

## *Integrated Power Conversion for Compute Power Delivery*

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### **Abstract**

Compute power delivery must convert from grid voltage to processor/GPU voltages with ever increasing demands on efficiency and power density. This talk describes the challenges and opportunities of the last stage of power conversion; point-of-load (PoL) converters. Topologies and architectures leverage active and passive device scaling laws to deliver high-efficiency, compact power converters, but a looming power wall motivates an examination of existing techniques. Integration of power conversion poses an attractive opportunity to reduce power delivery barriers if the limitations of power magnetics can be overcome. Designs that place the magnetics where the integration burden is reduced or removed while reducing the sizing requirements can enable new flexibility in PoL converter placement and performance.

### **Bio**

Andrew Stillwell received dual B.S. degrees in Electrical Engineering and Computer Engineering from University of Missouri, Columbia, MO in 2005. He spent seven years at National Instruments before arriving at the University of Illinois at Urbana-Champaign where he received M.S. and Ph.D degrees in electrical and computer engineering in 2015 and 2019 respectively. He is currently an Assistant Professor in the Electrical and Computer Engineering Department with the University of Illinois at Urbana-Champaign. His research interests include renewable energy applications, hybrid switched-capacitor converters, power electronics design optimization, high-density and high-efficiency power converters, and advanced control techniques for multilevel converters. In 2025, he received the Air Force Office of Scientific Research Young Investigator Award.

### **Host**

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