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Appendix A

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List of Abbreviations

| | |
|---------------|---|
| AENS | Average Energy Not Supplied |
| ASAI | Average Service Availability Index |
| ASUI | Average Service Unavailability Index |
| BESD | Battery Energy Storage Device |
| CAIDI | Customer Average Interruption Duration Index |
| CAIFI | Customer Average Interruption Frequency Index |
| CG | Conventional Generation |
| CF-PSO | Constriction Factor-based Particle Swarm Optimization |
| DER | Distributed Energy Resources |
| DFIG | Doubly Fed Induction Generator |
| DG | Distributed Generation |
| DS | Distribution System |
| ECOST | Expected Interruption Cost |
| EDNS | Energy Demand Not Supplied |
| EENS | Expected Energy Not Supplied |
| EIR | Energy Index of Reliability |
| ENS | Energy Not Supplied |

| | |
|-------------|---------------------------------------|
| EPDN | Electrical Power Distribution Network |
| EPLM | Electrical Power Loss Minimization |
| ESS | Energy Storage System |
| EV | Electric Vehicle |
| IEAR | Interrupted Energy Assessment Rate |
| LIV | Lightning Impulse Voltage |
| LI | Lightning Impulse |
| LOEE | Loss of Energy Expectation |
| LOLE | Loss of Load Expectation |
| LOLF | Loss of Load Frequency |
| LOLP | Loss of Load Probability |
| MC | Monte-Carlo |
| PDF | Probability Density Function |
| pf | Power Factor |
| PI | Proportional Integral |
| PSO | Particle Swarm Optimization |
| RES | Renewable Energy Source |
| RPCG | Rectangular Pulse Current Generation |
| RT | Repair Time |
| RTS | Reliability Test Systemm |
| SPR | Surface Plasmon Resonance |
| SPV | Solar Photovoltaic |

| | |
|--------------|---|
| SG | Spark Gap |
| SAIDI | System Average Interruption Duration Index |
| SAIFI | System Average Interruption Frequency Index |
| UPF | Unity Power Factor |
| VSC | Voltage Source Converter |
| WECS | Wind Energy Conversion System |
| WF | Wind Farm |
| WIPS | Wind Integrated Power System |
| WT | Wind Turbine |
| WTG | Wind Turbine Generator |