

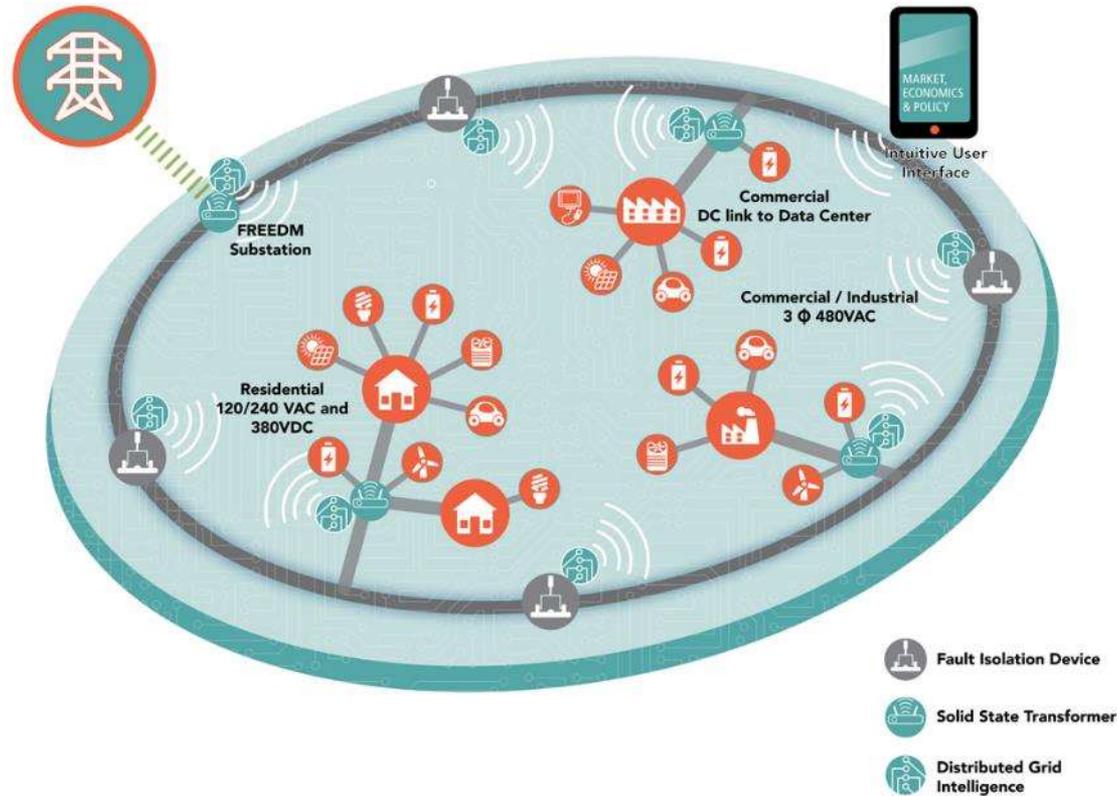
FREEDM

SYSTEMS CENTER

NC STATE UNIVERSITY



The Energy Internet



A network of distributed energy resources utilizing secure communications for intelligent power management enabled through advances in power electronics.

The Energy Internet

Conventional Grid	FREEDM
Central generation	Distributed generation and storage
One way power flow	Two way power flow
Centrally controlled	Distributed intelligence
Static	Actively reconfigurable
AC distribution (some HV DC transmission exists)	AC and DC distribution and use
Hard wired	Plug and play
Electromechanical and electromagnetic devices	Solid state devices (energy router, circuit breakers)
Limited renewable generation	High penetration of renewables
Limited situational awareness	High bandwidth communication for system monitoring & control
Security systems	Embedded cyber-physical security

Industry Members

5/18/16

Full (5):



Associate (14):



Affiliate (7):



