

NIST TE Challenge Phase II

Team: Tata Consultancy Services (TCS) Ltd.
Team leader: Dr. Yogesh Bichpuriya
Narayanan Rajagopal
Project name: Simulation of Dynamic Microgrid configuration in TE framework
Simulation tool set: Matlab, GridLab-D

Project summary:

This team will carry out a co-simulation of Dynamic Microgrid Based Operations (DMBO) with Transactive Energy framework. DMBO will configure the network into dynamic Microgrids based on network conditions and an incentivized and controlled power system will be simulated. Whole system will work in a Transactive framework and demonstrate the scenarios. The results of the simulation will be evaluated based on the metrics.

- Dynamic Microgrid configurations considering
 - Network model (IEEE 8500 node system)
 - Bids/offers by TE agents (market participants)
 - Weather scenarios (SGIP scenario)
 - Modifications
- Evaluation metrics
 - Load flow solution – voltage profile, losses, line flows etc.
 - Reliability Indices – number of customer interrupted in case of an event e.g. line outage, extreme weather scenario
 - Utilization of green energy – ratio of green energy / total energy consumed by all the loads
 - Market information – market quotes



AC \leftrightarrow DC | Renewables
Microgrid



Simulating DMC with Gridlab-D and Matlab

