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Affiliate Member

**Project Title**: Modular SiC based three-phase AC/DC Front End Rectifier with 99% efficiency

**Objectives**: Accelerate the adoption of WBG in high volume power electronic applications

**Major Milestones**: 20kW AC/DC rectifier demonstrated with an innovative topology, EMI/EMC testing, Parallel operation of at least 2 modules

**Significant Equipment Acquisition**: EMI/EMC test equipment

**Deliverables:** Scalable 20kW AC/DC Front End rectifier demo, test results, manufacturing or commercialization plan

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## WBG Technology Impact

1. Single stage, high frequency, innovative topology to achieve high efficiency and power factor correction – enabled only by the use of SiC MOSFET
2. Market segments impacted: datacenters
3. Timeframe for commercialization: 2019-2020
4. Incumbent technology that this project will compete against: double stage conversion UPS for AC datacenters, or dual stage AC/DC conversion for DC systems, with 70% more losses that this proposed innovative technology

## Additional impacts

1. Economic impact – if successful, this technology will lead to a **multi-million annual dollar business** for the SiC device manufacturers alone

2. Potential for Job Creation – through increased investments in datacenter infrastructure & equipment manufacturers

3. Workforce Development and Education – meetings will be planned with NCSU and VA Tech to share the project results and discuss technical issues

4. Improved US Competitiveness – use only SiC devices made by Power America members. Concept will have a deep impact on a wide range of datacenter related products, and potentially other markets too (volume effect)