



THIS IS DAYLIGHT SAVINGS.

Harvest more energy
from more places.

For Less.

Investor Presentation
February 2017

Forward Looking Statements

This presentation may contain forward-looking information about NanoFlex Power Corporation, a Florida corporation and its wholly-owned subsidiary, Global Photonic Energy Corporation, a Pennsylvania corporation (collectively, the “Company”).

All statements other than statements of historical facts included herein regarding the Company’s financial position, business strategy, growth strategy and other plans and objectives for future operations, are forward-looking statements. The words “anticipate,” “believe,” “estimate,” “expect,” “intend,” “plan” and similar expressions that may tend to suggest a future event or outcome are not guarantees of performance and are inherently subject to numerous risks and uncertainties, many of which cannot be predicted or anticipated.

Future events and actual results, financial or otherwise, could differ materially from those contained herein. Potential investors are cautioned that any such forward-looking statements are not guarantees of future performance and involve significant risks and uncertainties, and that actual results may differ materially from those projected in the forward-looking statements as a result of various factors, including without limitation, the risks set forth “Risk Factors” contained in the Company’s Annual Reports on Form 10-K. Potential investors are urged to carefully consider all risk-factors highlighted in the private placement memorandum. All forward-looking statements are expressly qualified in their entirety by the foregoing cautionary statement.



This is not a solicitation to sell nor offer to buy.



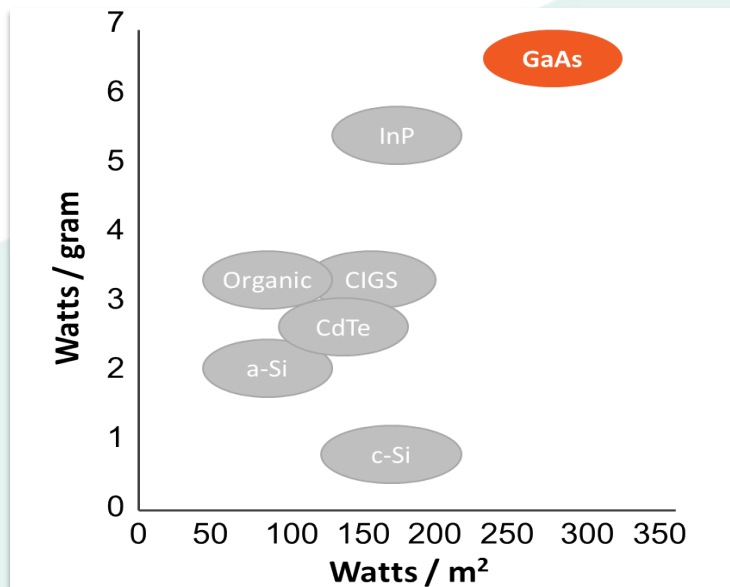
Investment Highlights



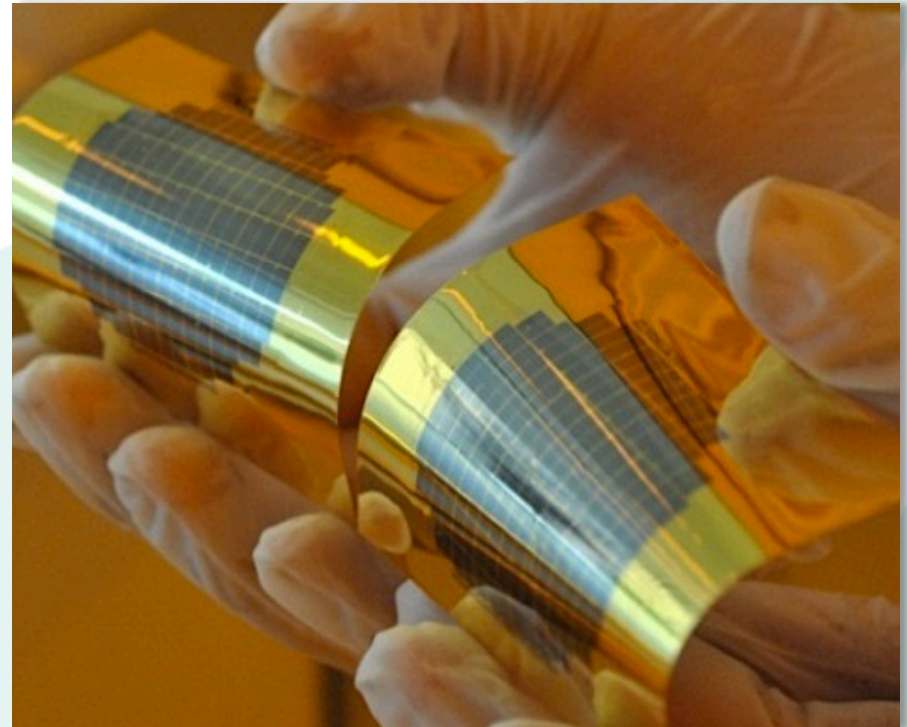
- Current solar technologies limit solar output and applications
- NanoFlex-enabled solar solutions dramatically outperform currently commercialized thin films – enabling new applications & unlocking markets
- Target priorities: military & portable power applications, high density solar farms and multi-story/space-constrained rooftops
- Commercialization of NanoFlex technologies via joint development with manufacturing partner SolAero Technologies
- Currently pursuing multiple sponsored development projects to accelerate commercialization & generate near-term revenue
- Capital-efficient business model via fab-less manufacturing & licensing with industry partners accelerates commercialization & mitigates risk
- Additional growth opportunity via extensive NanoFlex IP in Organic Photovoltaics (OPV) with semi-transparent films for windows/glass

Opening New Markets to Solar Power

NanoFlex technology makes ultra-high-efficiency, space-program solar cells cost-competitive, thin and flexible for terrestrial applications



Source: University of Michigan, NanoFlex Power



Patented Wafer Reuse Technology Creates High Efficiency Solar Thin Films at Breakthrough Prices

The Key: Reduce III-V solar cell cost by **>90%**:

- Reuse the GaAs parent wafer in production
- Make multiple cells from one parent wafer (others can make only 1:1)
- Faster, cheaper, reliable and reproducible

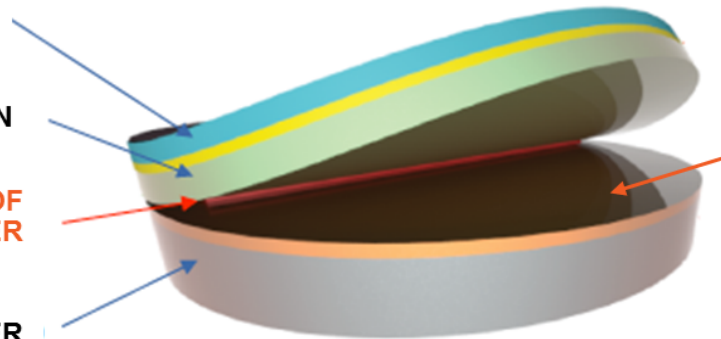
Made possible through patented Non-Destructive Epitaxial Lift Off (ND-ELO)

THIN FILM SUBSTRATE
(PLASTIC OR METAL FOIL)

ACTIVE SOLAR REGION

**SELECTIVE ETCHING OF
SACRIFICIAL LAYER**

PARENT WAFER



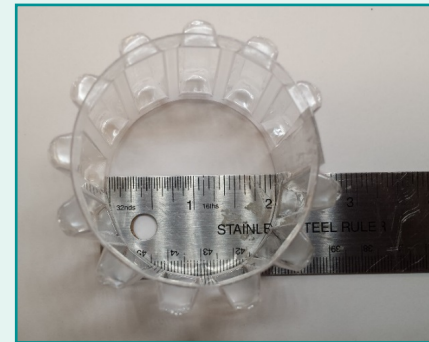
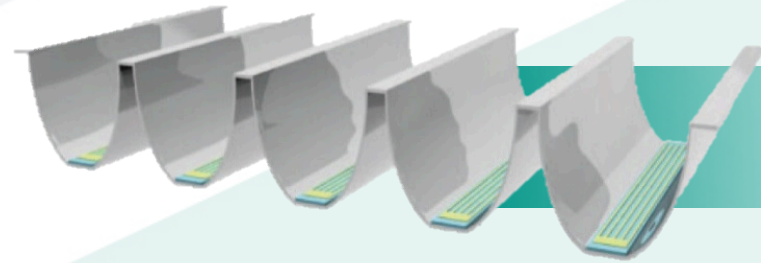
RE-USABLE WAFER SURFACE

ND-ELO creates a pristine wafer surface ready for regrowth without any degradation in surface quality or solar cell performance

No chemo-mechanical polishing =
Potential to reuse the same parent wafer **100s of times!**

More Savings: Mini-Concentrators

Enabling energy harvesting in diffuse light further reduces cost by using a smaller solar cell in the module

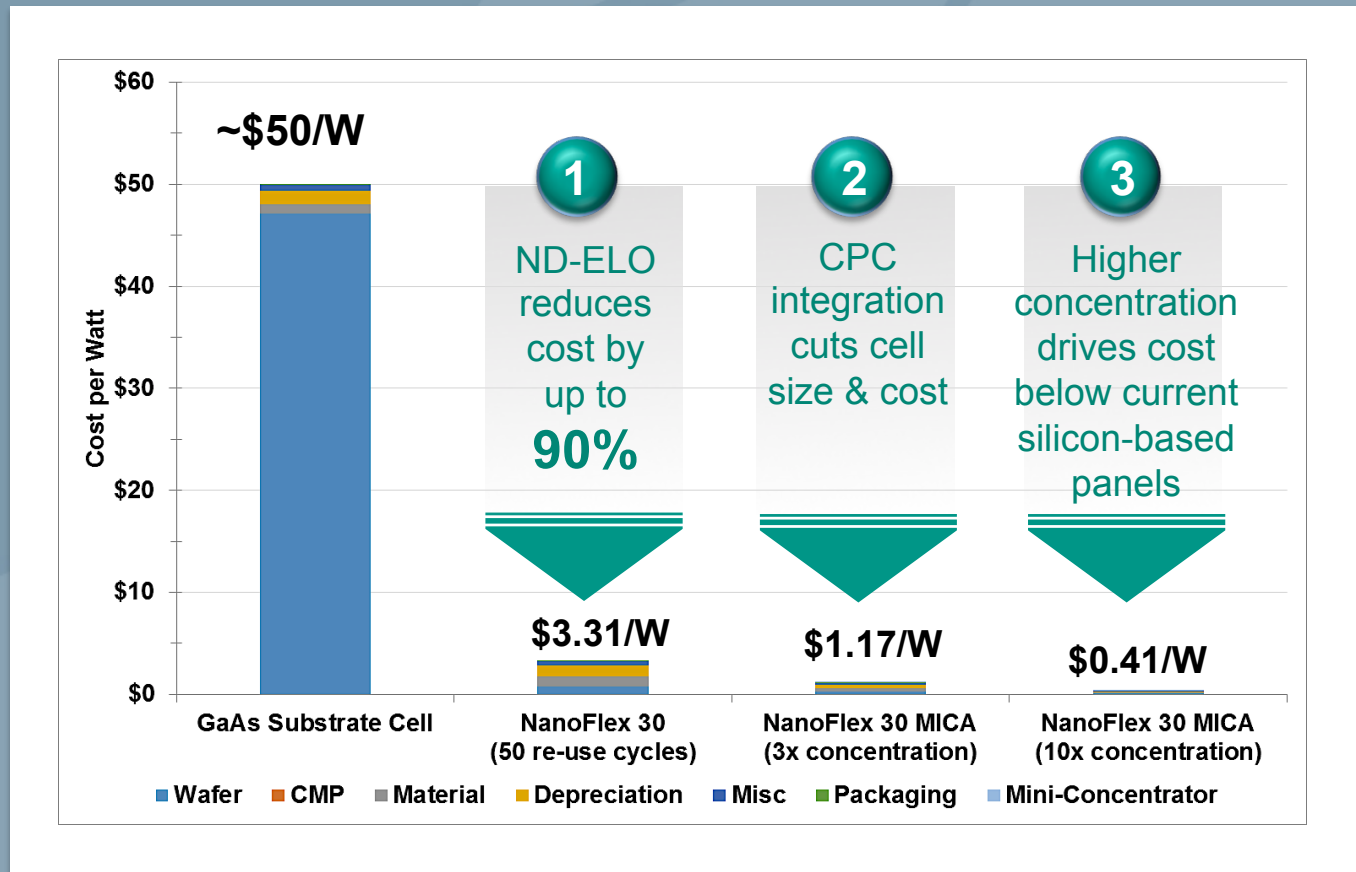


More Energy from a Smaller Solar Cell:

- Wide acceptance angle enables energy harvesting in diffuse light
- Dramatically lowers cost by decreasing required solar cell size by up to 90%
- Maintains lightweight and flexible form factor

Images from top: Schematic cross section of a CPC integrated with solar cell strips; Prototype CPC array bent around a 2-inch radius; Prototype of 12 CPCs integrated with 30 mm x 2 mm solar cell strips

Wafer Reuse & Mini-Concentrators Break the Cost Curve for High Efficiency Solar Thin Films



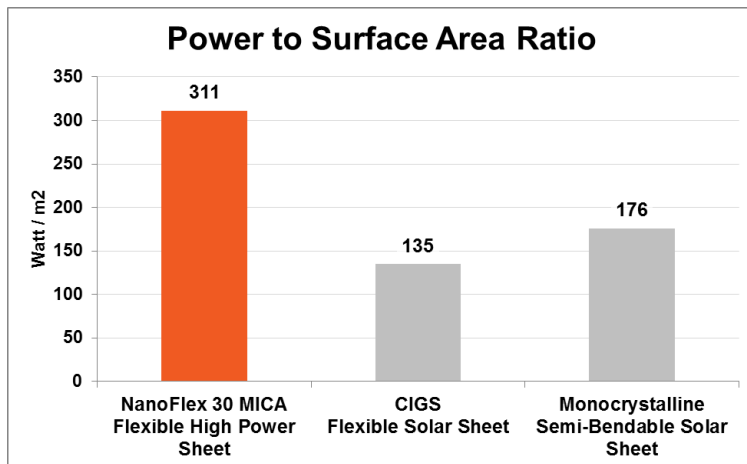
Notes: Preliminary projections reflect estimated dual-junction III-V solar cell costs in the 2020 timeframe at production scale.

Source: Price projections from National Renewable Energy Laboratory, NanoFlex Power, University of Michigan; silicon pricing from SolarCity (Oct 2015)

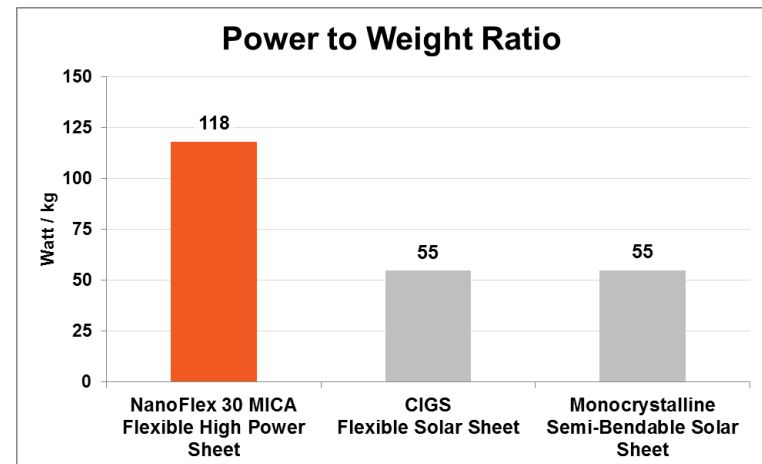
NanoFlex Thin Films Dramatically Outperform Other Technologies in Demanding Applications

Ultra-high efficiency, lightweight and flexible thin film unlocks mobile power, solar farms, and multi-story rooftop markets

2.3x higher power per m²



2.3x higher power per m²



NanoFlex 30 MICA Ultra-High Efficiency Thin Films
vs. Competing Flexible/Bendable Solar Products

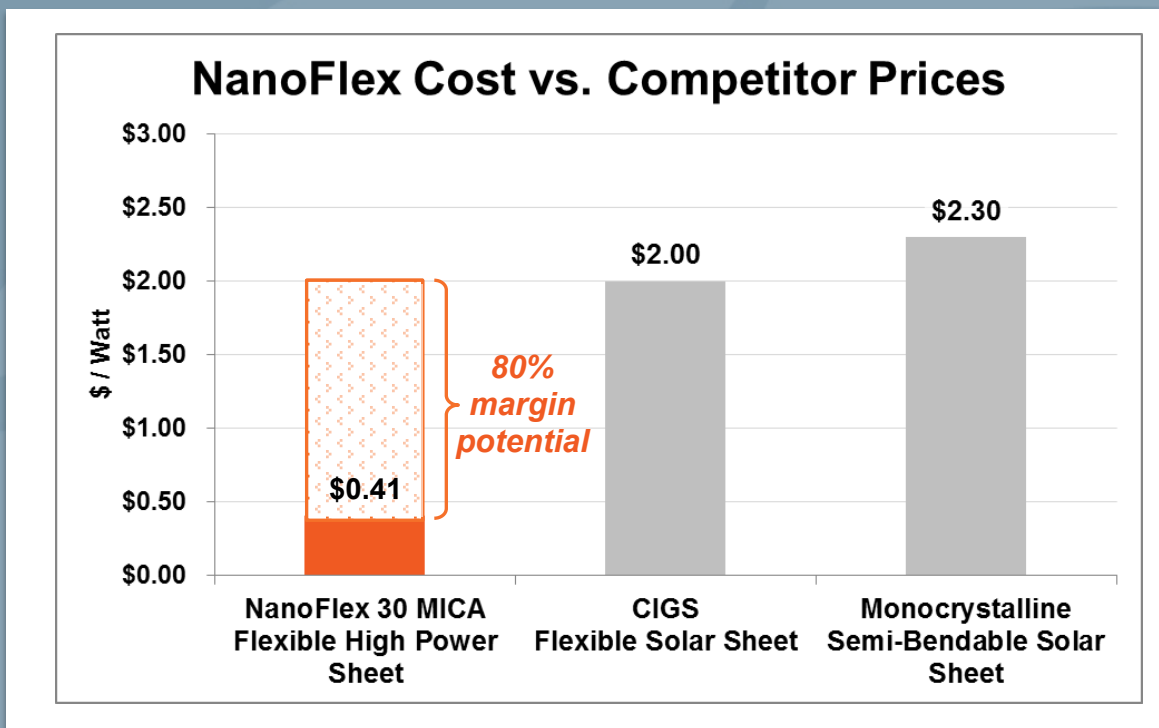
Notes: Estimates by NanoFlex & GreenPath Technologies for production-level sheet assembly of NanoFlex solar cells & metrics reflect MICA's energy production density (kW-hr/m²); CIGS from From MiaSole FLEX-01W specifications; Monocrystalline from Renogy RNG-100DB specification (100W)

Cost Advantages Deliver Outstanding Margin Potential

NanoFlex's cost breakthroughs have the potential to create the highest performance flexible solar solution at the lowest cost per Watt

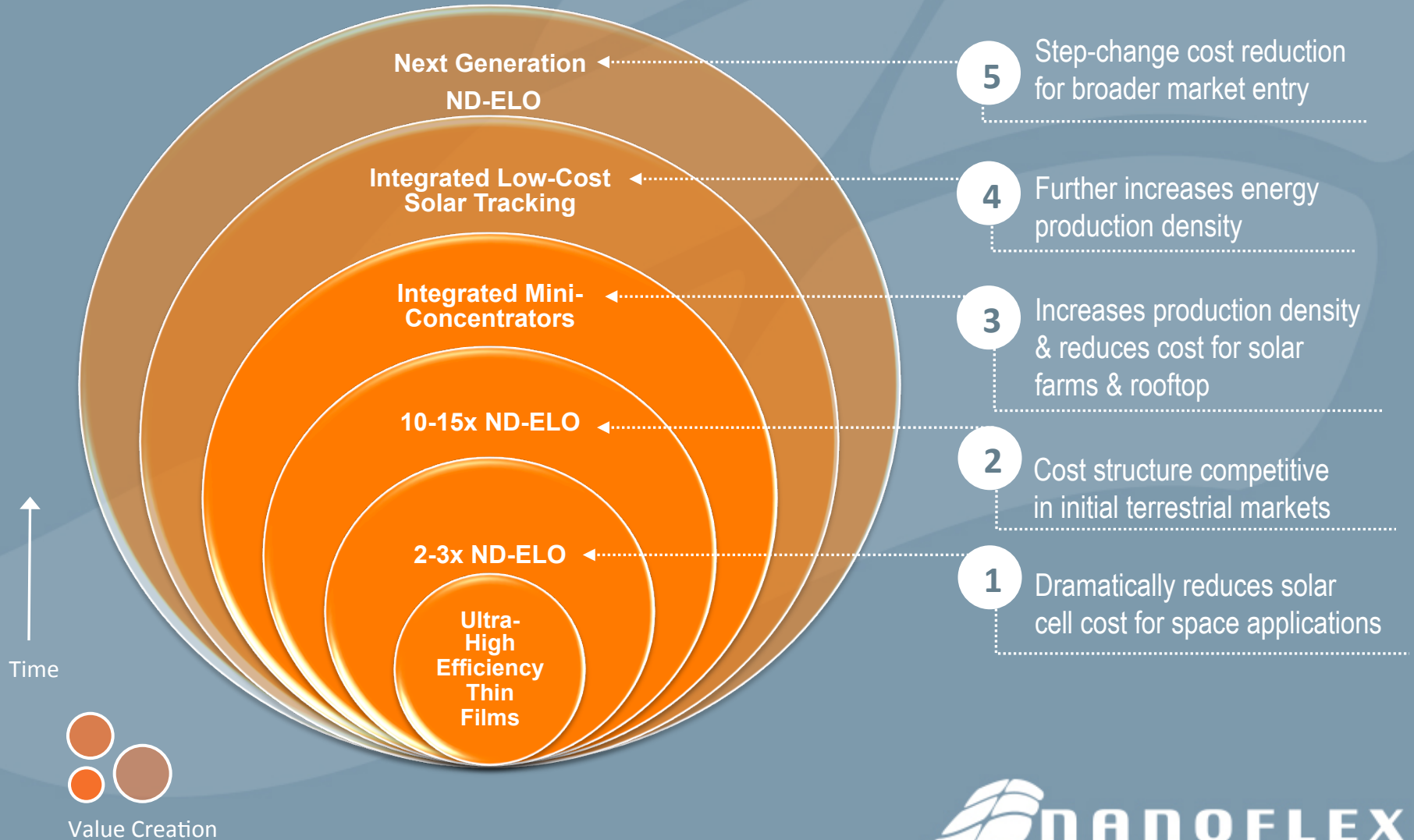


80% margin
potential at
competitor
prices



Notes: Estimates by NanoFlex & GreenPath Technologies for production-level sheet assembly of NanoFlex solar cells and Price/W metric reflects MICA's reduced price per energy production density (kW-hr/m²); Price for MiaSole FLEX-01W CIGS from industry sources; Monocrystalline from Renogy RNG-100DB (100W)

NanoFlex Technology Evolution, Value Creation & Market Expansion



Sustainable Market Development Strategy from High Value to High Volume

A ROADMAP TO SUCCESS:

Initial focus on high value applications ...

Aerospace

<1 MW, \$300-400M

High efficiency & lightweight solar arrays for space vehicles & unmanned aerial vehicles (UAVs)

Portable Power

50-160 MW, \$500-800M*

High efficiency, flexible & lightweight solar sheets & portable packs for military, emergency response, outdoor enthusiasts

Solar Farms

~30 GW, \$20 billion

Low-cost, high efficiency, lightweight panels with mini-concentrators and/or low cost integrated tracking for solar farm applications in high density areas

Rooftop / BIPV

~15 GW, \$10 billion

Low-cost, flexible high efficiency membranes for flat commercial rooftops, multi-story rooftops, facades, curtain walls, etc.; augmentation for silicon PV

Enabled Applications

Low-cost, high efficiency flexible thin films enable new applications such as automotive & transportation, consumer electronics, wearables, remote sensors, etc.

...transition to larger
markets & enabled
applications

Sources: Aerospace market data from Emcore SEC filings & Spectrolab media sources; *Field & Mobile reflect NanoFlex estimates of potential for specialty markets; BIPV estimates from BCC Research (c 2019); Solar Farm and Rooftop/BAPV volume estimates from SolarPower Europe, NanoFlex est. 1/2 of rooftop market is commercial; pricing assumptions from DOE Sunshot Targets

Example:

Portable Power Markets & Specialty Field Applications

Soldier Power Mission



Develop, acquire and field expeditionary, lightweight Soldier power solutions intended for the most austere operating environments and designed to reduce Soldier load and increase lethality.

Lighten the Load & Bring Power Forward

One out of eight U.S. casualties during Operation Iraqi Freedom was sustained by a soldier protecting a fuel supply convoy. Cumulatively, over the past decade, more than 3,300 U.S. troops have died during attacks on fuel convoys.¹

U.S. military operations in Afghanistan have paid the equivalent of \$400 per gallon of fossil fuel when security, transportation, and mortality costs are tallied up. The largest consumer of fuels on the battlefield is electricity generation.²

Why NanoFlex is Better:

- Highest power per area
- Highest power per weight
- Flexible
- Lightweight
- Rugged
- Harvest diffuse light
- High thermal tolerance
- Cost competitive
- Made in the USA

Notes: ¹ Solar Energies Industries Association & PV Magazine (May 2013) ; ² Navigant Consulting/Pike Research (4Q 2012); – Claims based on preliminary specifications

Example:

Solar Farms can make Sense in High Density Locations



NanoFlex overcomes disadvantages in high density areas, including:

- High real estate costs
- High installation & balance of systems costs
- Suboptimal lighting conditions

Why NanoFlex is Better:

- Increase energy density
- Reduce real estate footprint
- Reduce balance of systems
- Harvest diffuse light
- Optimize interconnection
- Lightweight & rugged
- High thermal tolerance
- Cost competitive
- Made in the USA

Notes: ¹ Claims based on preliminary specifications

Source: Southern Sky Renewable Energy, 5.6MW solar farm on 15.5 acres

Example: Enabling Net Zero Energy Buildings

Global BIPV installations expected to increase from 1.6 GW in 2014 to more than 2.6 GW in 2019

- BCC Research



Source (L to R): CoolFlatRoof.com; PV Curtain Wall by BISEM at Guardian Industries Science and Technology Center in Detroit, Michigan

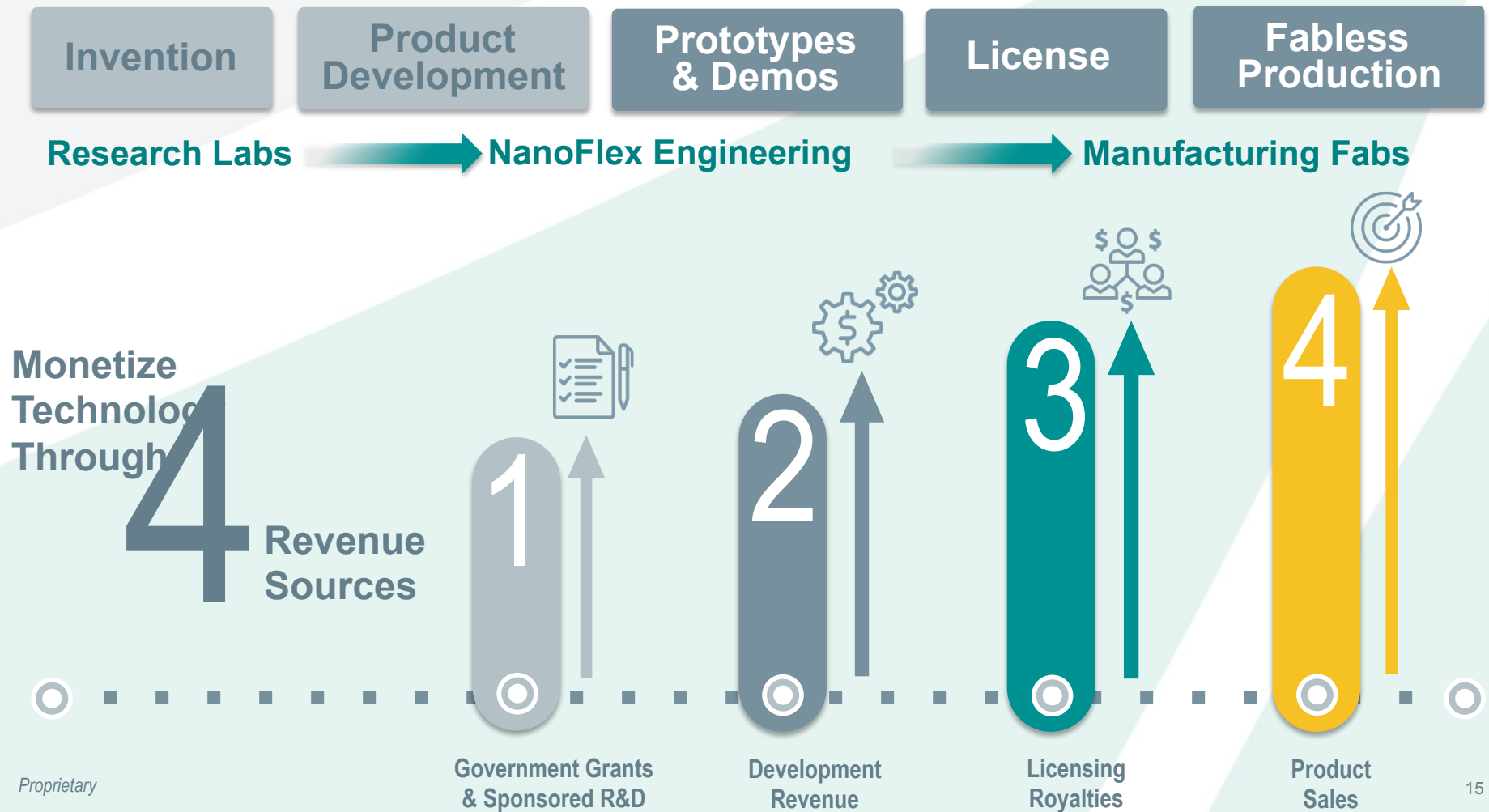
Big Bold Goals – Adopted 2007-08 by Energy, Utilities Commissions

Source: California Public Utilities Commission

- All new residential construction in California will be zero net energy by 2020
- All new commercial construction in California will be zero net energy by 2030
- 50% of existing commercial buildings will be retrofit to ZNE by 2030

Commercialization & Monetization Roadmap

Capital-efficient business model based on joint development, licensing and fabless manufacturing with major industry partners



Exclusive Worldwide Rights to Key Patents

Exclusive rights to an extensive portfolio of issued/pending patents covering all aspects of our breakthrough technologies

Materials

Materials made from common elements at very low costs that assemble into desired structures

- Fullerene acceptors
- Blocking layers
- New materials for visible & infrared sensitivity



Architectures

Proprietary device architectures utilize material-specific characteristics to enable high power output and long life

- Protective & sacrificial layering of III-V solar cell growth
- Mini-compound parabolic arrays
- Integrated tracking with Kirigami
- Monolithically integrated micro-inverters
- Multi-junction organic solar cell
- Mixed layer & nanocrystalline cells
- Transparent/semi-transparent cells

Processes

Proprietary processes for ultra-low-cost fabrication of high-performance materials and architectures

- High speed non-destructive epitaxial lift-off
- Cold weld bonding
- Roll-to-roll mini-concentrator array processing
- Scalable growth technologies



Commercialization Underway with High Performance PV Leader, SolAero Technologies



Validates NanoFlex's technology & begins commercialization of cost-competitive high efficiency thin films new, growing markets.

- SolAero is a world leader in III-V solar cells, powering >170 space missions
- Joint Development focused on commercializing NanoFlex's cost-reduction technology
- SolAero engineers implementing NanoFlex technology in their manufacturing process & in production-configuration solar cells – soon we will see:
 - SolAero licensing NanoFlex IP for aerospace applications
 - SolAero supplying NanoFlex with cells for customer demonstrations & new market development
 - NanoFlex & SolAero commercialization of low-cost GaAs thin films for terrestrial applications like mobile power, solar farms, and rooftop/BAPV



The NanoFlex Team

Management Team

Dean L. Ledger	<i>Co-Founder, CEO, Director</i>	35 years experience financing & developing technology opportunities; prev Director & EVP at Universal Display Corporation (Nasdaq: OLED)
J. Norman Allen	<i>Chief Technology Officer</i>	35 years in battery, semiconductor, green energy ventures; prev President of New Products & Tech at Duracell; Founder/CEO of PowerSmart Electronics; Founder/COO of Ultracell; Founder/CEO of Solidia Technologies; Greentech Advisor at Kleiner Perkins; Operating Partner at Potomac Energy Fund
Mark Tobin	<i>Executive Vice President & Chief Financial Officer</i>	19 years experience with advanced technology development within industry and the capital markets; prev Director of Research at Roth Capital Partners; Science Applications International Corporation; U.S. Air Force officer

Research Team

Dr. Stephen R. Forrest	<i>University of Michigan</i>	Professor of Electrical Engineering, Materials Science & Engineering, & Physics; track record of delivering commercially successful companies; Director at Applied Materials (Nasdaq: AMAT)
Dr. Mark E. Thompson	<i>University of Southern California</i>	Professor of Chemistry, Chemical Engineering, & Materials Science; instrumental in discovery & development of OLED technology

Key Milestones and Activities

- Expand engineering team to support technology transfer
- Receive sponsored funding to advance commercialization efforts through prototype development, testing, and manufacturing readiness
- Fabricate prototypes and conduct demonstrations and testing
- Advance process/technology to higher efficiency product configurations
- Sign license agreement and supply agreement with SolAero Technologies
- Reduce costs and adhere to strict spending discipline with a focus on supporting commercialization and revenue generation
- Initiate professional marketing campaign and accelerate business development efforts
- Secure development partner(s) to support commercialization of OPV

Investment Highlights



- Solar power has only scratched the surface of its total opportunity
- NanoFlex-enabled solutions can dramatically outperform current thin films, enabling new applications & unlocking markets
- Initially targeting military & portable power applications, followed by high density solar farms and multi-story/space-constrained rooftops
- Commercialization of NanoFlex's cost reduction technologies ongoing via joint development with manufacturing partner SolAero Technologies
- Currently pursuing multiple sponsored development projects to accelerate commercialization & generate near-term revenue
- Capital efficient business model via fab-less manufacturing & licensing with industry partners accelerates commercialization & mitigates risk
- Extensive additional IP in Organic Photovoltaics (OPV) presents a future growth opportunity with semi-transparent solar PV films for windows/glass



THANK YOU

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