
VICOR
Investor Update
22nd Annual Needham Growth Conference
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Needham
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Vicor Corporation (Nasdaq GS: VICR)

- Vicor is known for pioneering power conversion technologies, embodied in highly-differentiated solutions addressing the most challenging customer applications
- Performance differentiation (voltage conversion efficiency, solution power density, design flexibility, and TCO) is enabled by patented/proprietary topologies, designs, control ICs, components, materials, and packaging
- Highly scalable operational model; no debt

Founded 1981; public listing 1984	Average Daily Volume (3 mo.): 198,000
41,469,000 diluted shares; two share classes	Trading float: 18,516,000
Total outstanding shares: 40,526,000 (54.3% held by insiders)	Listed share total: 28,768,000 (40.8% held by reporting institutions)

Data as of December 31, 2019.

VICOR

Positioning: Strategically Focused on High Voltages

Vicor's leadership built on foundation of:

- Decades of R&D Focused on Breakthrough Innovation
- Robust Patented / Proprietary IP Portfolio
- Factorized Power Architecture™
- Highly Differentiated Designs & 3D Packaging
- Unmatched Value Proposition

48V: the most compelling chassis and board level solution

"We need the "Killer App" that will force the watershed change in the way businesses think about power. The Killer App is the need for 48V to <1V power conversion for point of load at hundreds of amps. This is real, and it is now. You are not going to solve this problem effectively without a transformer. The converter will have to live up on the substrate next to the processor where the high current is needed.

As far as I am aware only one company – Vicor – has made the enormous investment needed to solve this problem. It is available today. But the industry is putting on blinders – who can afford such high technology? That's where the killer app idea comes in – you cannot afford NOT to do it this way.

There is going to be a disruption here.

-- Dr. Ray Ridley, President, Ridley Engineering

"In my estimation, Vicor has the best 48VDC to 1VDC and below, in the industry."

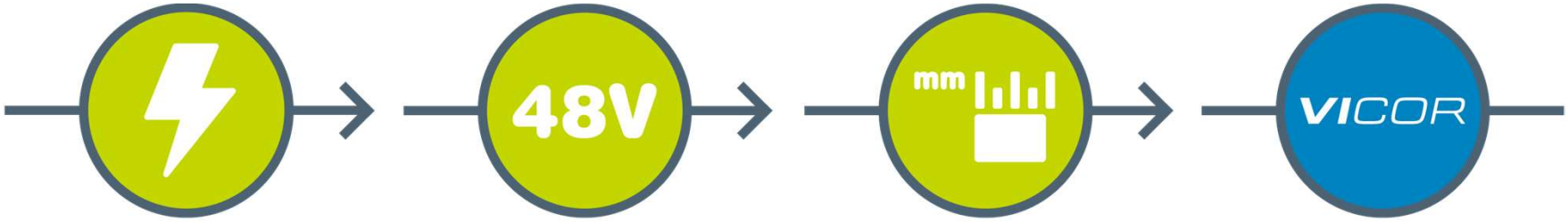
-- Steve Taranovich, Editor/Writer, EDN

"Thanks to Vicor, we are implementing the state-of-the-art 48V technology in Wiwynn® server platform, M1, which will increase power efficiency and offer the best TCO to data centers."

-- Sunlai Chang, Vice President and CTO, Wiwynn

Strategic Opportunity / Value Proposition

- Positioned to lead the accelerating transition to 48V distribution in large, high growth markets
  - Acknowledged leader in 48V conversion and distribution
  - Unmatched capabilities, enabled by substantial IP portfolio
  - Trends evident in AI adoption in data centers and transition to mild-hybrid and full-electric vehicles
    - Additional opportunities in satellite, 5G wireless infrastructure, lighting, and defense electronics
- Driver: tremendous pressure on Power Distribution Networks (PDNs) across applications



System performance driving rapidly increasing load power

Moving PDN to higher voltage eases the delivery and distribution of higher voltages and currents

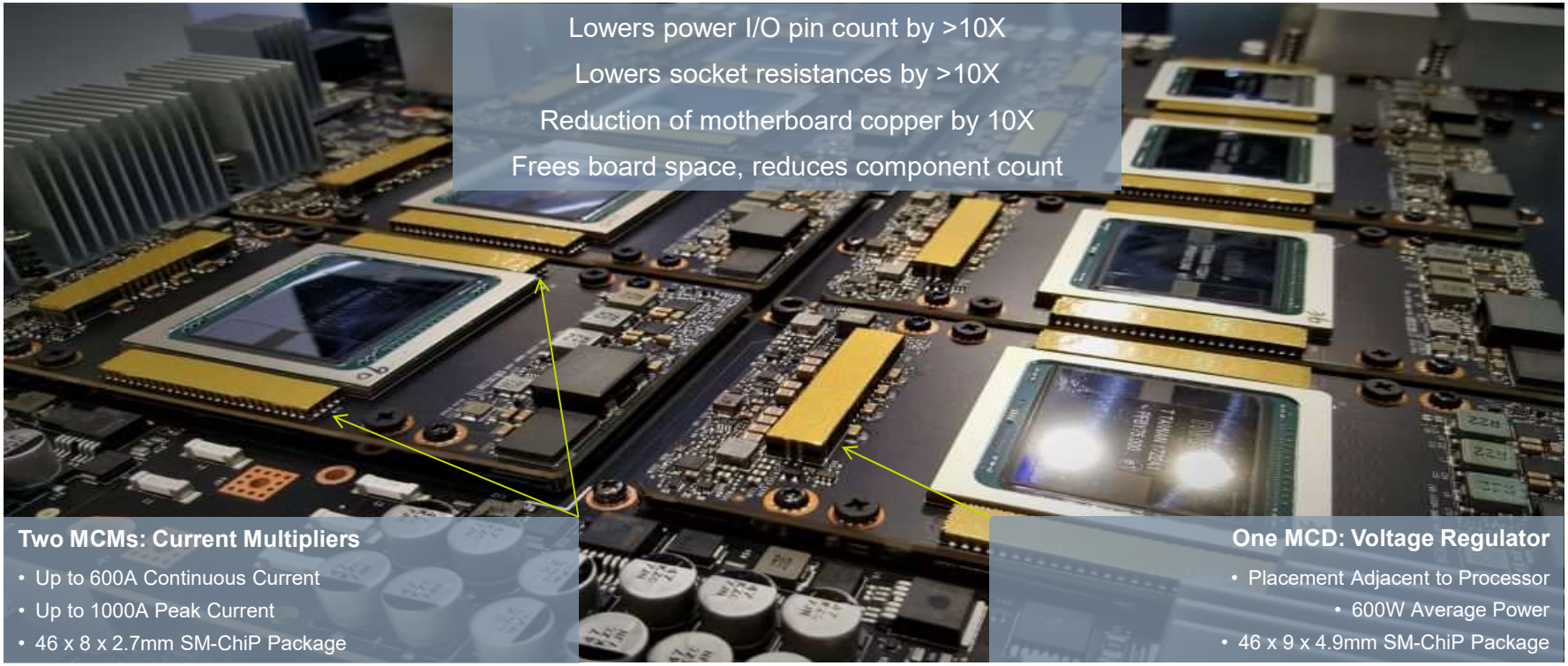
Wattage = Voltage x Current

High power density enables higher efficiency and performance for both system and loads

The power module company with the highest performance and density

48V Leadership: Nvidia DGX-2

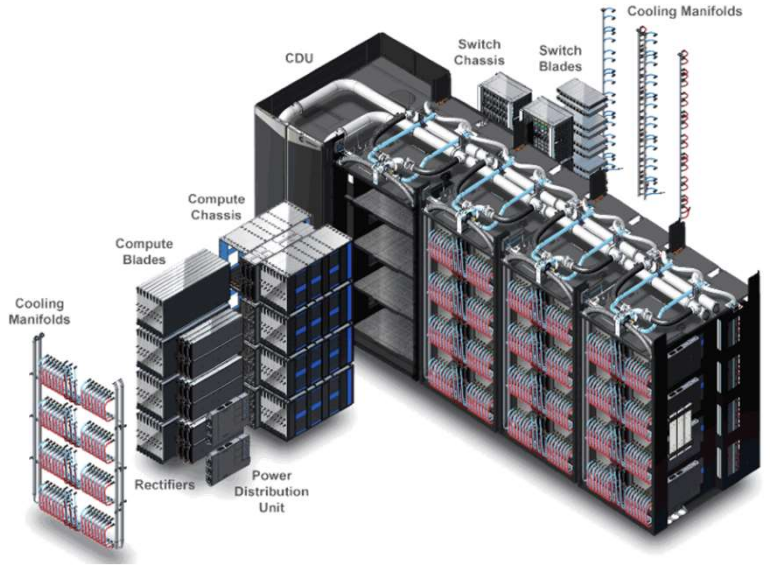
Competitively unmatched approach to current delivery to AI processors



Current Generation (2018-2019):
Eight NVIDIA SXM3 Accelerator Boards = One HGX-2 Cloud Server Platform
Two HGX-2 Boards + NVLink = DGX-2 Supercomputer

48V Leadership : Cray/AMD Frontier Exascale HPC/SC

- Exascale implementation of Shasta architecture
  - Latest project in DOE's "PathForward" initiative
    - Industry participants: AMD, Cray, HPE, IBM, Intel, and Nvidia
  - Each node has full 48V Factorized Power design
    - AMD Epyc CPU supported by four Radeon Instinct GPUs
    - New accelerator-centric compute blade design
    - Utilizing Power-on-Package (MCD and MCMs)
- Frontier: >100 high power "cabinets"
  - 40 MW power envelope
    - ~300kW per cabinet; ~80kW each rack
  - 380V to 48V DC distribution
    - Enabled by Vicor BCMs
- Production planned for 2020



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Targeted Opportunities: Leadership of SC/HPC & Hyperscalers

Current demands of AI acceleration driving infrastructure transition to 48V

3-phase 480V AC

Cloud / Hyperscalers

Air, liquid, and immersion cooling

380V HVDC

48V

40kW to 80kW rack power

Heavy workloads: HPC/AI Training

GPU, ASIC, FPGA

<1V @ 350A to 1,500A

Medium workloads: Cloud / Hyperscalers

CPU, GPU, ASIC, FPGA

<1V @ 150A to 300A

12kW to >20kW rack power

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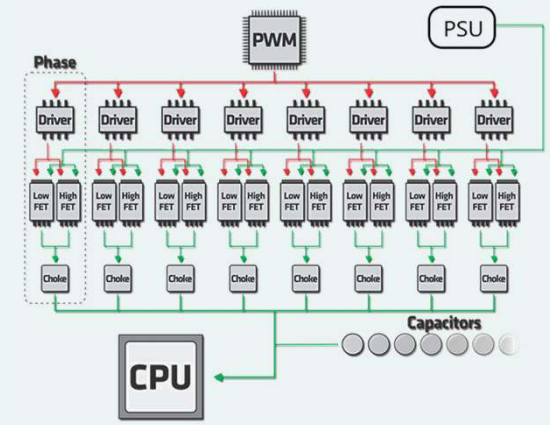
Targeted Opportunities: Facilitating Data Center Adoption

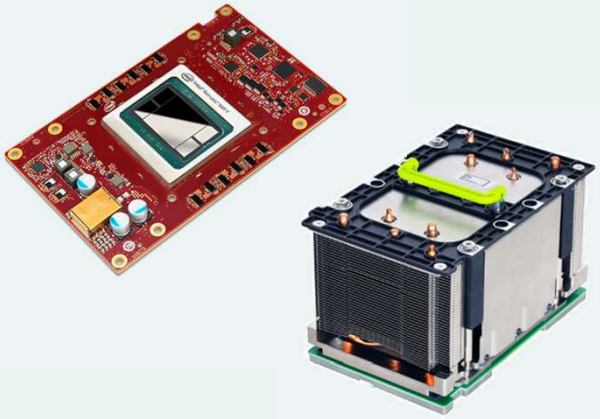
Adding 48V AI on new builds or refreshing legacy architectures

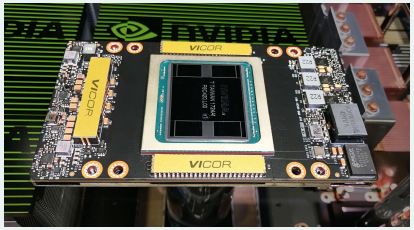
Legacy 12V PDN



48V

Accelerators

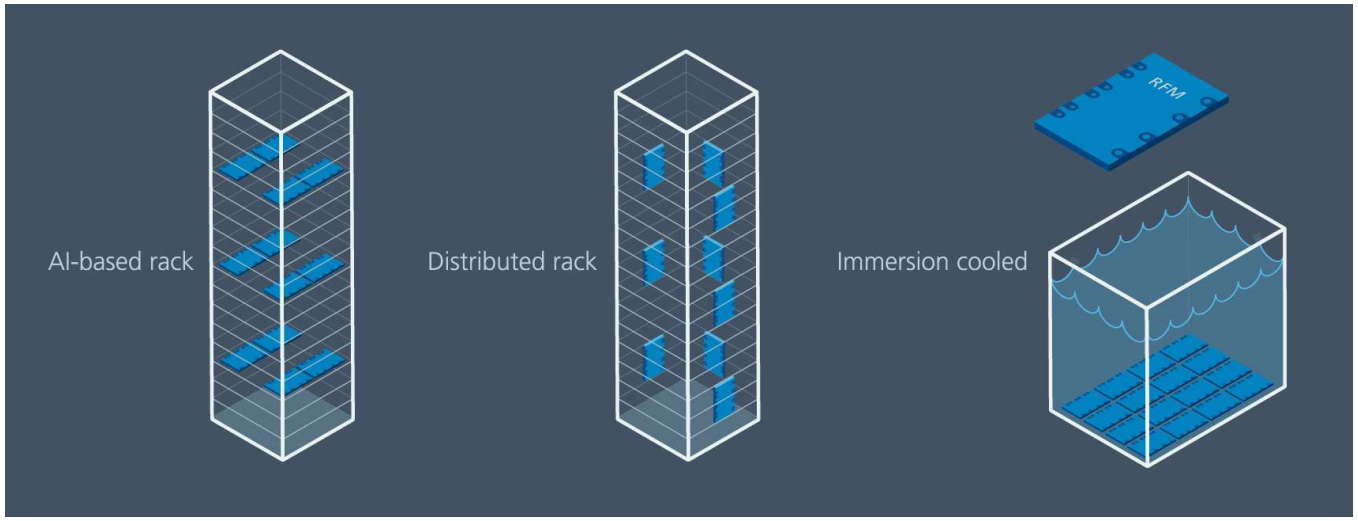




Targeted Opportunities: Redefining Rack Power Distribution

Server power requirements >20kW driving 48V and greater power density

- PowerTablet and new RFM line enable unmatched power density and design flexibility
  - Conventional DC-DC rack distribution and more advanced AC-DC power deployments
- Targeting rack power supply (PDU) TAM of $1B; potential SAM in early stage

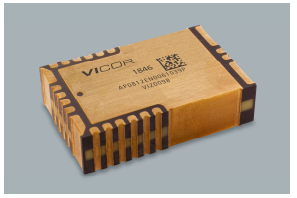


Proof of Concept:
PEZY / Exascaler Supercomputer
(Immersion)

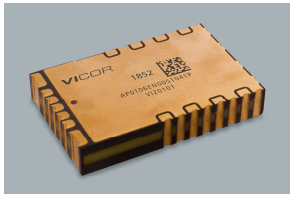
Targeted Opportunities: LEO Communications Satellites

Radiation-hardened, fault-tolerant components aimed at “constellation” applications

BCM3423



PRM2919

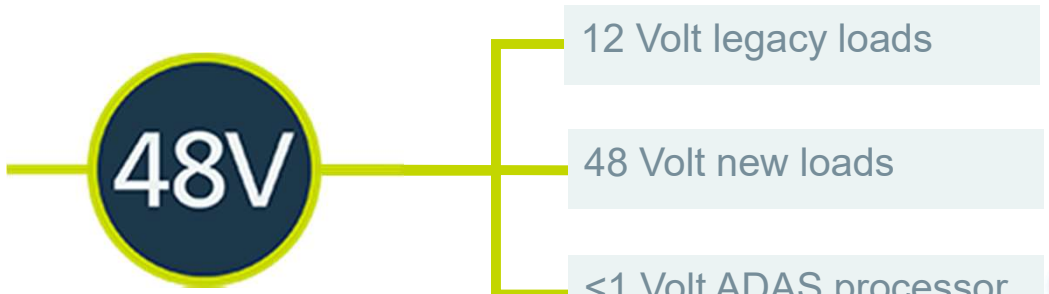


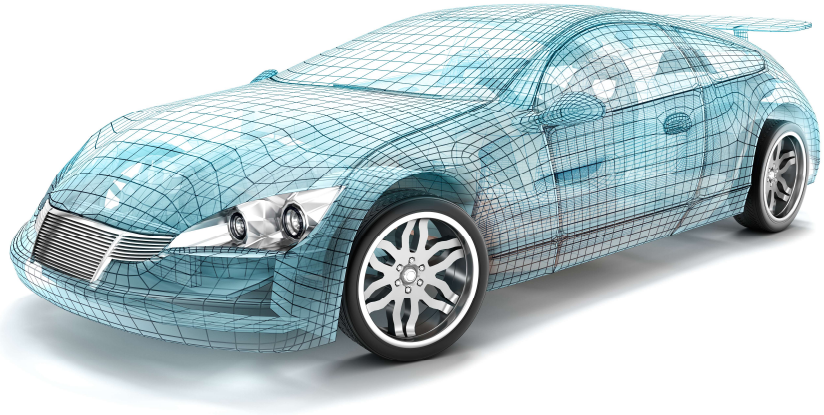
VTM2919

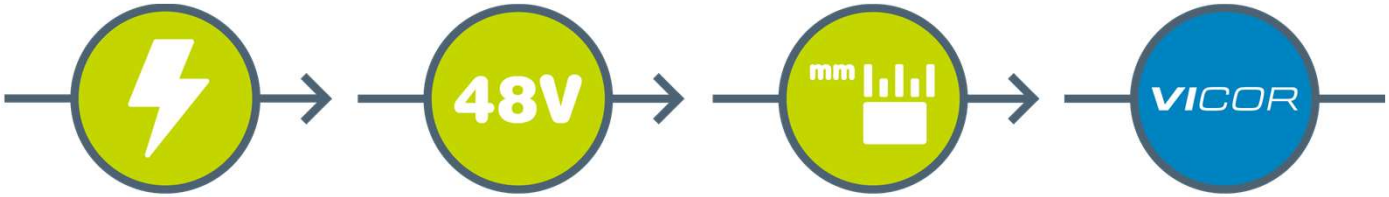
- Estimated $500M TAM (2023)
  - LEO Segment represents ~25% of TAM
  - Production scheduled for 2020

Targeted Opportunities: Mild Hybrid Vehicles

Enabling new features and reducing weight





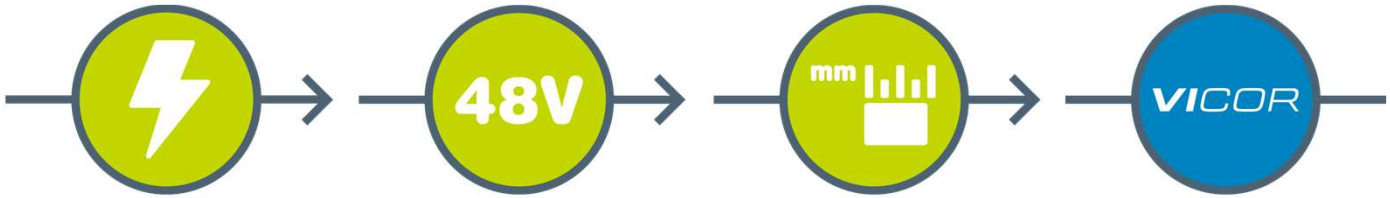


New features: 12V PDN and battery cannot meet needs

Density and lower weight to meet CO2 standards

Targeted Opportunities: Extending EV Battery Life & Range

Increased distribution efficiency and light weight



800V and 400V battery systems need to efficiently convert to 48V

Density, higher efficiency and lower weight extends battery life and driving distance

Automotive Opportunities: Longer-term, but Substantial

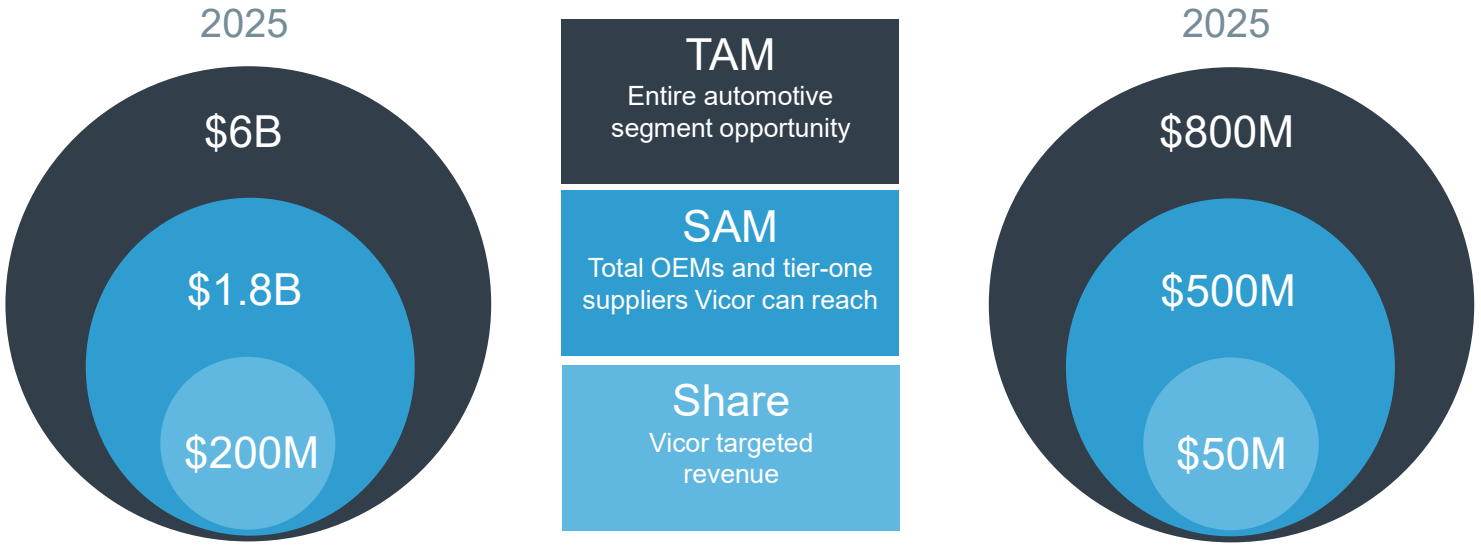
Targeting $250M revenue by 2025

Powertrain and chassis electronics

- Forecasts for ~9% CAGR, as electronic content expands from third to over half of vehicle value
- Well positioned with differentiated performance, size, and weight
- Numerous engagements, with early design wins

Autonomy / AI

- $100M segment TAM today growing to $800M
- Technology advancements and adoption taking longer than anticipated, but enormous R&D spend; standardization expected
- Established engagements with market leaders



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Strategic Shift Underway

Vicor has two product categories: Advanced and Brick

- Advanced Products (~1/3rd volume):
  - Enabled by disruptive, unmatched technology
    - Factorized Power Architecture™
    - ChiP™ modular packaging; next generation control silicon
  - Targeting most challenging applications with highest growth potential
  - Scalable manufacturing model
- Brick Products (~2/3rd volume):
  - Well-established, legacy product lines for distributed power applications
  - Mass customization serving broad range of non-commoditized segments
  - Steady revenue, profitability, and cash generation
- Advanced volume expected to exceed Brick volume by 2021

Operational Shift Underway

To high-volume / low-mix from low-volume / high-mix

- Leveraging infrastructure
  - Product platforms in place
  - Global sales and support in place
  - Expanding current production model
- Sustaining cash-generative model
- Customer transition
  - Driving economics of high volume OEMs
- Approaching mix shift
  - Expect Advanced > Brick by 2021
  - Mix shift expected to accelerate profitability

Expanding Production Capacity		
	**Estimated timing**	**Expected annualized revenue capacity**
Capacity expansion	Online Q2 2019 ✓	~$450M-$500M
90,000 sq.ft. addition	Online 2H 2020	~$750M
New facility	TBD 2022	~$1B

Long Term Financial Model

	FY18	YTD Q3'19	Long Term Targets
Revenue	$291M	$200M	DD CAGR
Advanced Products	36%	30%	~80%
Brick Products	64%	70%	~20%
Gross Margin	48%	47%	~65%
R&D	15%	17%	~15%
SG&A	21%	22%	~15%
Operating Income	11%	7%	~35%

Summary

- Targeting opportunities with potential for sustained high growth
- Disruptive and proprietary topologies, designs, materials, and packaging
- Opportunity to expand share beyond existing customers and applications
- >80% market share today within AI GPU and ASIC segment at 48V
- Substantial automotive pipeline developed in first year
- Significant operating leverage expected to drive profitability ramp