



Australia's low cost semiconductor developer

Investor Presentation

May 2008

Giles Bourne Interim CEO

Commercial in Confidence



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BluGlass Overview

Commercialising revolutionary low-cost GaN deposition process for the rapidly growing LED Market

- Commercialising a new low cost technology for producing semiconductor material gallium nitride (GaN). GaN is used in the manufacture of blue, green and white light emitting diodes and blue lasers.*
- BluGlass Remote Plasma Chemical Vapour Deposition (RPCVD) process has a substantial cost advantage by attacking the direct material costs of the deposition process of the current LED production methods resulting in a ~50% lower cost at the wafer level**
- Key IP protected by patents
- HB-LED is the future of general lighting with significant energy savings and longer life versus current lighting systems.
- Rapidly growing, multibillion dollar markets for LED and RF/power electronics applications presents ready made market for novel manufacturing technology
- Strong technical and commercial team
- Demonstration plant and commercial scale manufacturing equipment due for commissioning in Q2 2008.

- **ASX:BLG**
- **oversubscribed IPO Sept 2006 raised A\$10M**
- **Market Cap. A\$65M**
- **167 M shares on issue**
- **Top 20 shareholders 44.7%**
- **Cash Balance A\$7.5 M May 2008**
- **A\$5M Aus Industry Commercial Ready grant 2007- 2009**
- **Cash Burn A\$0.5 M p.q.**

Source: *Aegis Equity Research – April 2008

** Wright, Williams& Kelly


BLUGLASS

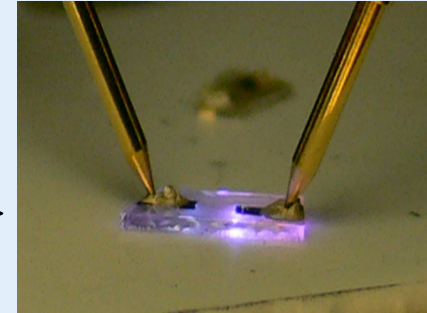
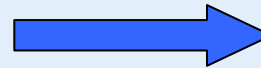
Highly skilled team of industry experts

DIRECTORS	MANAGEMENT	TECHNOLOGY DEPARTMENT
Dr. Michael Taverner Chairman	Giles Bourne Interim Chief Executive Officer & Commercial Manager	Dr. Marie Wintrebert-Fouquet Senior Research Scientist
David Jordan Non-executive Director	Geoff King CFO	Dr. Tim Dabbs Senior Research Scientist
Greg Cornelsen Non-executive Director	Dr. Scott Butcher CTO	Guy Reynolds Equipment Engineer
Chandra Kantamneni Non-executive Director	Conor Martin Equipment Design and Development Manager	Satanarayan Barik Research Engineer
	Piotr Glowacki Facilities Manager	Alanna Fernandes Research Engineer
		Phil Dixon Equipment Engineer
		Yong Kim Research Scientist

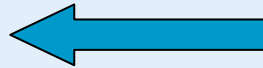
Many years of experience in semiconductors, research and international business

Why focus on Gallium Nitride?

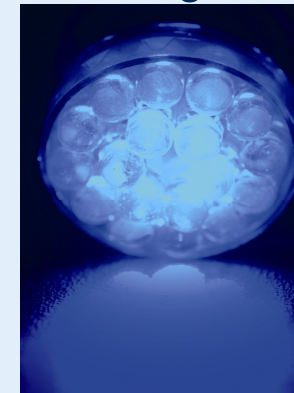
Gallium nitride (GaN) is a semiconductor material that electroluminesces (emits light) under applied voltage



GaN dominates the blue / green Light Emitting Diode (LED) & UV Laser Diode (LD) market. LED applications include mobile phone and laptop screen backlighting, torches, car displays, traffic signals.



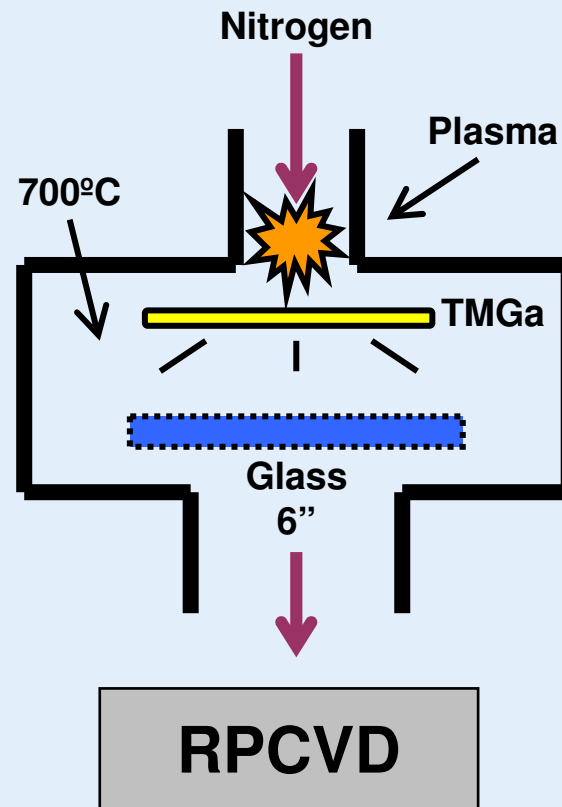
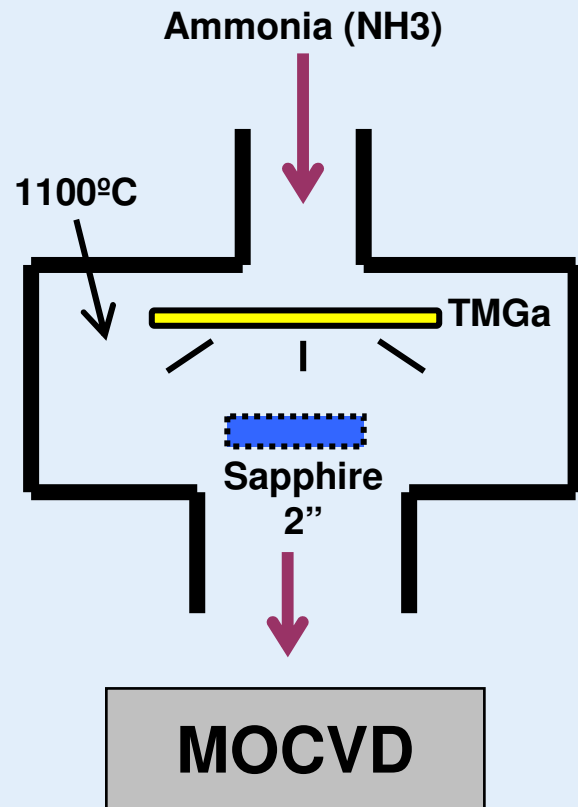
Environmental benefit underpins the potential for significant LED penetration of the US\$100B general lighting market



Lower cost for GaN production a key enabler

BluGlass' Process Advantage

RPCVD process offers substantial savings (~50%) over the current MOCVD process as demonstrated by WWK TCO modeling.



BluGlass' Process Advantage

Key cost savings due to use of cheaper input materials at lower temperatures

Low pressure reaction chamber in which a glass substrate is heated to 500 - 700°C.

✓ new low cost substrates

Remote plasma generated active nitrogen species react with trimethyl gallium (TMGa) depositing a thin film of GaN on the wafer.

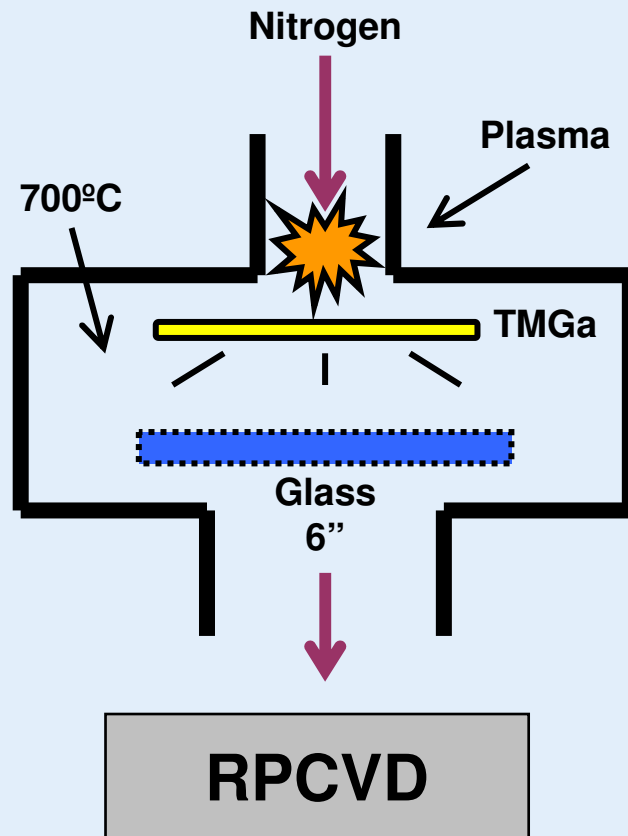
✓ safer process

Large area deposition capability (>6", cf 2" industry standard) offers substantial production efficiencies.

✓ inherently scalable

Strong IP position within competitive IP environment.

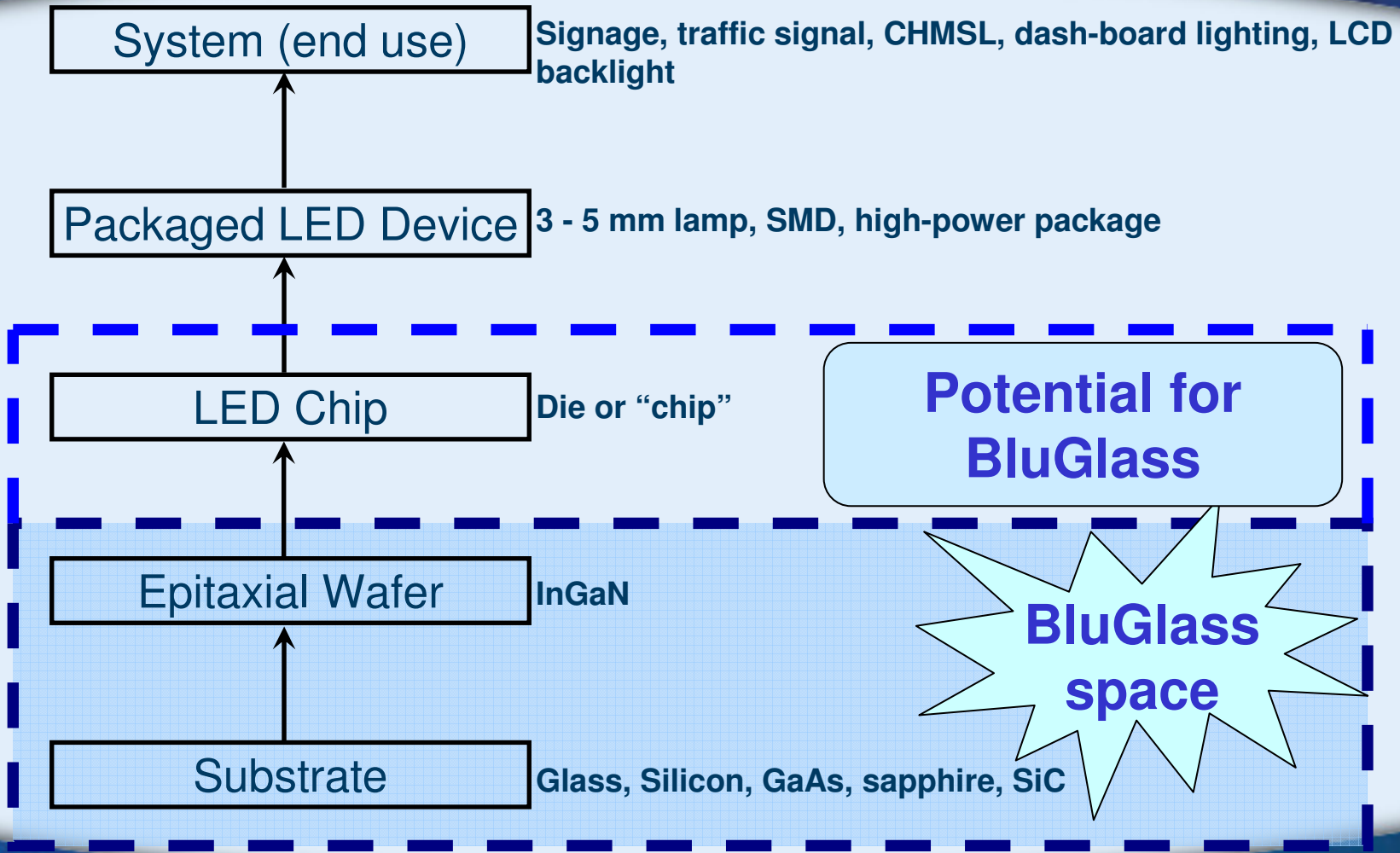
✓ commercially attractive
✓ environmental benefits
✓ cost driven



- Cheaper Substrate
- No Ammonia
- Larger Area Substrates
- Equals ~50% cost saving for wafer manufacture (a)

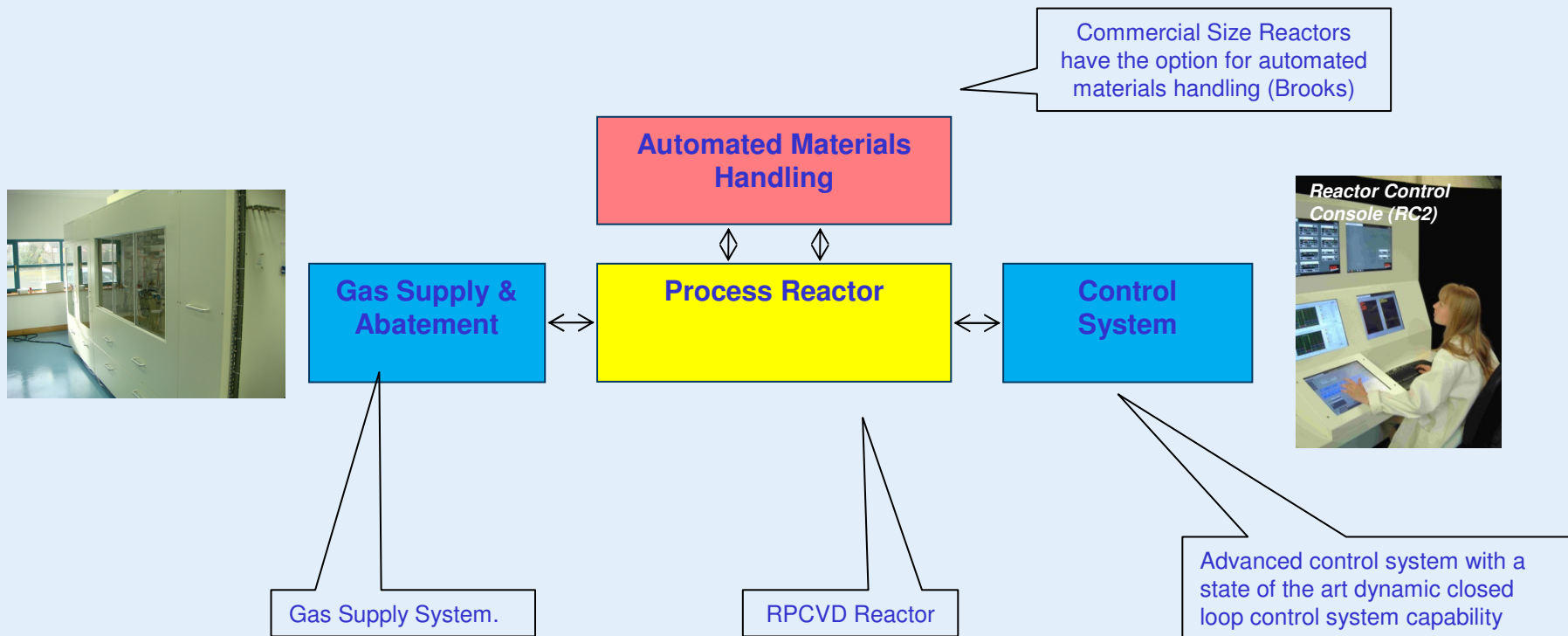
Note: (a) Wright, Williams & Kelly excluding savings from larger area deposition.

HB LED vertical supply chain



BluGlass RPCVD Reactor

Typical RPCVD Reactor Components



Our “green” credentials

Environmental benefits accrue at two levels:

GaN wafer manufacturing process (RPCVD vs MOCVD)

- Reaction temperatures reduced (500-700°C vs 1,000°C plus)
- Nitrogen replaces toxic ammonia



Energy efficient LED devices

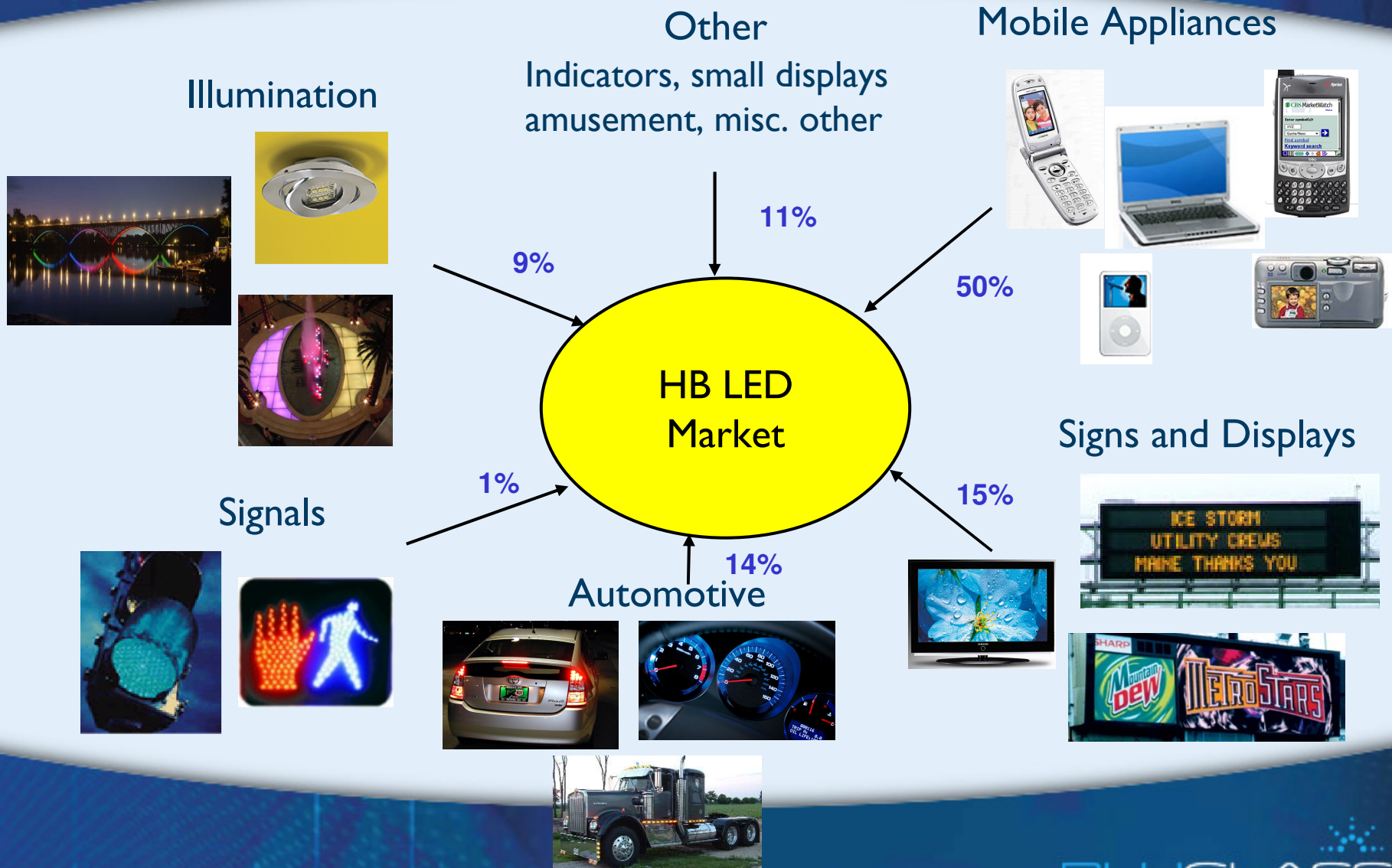
- Currently replacing **incandescent bulbs**, **first** commercialised in the late 1800's, more than a century ago
- LED lights are currently 4 - 5 times more energy efficient, about the same as compact fluoro's (CFL's) but targeted for much higher
- last 50 times longer than incandescents, 5 times more than CFL's, with higher targeted lifetimes (up to 100,000 hours)
- LED's contain no mercury, unlike CFL's



Professor Shuji Nakamura, blue GaN LED pioneer and 2006 Millennium Prize winner –
“It is estimated it is possible to alleviate the need for 133 nuclear power stations in the US by the year 2025 if white solid-state lighting is implemented”

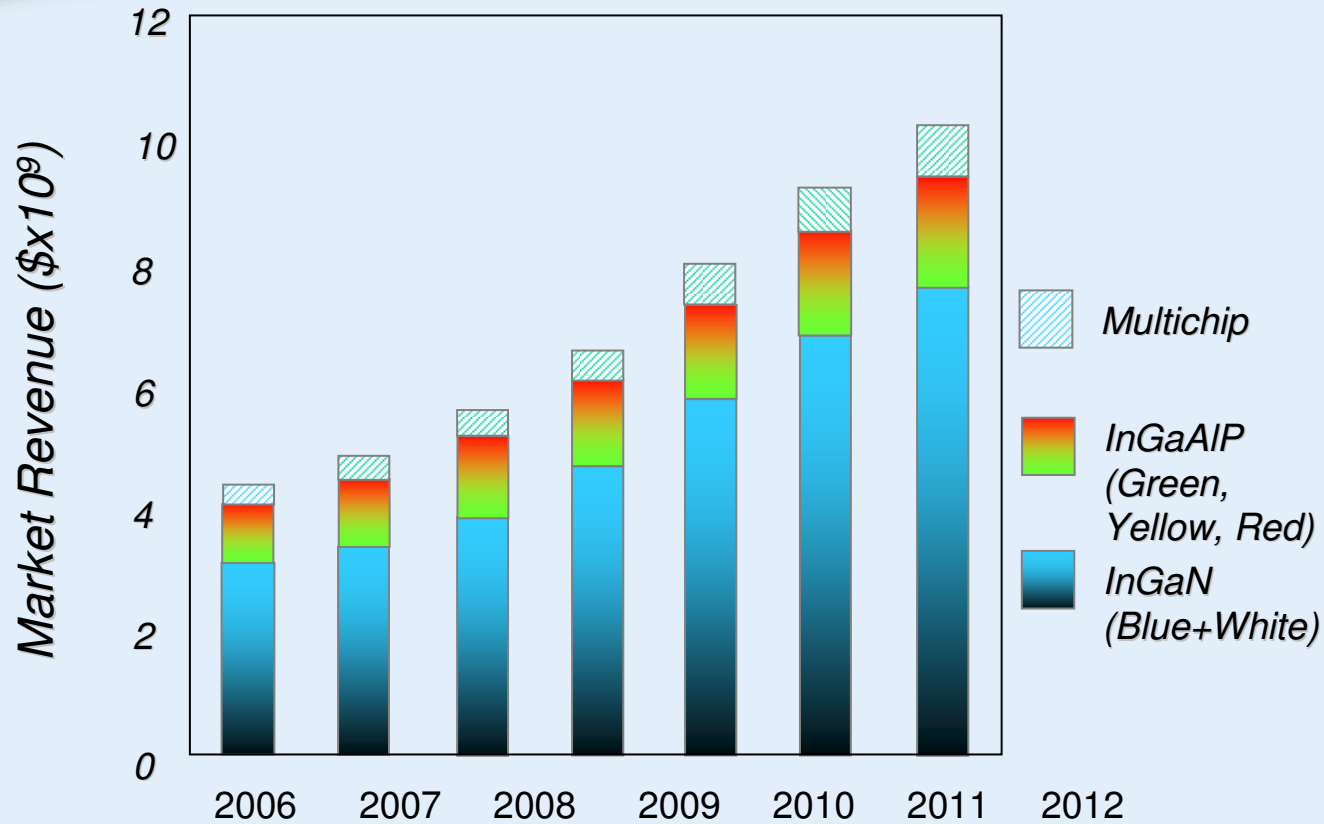
High Brightness LED application segments

A rapidly growing and evolving market



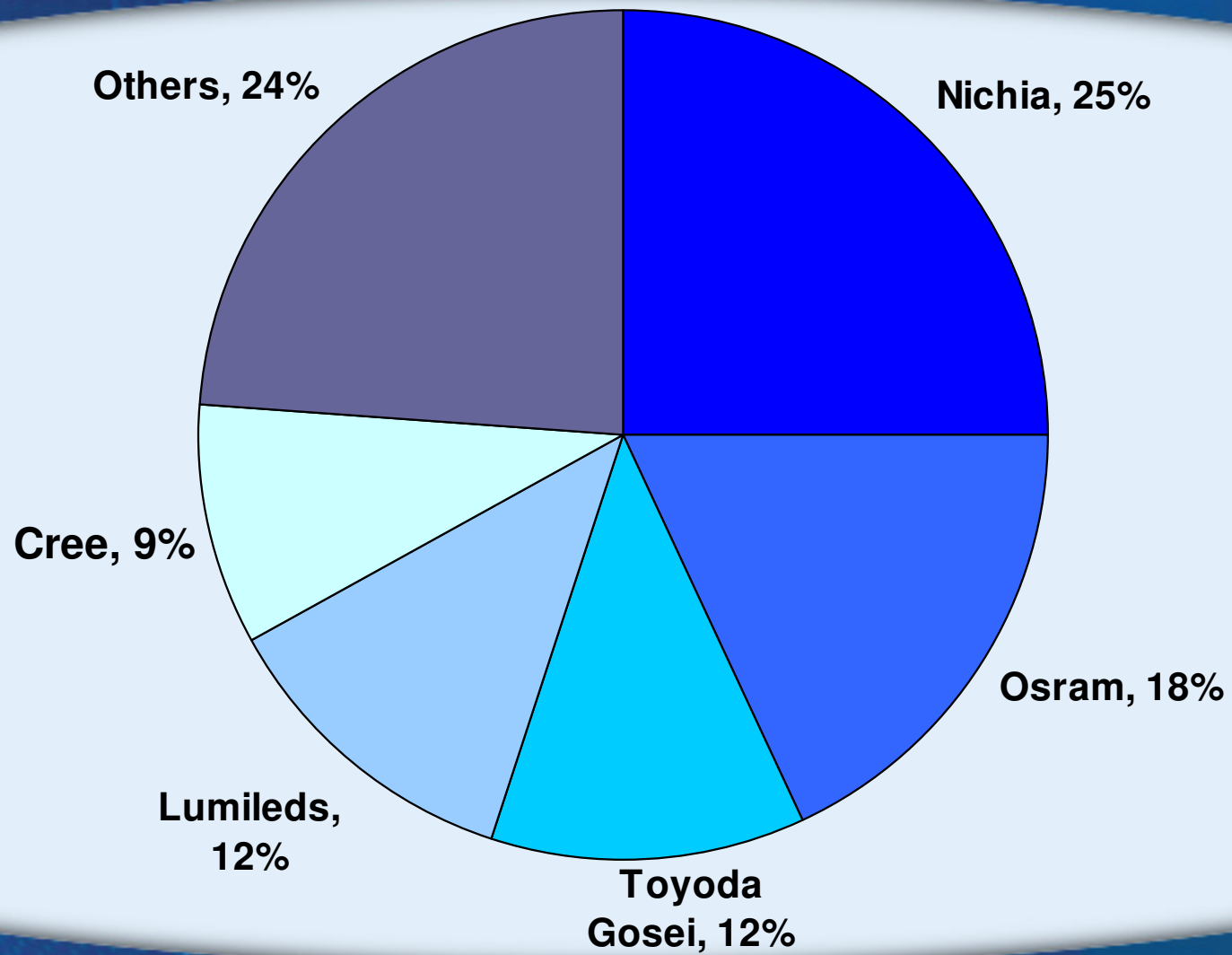
Source: Strategies Unlimited

LED sector emerging as next star industry



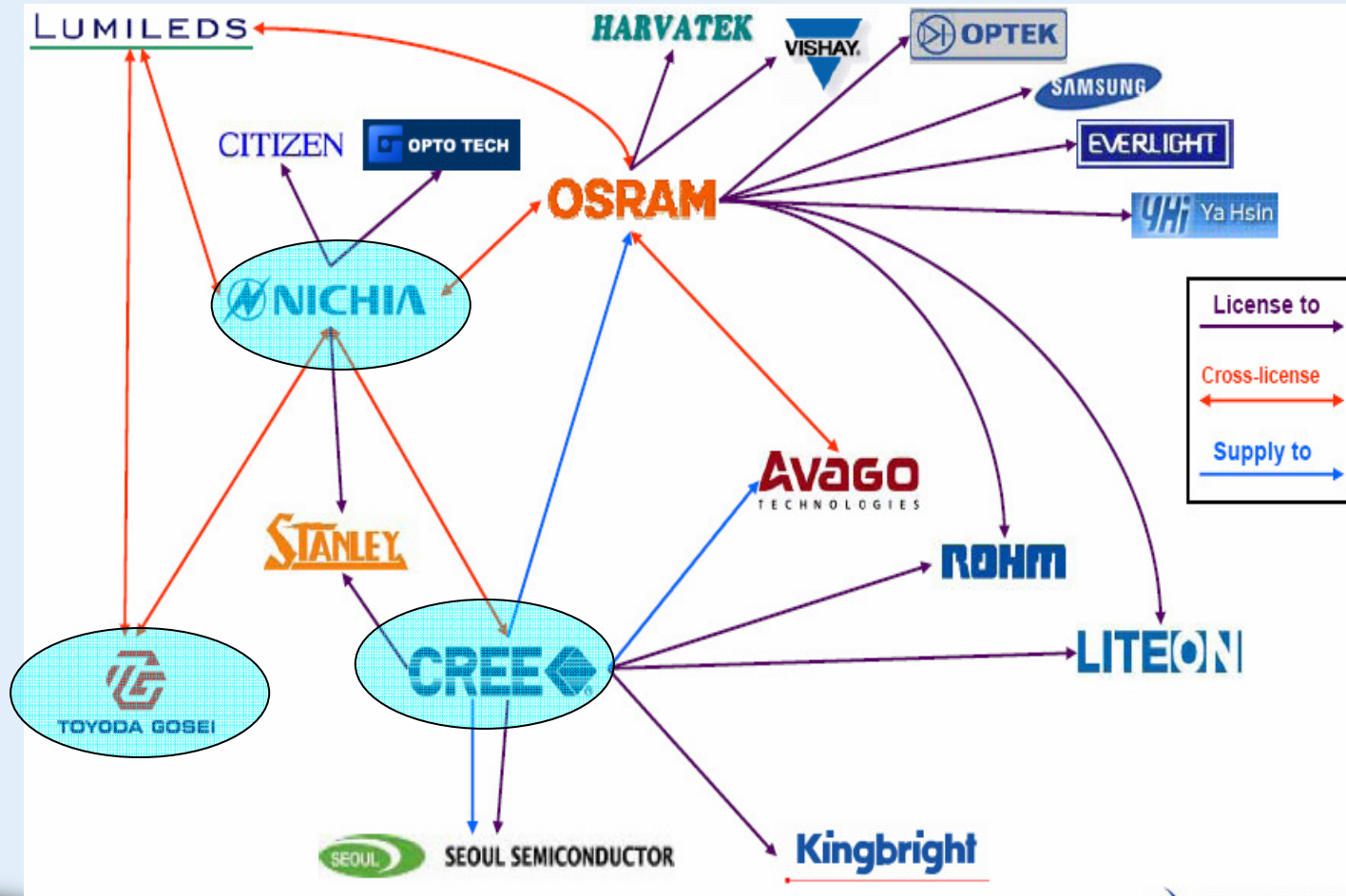
- Market pull for white LEDs for solid state lighting
- 17.6% CAGR to \$9.4 billion in 2011

HB-LED 2006 market shares in revenues per company (all colours, all materials)



Technology Licensing Landscape

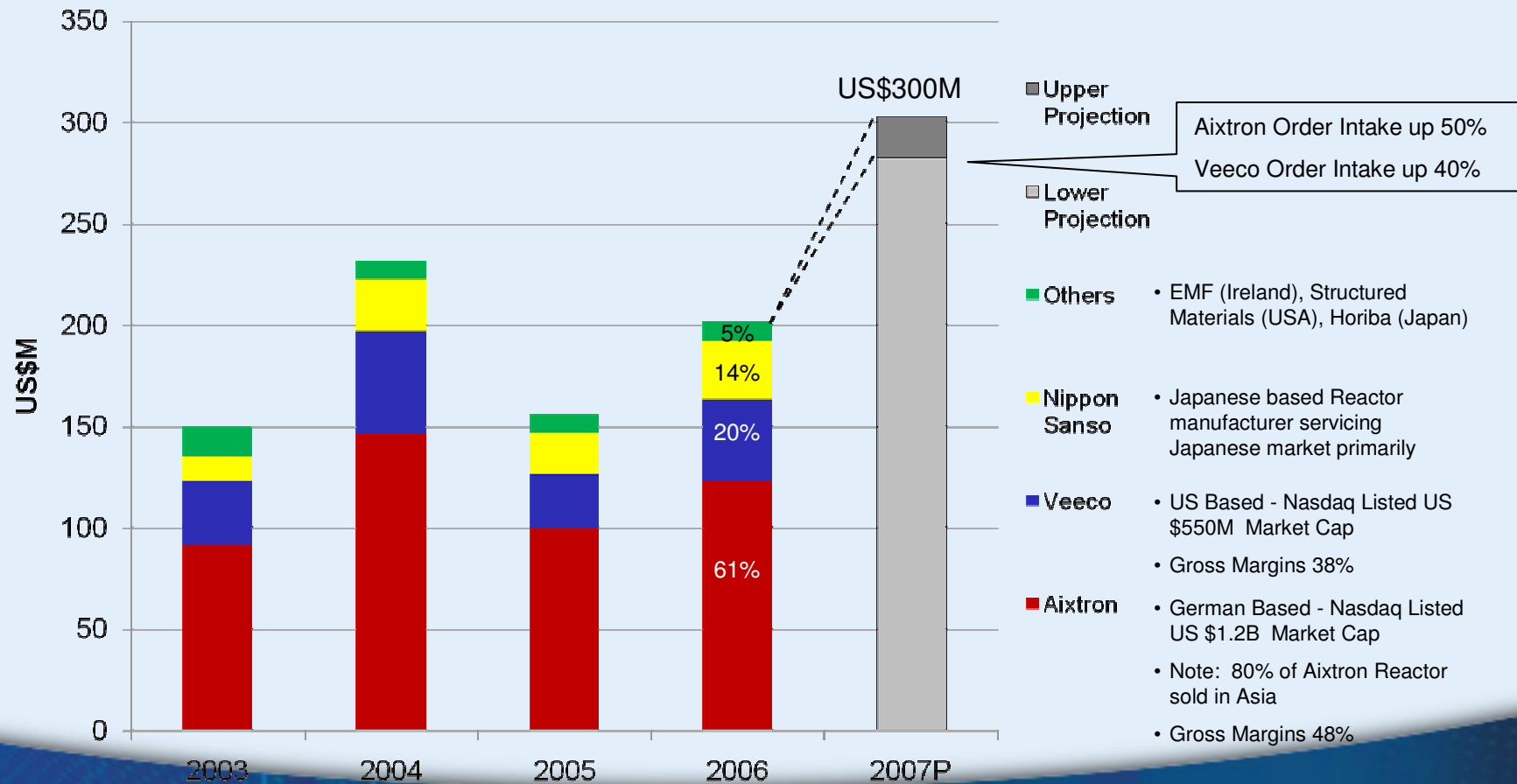
BluGlass RPCVD technology works within the current competitive and complex IP licensing environment



MOCVD Equipment Market

US\$300M MOCVD reactor supply market which is dominated by two major players earning Gross Margins of 38-48%

MOCVD (GaN & Other Compounds) Reactor Market Size & Shares



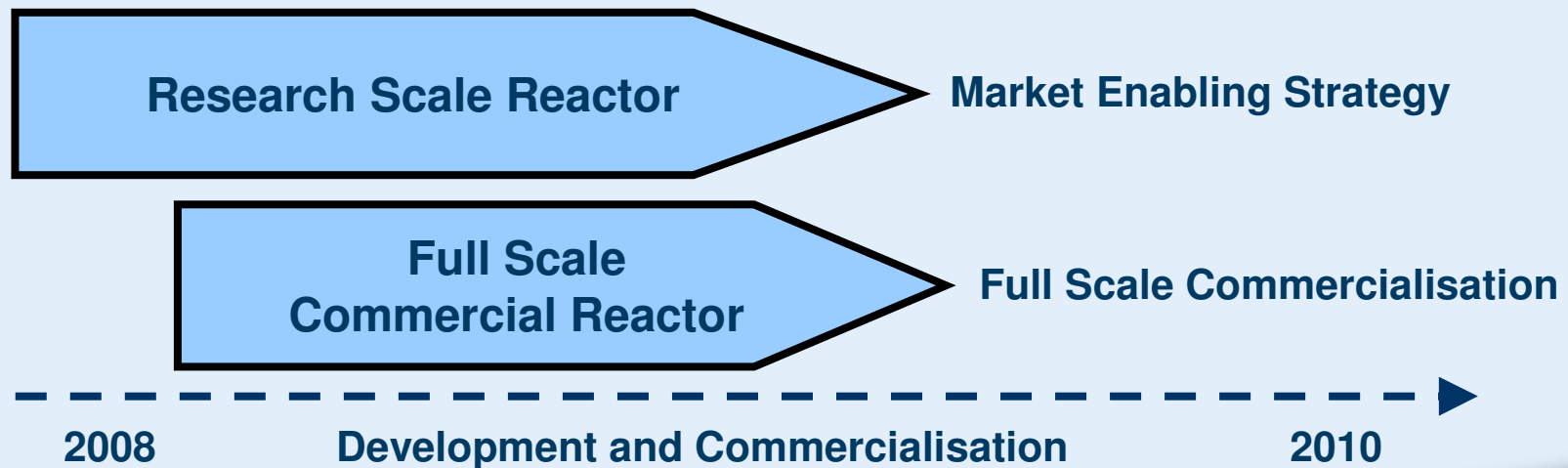
Source: VLSI Research Inc., Aixtron & Veeco Investor Presentations.

BluGlass Strategy

To capture value from the rapidly growing LED market by licensing its novel low cost RPCVD process.

To demonstrate and deliver a low cost GaN manufacturing technology to the global market by:

- **Supply of commercial reactor**
- **Process licensing (technology fee & royalty stream), and**
- **Niche manufactured product**



BluGlass Revenue Model

Generating value from ongoing royalty stream from process licence

Revenue Model – 3 key drivers

1. Market Size – forward projection in \$'M and substrate requirement
2. Share – BluGlass share of that market
3. Return – BluGlass revenue on that share

BluGlass Revenue Model

Generating value from ongoing royalty stream from process licence

Market Size

- **Wafer Market growing at 18% CAGR**

- 2007 5.1M
- 2012 11.6M^(a)

- **Typical Reactor**
~20,000 wafers p.a.

- **Wafer Demand**

- 2007 5.1M wafers
- 2008 5.9 M wafers
- 2009 7.0 M wafers

- **Incremental Reactor Demand**

- 2008 40 Reactors
- 2009 55 Reactors
- 2010 etc

Share

BluGlass
Market
Share

Return

Three Sources of Revenue

1.Reactor Sale (one off manufacturing margin currently low due to outsourced manufacturing model)

2.Process Licence Fee
(one off upfront)

3.Ongoing Royalty
- for example

- Approximate cost saving per wafer of BLG process = US\$40^(b)
- Royalty Return ~ 25% ^(b) of Cost Saving = US\$10
- Per Machine = ~US\$200K p.a.

Note: (a) Yole Développement 2007
(b) Wright, Williams & Kelly

BluGlass Revenue Model

Generating value from ongoing royalty stream from process licence

➤ Revenue

- Clearly a rapidly growing market with strong revenue potential for the low cost BluGlass RPCVD technology

➤ Additional Potential Benefits Offered (but not yet factored in)

- Large area substrate (6"+) deposition –
 - significantly higher chip count per wafer ($\approx 9x$, 9,000 \Rightarrow 80,000)
 - improved yield potential
 - reduced downstream processing cost
 - availability of lower cost / readily available substrates
- Other substrate types / processes (silicon)
- Other technology areas (III – nitrides / other)

Exploiting the Synergy of the BluGlass RPCVD LED technology with Solar Energy Application

Assessing a new opportunity...

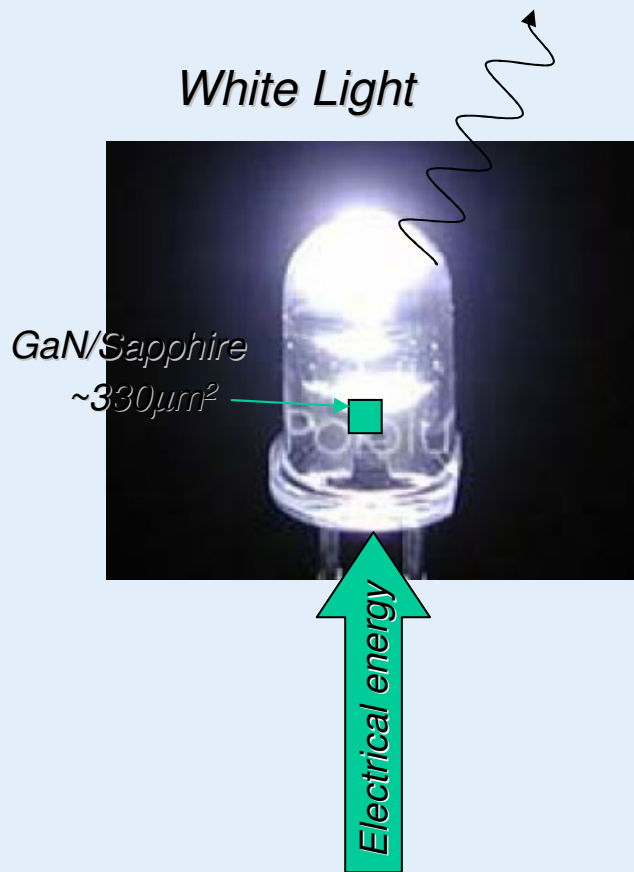
The Solar (PV) Market Opportunity

- Solar is fast emerging as the most viable and eco-friendly power generation option for tomorrow with no moving parts, no noise and zero emissions.
- In 2006 the global market for PV energy grew by 41% to \$15.6 Billion
- By 2015 the market is estimated to be \$69.3 Billion
- Large scale substitution has started with expanding incentives driving very strong demand growth through 2009

Adaptability of the BluGlass Technology

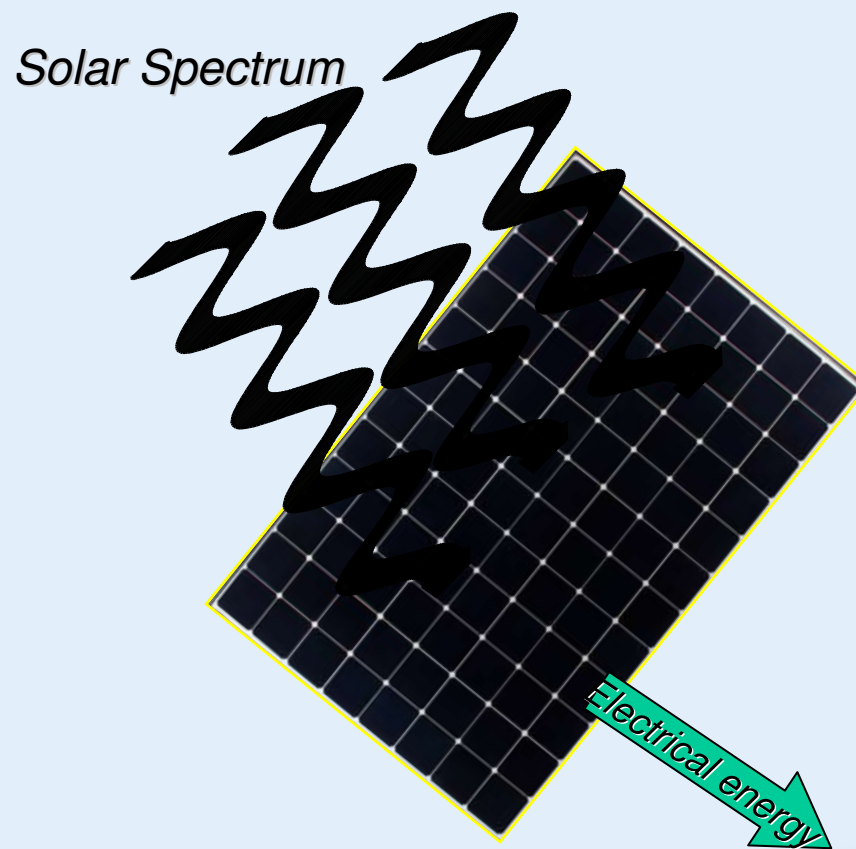
Large area high efficiency conversion / driving down costs

Electrical IN : Optical OUT



9000 LED die/2" Sapphire

Optical IN : Electrical OUT



Substrate size ~ 1m²

LED applications-by substrate

BluGlass addresses both markets with technology to fit both applications

Power Scaling

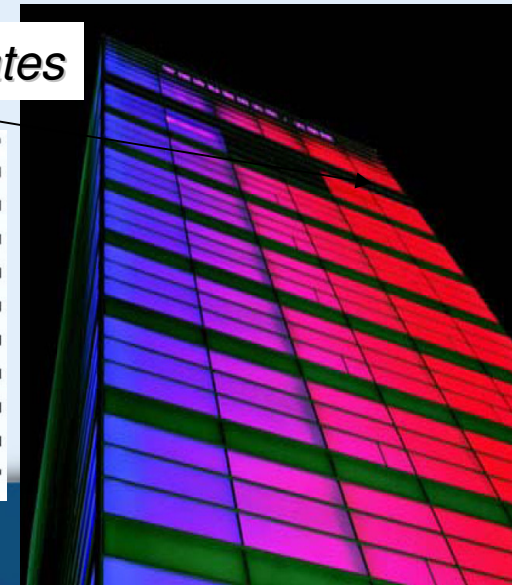
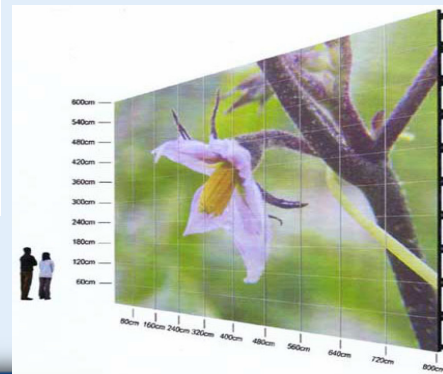


High Cost Substrates

Low Cost Substrates



Area Scaling



Scaling solar energy conversion technologies

Increasing volume of application dictates the cost of the substrate used for thin film solar

Peak Energy Plant Generation



Residential Energy

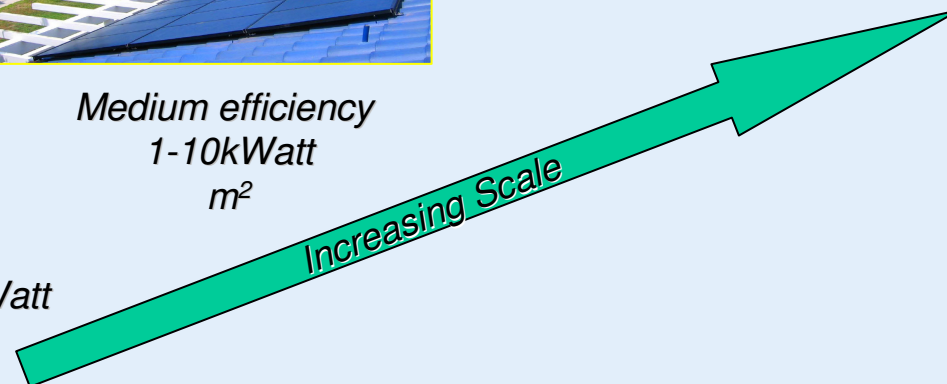


Low-Medium efficiency 1-100MWatt
km²

Mobile Applications



Medium efficiency
1-10kWatt
m²

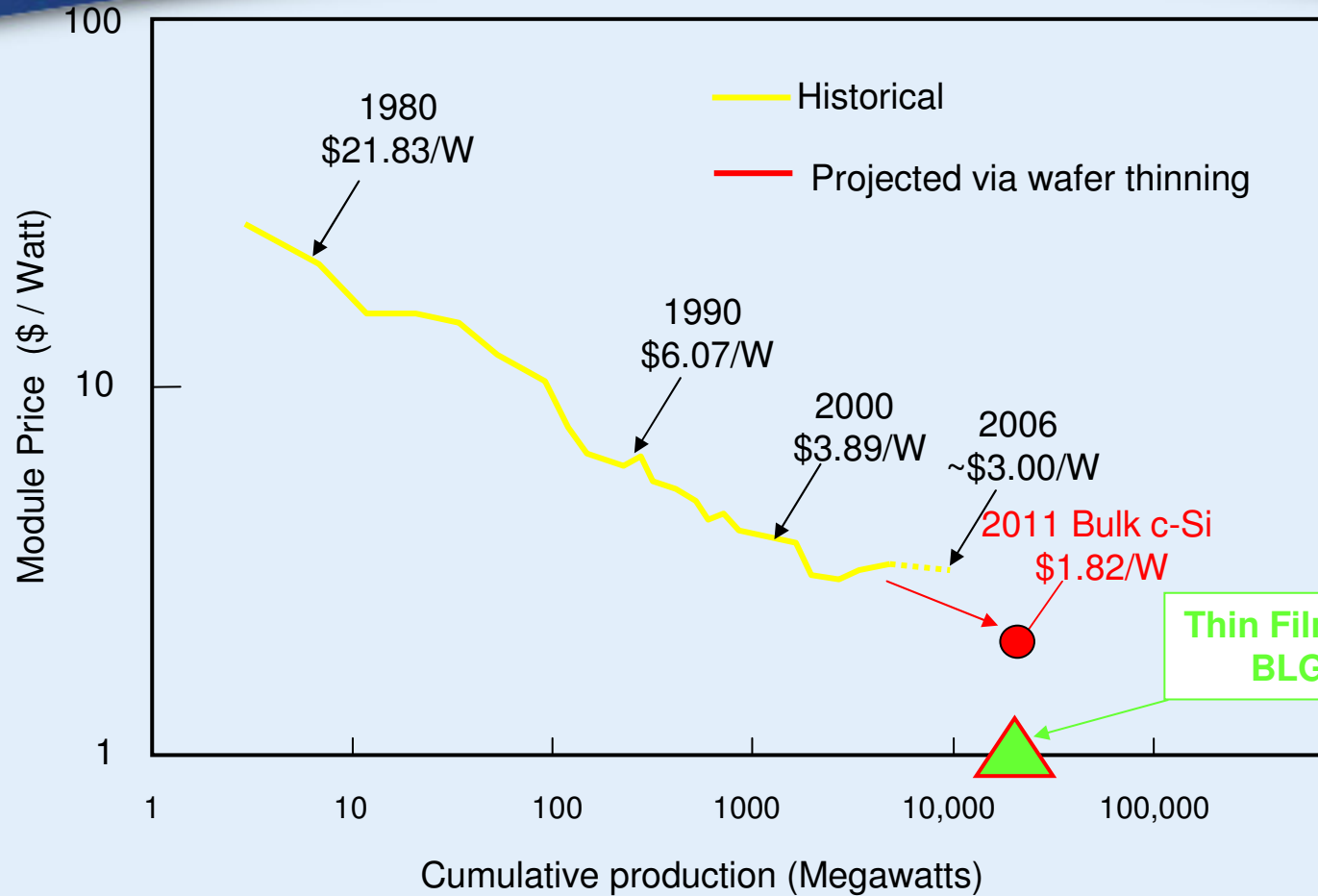


High Cost Substrates

Low Cost Substrates

Bulk c-Si PV technology & “Thin-film-on-glass”

BluGlass will be seeking to deposit higher efficiency thin film structures on cheap glass substrates



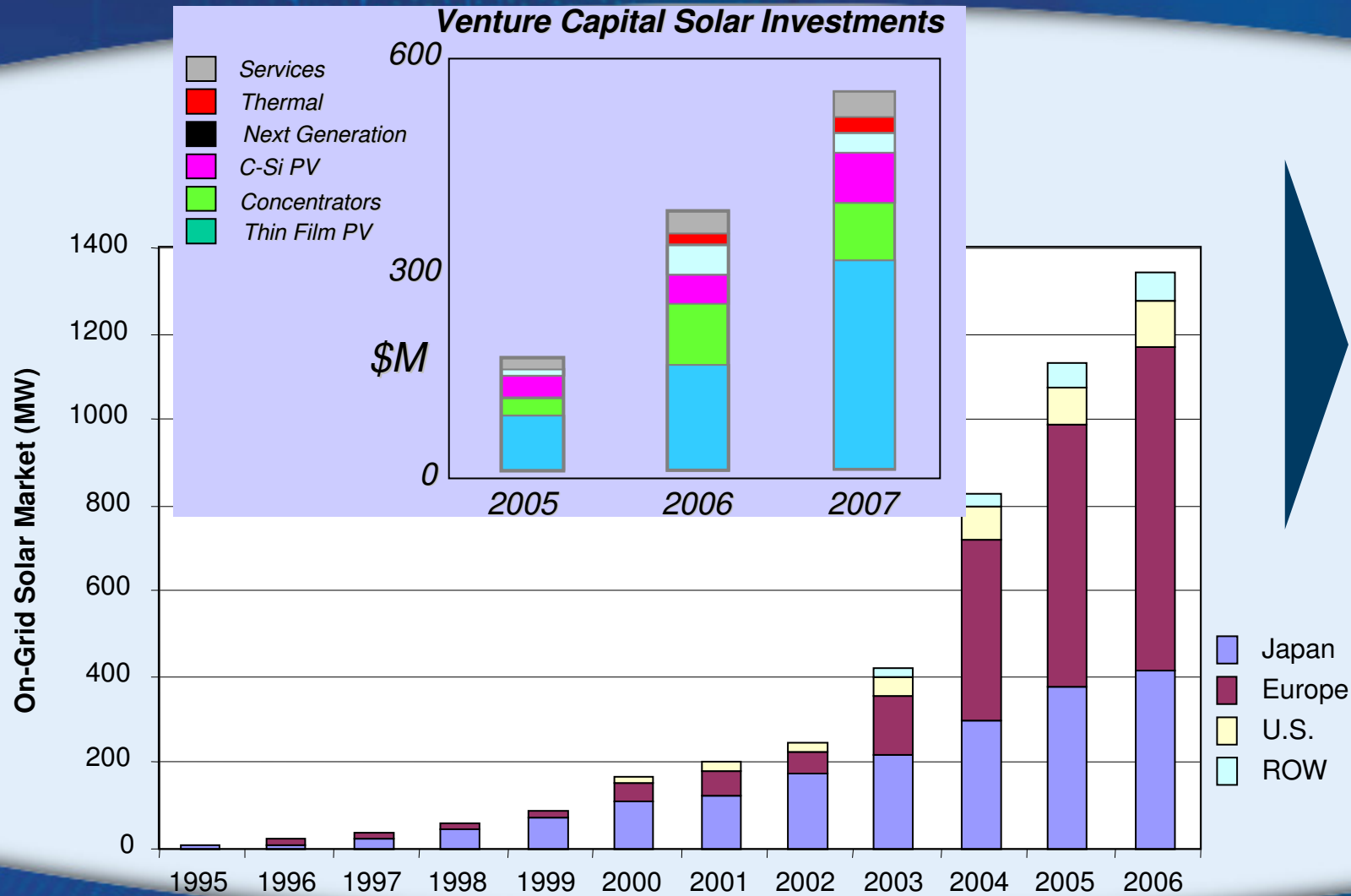
• BLG to target less than \$1/Watt performance using thin film technology on cheaper substrates (glass)

Thin Film on Glass enables <math>< 1\text{ \\$}/\text{Watt}</math>

Source: Sunpower, NREL
(* 2002 data for c-Si module)

Solar Energy Investment and Market Growth

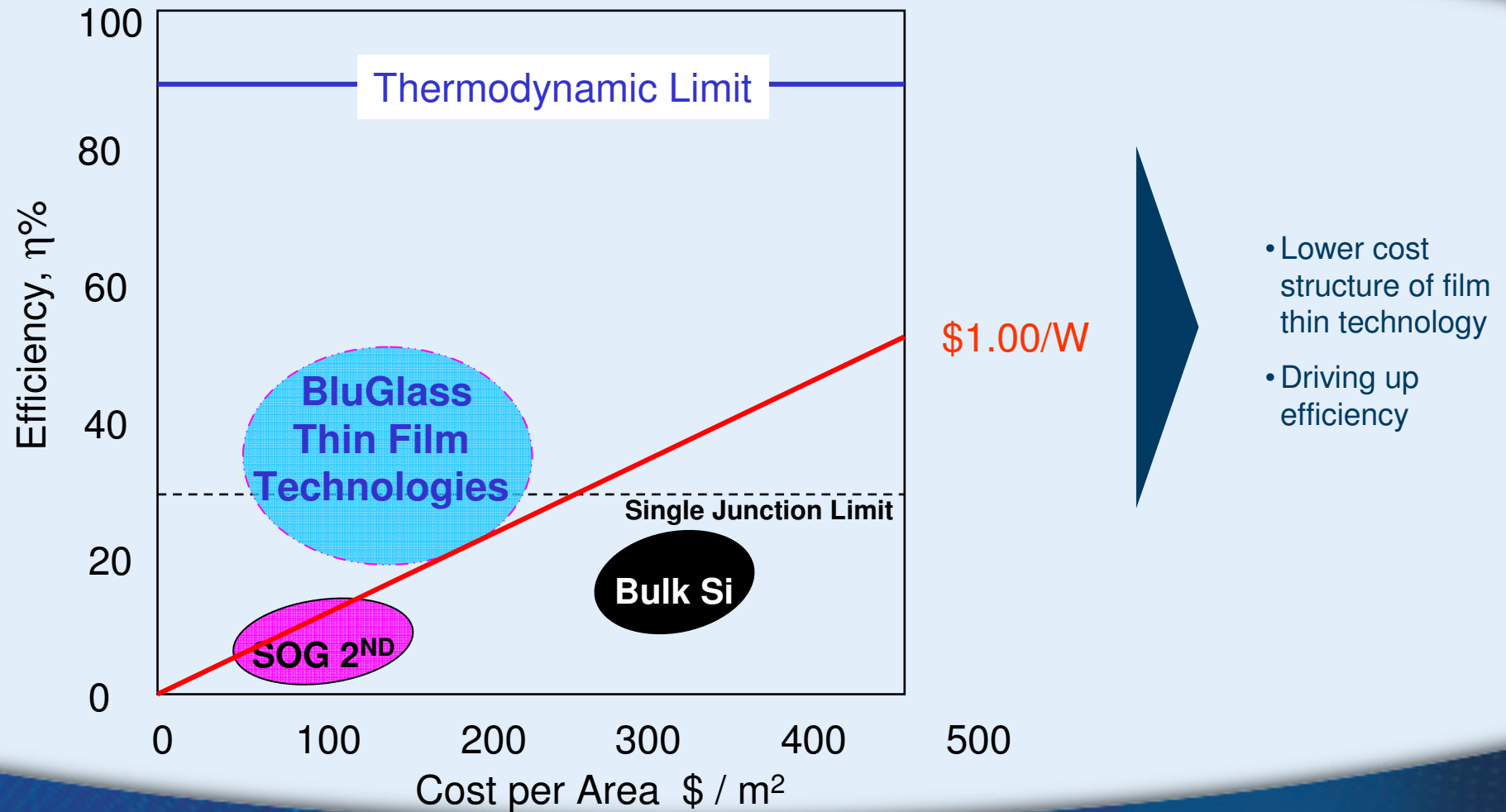
BluGlass is well positioned to enter the thin film / low cost substrate market for solar applications



• VC community in the US is investing heavily in thin films as a way to dramatically reduce cost per area manufacture

BluGlass target for Thin Film Technologies

BluGlass will seek to leverage cost of thin film on glass and drive up efficiency using proprietary materials and devices



Source: adapted from M. Green

Recent achievements and next milestones

- Dedicated manufacturing facility 1,260m²
- Upgrade to electricity supply and fit-out in readiness to install RPCVD fabrication equipment **May 2008**
- Demonstrated world's first GaN-on-glass blue LED
- Extended GaN deposition wafer size from 2 inch to 6 inch
- Key collaborations enabling the technology's commercial demonstration are in place:
 - St Gobain Recherche, France (for special substrates)
 - EMF Semiconductor Systems, Ireland and Brooks Automation Inc, USA (for components of the commercial RPCVD reactor) 2Q07
 - M+W Zander, Germany (for clean room and machine shop design & manufacture) 4Q06
- Reactor chamber large scale tool passes rigorous testing
 - Incorporate into demonstration production line **May 2008**

Other technology options under development – silicon, PV, III-N etc

Why invest in BluGlass

- LED sector is emerging as next “star” industry
- BluGlass is well positioned to enter this rapidly growing, US\$6B+ market with its breakthrough low cost technology
- Well funded – IPO + Comm Ready \$5M
- The RPCVD process has multiple benefits over existing technologies
- Strong IP position underpins commercial attractiveness
- Environmental and commercial benefits in adopting the technology
- Highly capable international technical and commercial team
- Adaptability of the RPCVD technology into new growth markets such as solar (PV)

Thank you

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