In preventive dispatch model, to guarantee that enough regulation capacities are reserved, the system regulation-up/down capacity requirement of each dispatch interval is set to be 5% of the peak load in that interval. For simplicity, all generators submit the same bid for regulation-up/down services, and the ramping-up and the ramping-down capability of generators are the same.

The parameters of generators in the IEEE 30-bus system are summarized in Table A. 6 generators are contained in this case.

TABLE

Parameters Of Generators In The IEEE 30-Bus System

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Index | 1 | 2 | 3 | 4 | 5 | 6 |
| Energy bid ($/MWh) | 44 | 25 | 22 | 30 | 32 | 35 |
| Capacity bid ($/MWh) | 19.8 | 28.8 | 36 | 27 | 32.4 | 39.6 |
| Mileage bid ($/MW) | 2.9 | 2.5 | 4 | 3 | 3 | 3.5 |
| (MW) | 80 | 80 | 50 | 55 | 30 | 40 |
| (MW) | 10 | 10 | 10 | 10 | 10 | 10 |
| (MW/ min) | 48 | 48 | 30 | 33 | 18 | 24 |
| (MW) | 48 | 48 | 30 | 33 | 18 | 24 |

The parameters of generators in the practical 661-bus utility system are summarized in Table B. 48 generators are contained in this case.

TABLE

PARAMETERS OF GENERATORS IN The Practical 661-Bus Utility System

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Energy bid ($/MWh) | Capacity bid ($/MWh) | Mileage bid ($/MW) | (MW) | (MW) | (MW/ min) | (MW) |
| 1 | 23 | 21.9 | 2.2 | 100 | 10 | 60 | 60 |
| 2 | 34 | 22.5 | 1.7 | 100 | 10 | 60 | 60 |
| 3 | 38 | 30.3 | 0.9 | 100 | 10 | 60 | 60 |
| 4 | 59 | 34.8 | 1.8 | 100 | 10 | 60 | 60 |
| 5 | 29 | 47 | 1.8 | 550 | 10 | 330 | 330 |
| 6 | 40 | 26.1 | 0.9 | 185 | 10 | 111 | 111 |
| 7 | 55 | 24.8 | 2.1 | 100 | 10 | 60 | 60 |
| 8 | 61 | 36.7 | 1.5 | 100 | 10 | 60 | 60 |
| 9 | 47 | 22.7 | 2.6 | 100 | 10 | 60 | 60 |
| 10 | 66 | 21 | 2.7 | 100 | 10 | 60 | 60 |
| 11 | 66 | 15.6 | 1.4 | 320 | 10 | 192 | 192 |
| 12 | 51 | 33.1 | 1.5 | 414 | 10 | 248.4 | 248.4 |
| 13 | 66 | 15.1 | 1 | 100 | 10 | 60 | 60 |
| 14 | 65 | 34.5 | 2.3 | 107 | 10 | 64.2 | 64.2 |
| 15 | 37 | 34.5 | 2.3 | 100 | 10 | 60 | 60 |
| 16 | 70 | 17.6 | 2.1 | 100 | 10 | 60 | 60 |
| 17 | 65 | 28.9 | 1.6 | 100 | 10 | 60 | 60 |
| 18 | 38 | 42 | 2.1 | 100 | 10 | 60 | 60 |
| 19 | 59 | 35 | 1.9 | 100 | 10 | 60 | 60 |
| 20 | 36 | 29.1 | 2.2 | 119 | 10 | 71.4 | 71.4 |
| 21 | 28 | 33.3 | 2.6 | 304 | 10 | 182.4 | 182.4 |
| 22 | 57 | 28.7 | 1.5 | 148 | 10 | 88.8 | 88.8 |
| 23 | 52 | 17.3 | 2 | 100 | 10 | 60 | 60 |
| 24 | 50 | 42.2 | 0.9 | 100 | 10 | 60 | 60 |
| 25 | 32 | 41.8 | 1.3 | 255 | 10 | 153 | 153 |
| 26 | 34 | 34.9 | 2.5 | 260 | 10 | 156 | 156 |
| 27 | 60 | 36.5 | 1.4 | 100 | 10 | 60 | 60 |
| 28 | 50 | 35.6 | 1 | 491 | 10 | 294.6 | 294.6 |
| 29 | 35 | 36.6 | 2.3 | 492 | 10 | 295.2 | 295.2 |
| 30 | 35 | 23.4 | 2.2 | 805.2 | 10 | 483.12 | 483.12 |
| 31 | 31 | 42.7 | 2.2 | 100 | 10 | 60 | 60 |
| 32 | 45 | 39.7 | 2.7 | 100 | 10 | 60 | 60 |
| 33 | 48 | 40.8 | 1.2 | 100 | 10 | 60 | 60 |
| 34 | 23 | 19.8 | 2.2 | 100 | 10 | 60 | 60 |
| 35 | 28 | 15.2 | 1.6 | 100 | 10 | 60 | 60 |
| 36 | 46 | 40.8 | 2.3 | 100 | 10 | 60 | 60 |
| 37 | 47 | 43.4 | 1.5 | 577 | 10 | 346.2 | 346.2 |
| 38 | 46 | 34.8 | 2.2 | 100 | 10 | 60 | 60 |
| 39 | 26 | 16.9 | 1.6 | 104 | 10 | 62.4 | 62.4 |
| 40 | 28 | 26.3 | 2.7 | 707 | 10 | 424.2 | 424.2 |
| 41 | 40 | 47.7 | 1.6 | 100 | 10 | 60 | 60 |
| 42 | 55 | 44.8 | 2.2 | 100 | 10 | 60 | 60 |
| 43 | 59 | 39 | 2.4 | 100 | 10 | 60 | 60 |
| 44 | 52 | 20.9 | 1.2 | 100 | 10 | 60 | 60 |
| 45 | 49 | 38.8 | 2.2 | 352 | 10 | 211.2 | 211.2 |
| 46 | 69 | 17.8 | 2.5 | 140 | 10 | 84 | 84 |
| 47 | 46 | 34.6 | 2.3 | 100 | 10 | 60 | 60 |
| 48 | 34 | 31.1 | 1.2 | 100 | 10 | 60 | 60 |