

Industry Project Portfolio

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Affiliation: **A** Southern Company

Ecosystem of Power Electronics Applications is Vast

External Investment

Increasing

- The world is made of electronics
- A Greener and Smarter grid demands Power Electronics
- Currently, a void exists in utility engagement on WBG devices
 - Critical to high power applications
- PowerAmerica engagement to create supply chain
- PACE engagement to collaborate in technology development & demonstration.



Increasing Utility Value

PACE

Utility Research & Storyboarding



Scene:	Translated into Specifics	Scene:	For Technology Choices	Scene:	То	Achieve	Future	State
1. 2. 3. 4. 5.	New demand for grid access. New methods of integrating assets. New methods of performing traditional grid functions and new functions (PFC) required. Need for visibility and new insights. Need for enforcement of standards or solutions for bad actors.	1. 2. 3. 4.	Solid-state power substations Power quality monitoring and conditioning solutions Solid-state circuit protection Power flow control	Residential Commercial Industrial				

Make-Up of a Net-Zero Distribution Feeder



We Are Exploring SSPS Applications On Various Fronts

S4T (GaTech & Endeavor)

- Recent PowerSecure partnership
- 4 years SCS R&D support
- 500kW, multi-port system
- Goal: successful field pilot of unit #001 and quantified value add



M3-PE LV-HUB (ORNL)

- Wrapped in transactive controls
- Goal: Residential use validation



XFC-EV HUB (EPRI, SCE)

- Initial siting at Southern Cal. Edison
- Goal: DCaaS use validation



EV Charging Depot (RPS)

- 1.5MVA, 15kV at Duke eGrid
- Goal: EV charging use validation



 \mathbf{PV}

A Utility Partner like Southern

We are prepared for demonstrations

- Applied R&D Lab Space
- Dedicated Power Electronics R&D personnel
- The goal is to quickly facility technology transfer into field operations.

We are capable of integration with other Grid-edge innovations

- Leveraging integrated R&D projects currently in demonstration like
 - EV V2G
 - Residential and Commercial Solar/Charging
 - Digital Substation P&C
 - Smart Cities/Homes
 - Energy Storage
 - Advanced grid Comms
 - Microgrid Control
 - Real-time Digital Simulation

Interested in scaling the capabilities of Power Electronics for the Grid

Supporting MV EnergyHub – MERIT project

Collaboration across the industry is Imperative















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