

# A Deterministic Security Constrained Unit Commitment Model

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Given is a network of  $I$  power generators that must be operated over  $T$  time periods over which a time-variant demand is specified. It is assumed that the fuel consumption of the generators follows a convex quadratic function. Given are also constraints on spinning reserves, ramp limits, fuel constraints, up- and down time limits, and limits on emissions. Cost data for start-up and shot-down are also provided.

The problem then consists in determining which units to operate at each time period, when to start them up and when to shut them down, as well as how much power each unit must produce to satisfy the total demand. The objective is to determine such a schedule to minimize the total operational costs.