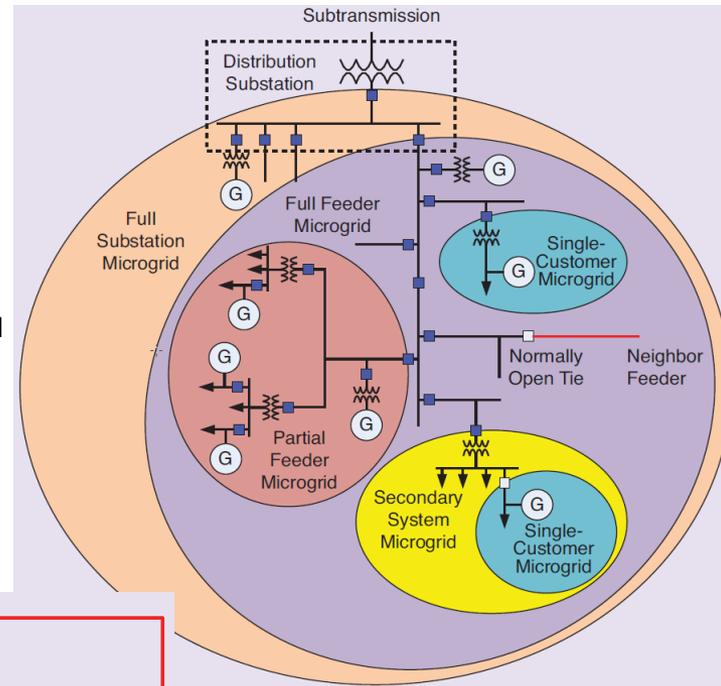


## Electric Utility & Grid of the Future

- Significant interest on the future of the electric utilities due to grid evolution driven by DER proliferation and integration of emerging technologies. Utilities are approaching the subject both, reactively (mandated by PUCs) and proactively (positioning to influence regulators and policymakers). Focus on changes to existing business models, grid architecture, product and service diversification, and development of suitable regulatory frameworks

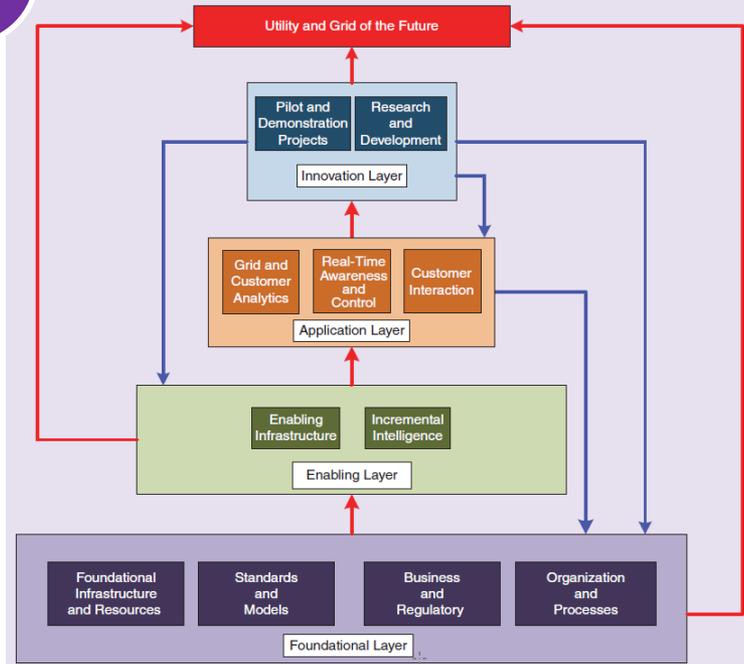


Need for new electric utility business models, planning, operations and engineering procedures, and regulatory and policy frameworks



- **Grid modernization:** “Hands-on” comprehensive portfolio of initiatives focused on realizing Smart Grid / Grid of the Future vision. Deployment of incremental grid intelligence (technology), infrastructure (foundational, IT/OT), and engineering processes
- **Regulatory modernization:** required changes to existing regulatory frameworks to enable utilities and customers to fully take advantage of opportunities derived from grid modernization

Source: J. Romero Agüero, A. Khodaei, R. Masiello, The Utility and Grid of the Future, Challenges, Needs and Trends, IEEE Power & Energy Magazine, pp. 29-37, Sep/Oct 2016  
<http://online.gmags.com/PNE0916/default.aspx?pg=1&mode=2#pg31&mode2>



- **New business models:** Utilities are exploring new business models and related initiatives (service portfolio diversification, rate unbundling and value of solar regulatory proceedings, microgrids, distribution system/market operators, transactive energy, etc.) to:
  - Address potential impacts (revenue decrease, stranded assets, cross-subsidies, etc.) caused by the proliferation of DER alternatives (community choice aggregation, community solar, shared solar, etc.)
  - Take advantage of potential benefits derived from this new reality