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In the United States there are approximately 700,000 high power transmission lines (AC and DC). The system is referred to as "the grid," by the industry. Three major regional grids encompass the continental United States (and portions of Canada and Mexico are included: the Eastern Interconnect, The western Interconnect, and the Texas interconnect. A growing concern is maintenance of the voltage stability of the grid. Slight in stability in the grid can lead to outages or even black outs, if the effects of problems are not dealt properly. In order to address this issue, the physics limitations of failure propagations must be understood and calculated. We intend to understand parameters of the dynamics of the grid and explore numerical understanding and bases determining the effectiveness of grid command and control.

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