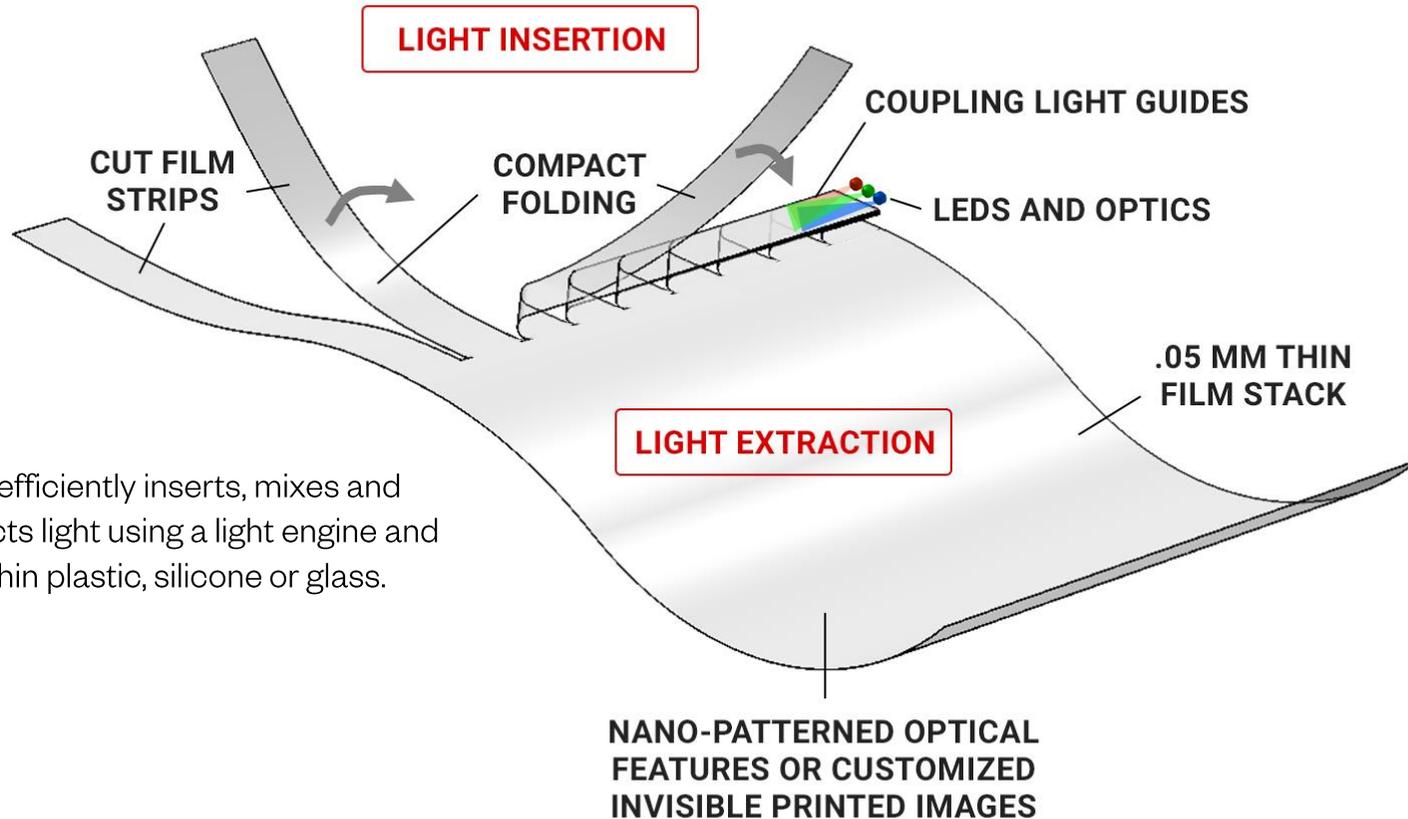




Thank You

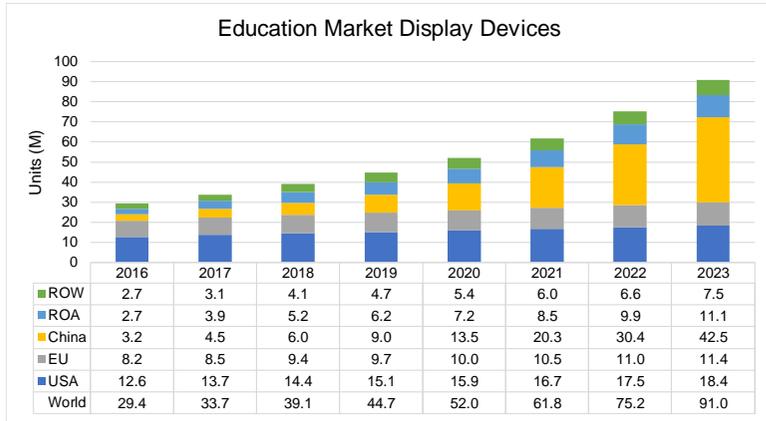
For additional information, contact [Mike Casper](mailto:mcasper@flexlighting.com)
mcasper@flexlighting.com or [773-972-7116](tel:773-972-7116)

How It Works



FLEEx efficiently inserts, mixes and extracts light using a light engine and ultra thin plastic, silicone or glass.

Global Education Market

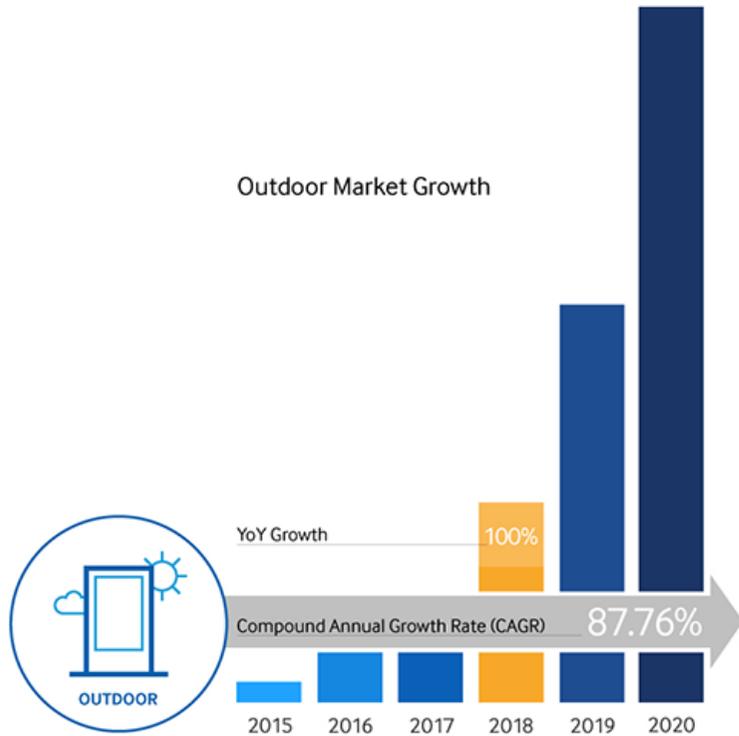


- China will pass US as the largest market for education displays by 2021
- China market of ~280M students with rapidly increasing education budget represents largest growth opportunity
- Government goal to protect children's eyesight

*Market size numbers provided by DSCC in "Reflective Display Market Forecast for FLEx Lighting" report, based on market analysis and third party interviews.



Outdoor Signage



Source: Samsung "top five digital signage trends in 2018"

