# 含高比例可再生能源农村主动配电网测试系统参数

表1 农网线路参数

**Table 1 Line parameters in rural network**

| 起点 | 终点 | 线路长度（km） | 电阻（Ω） | 电抗（Ω） |
| --- | --- | --- | --- | --- |
| 1 | 2 | 1.027 | 0.27729 | 0.38923 |
| 2 | 3 | 0.909 | 0.24543 | 0.34451 |
| 3 | 4 | 0.8 | 0.21600 | 0.30320 |
| 4 | 5 | 1.078 | 0.29106 | 0.40856 |
| 5 | 6 | 0.82 | 0.22140 | 0.31078 |
| 6 | 7 | 1.1 | 0.29700 | 0.41690 |
| 7 | 8 | 0.752 | 0.20304 | 0.28501 |
| 8 | 9 | 0.815 | 0.22005 | 0.30889 |
| 9 | 10 | 0.714 | 0.19278 | 0.27061 |
| 10 | 11 | 0.708 | 0.19116 | 0.26833 |
| 11 | 12 | 0.998 | 0.26946 | 0.37824 |
| 12 | 13 | 1.056 | 0.28512 | 0.40022 |
| 13 | 14 | 1.132 | 0.30564 | 0.42903 |
| 2 | 15 | 0.728 | 0.19656 | 0.27591 |
| 5 | 16 | 0.776 | 0.20952 | 0.29410 |
| 16 | 17 | 0.522 | 0.14094 | 0.19784 |
| 6 | 18 | 0.91 | 0.24570 | 0.34489 |
| 9 | 19 | 0.995 | 0.26865 | 0.37711 |
| 19 | 20 | 0.905 | 0.24435 | 0.34300 |
| 19 | 21 | 0.869 | 0.23463 | 0.32935 |
| 22 | 23 | 0.78 | 0.21060 | 0.29562 |
| 23 | 24 | 0.988 | 0.26676 | 0.37445 |
| 24 | 25 | 1.04 | 0.28080 | 0.39416 |
| 25 | 26 | 1.141 | 0.30807 | 0.43244 |
| 26 | 27 | 0.948 | 0.25596 | 0.35929 |
| 27 | 28 | 0.86 | 0.23220 | 0.32594 |
| 28 | 29 | 0.726 | 0.19602 | 0.27515 |
| 29 | 30 | 0.533 | 0.14391 | 0.20201 |
| 30 | 31 | 0.841 | 0.22707 | 0.31874 |
| 31 | 32 | 0.928 | 0.25056 | 0.35171 |
| 23 | 33 | 1.17 | 0.31590 | 0.44343 |
| 33 | 34 | 1.02 | 0.27540 | 0.38658 |
| 26 | 35 | 1.053 | 0.28431 | 0.39909 |
| 27 | 36 | 0.809 | 0.21843 | 0.30661 |
| 36 | 37 | 1.114 | 0.30078 | 0.42221 |
| 36 | 38 | 0.662 | 0.17874 | 0.25090 |
| 28 | 39 | 0.771 | 0.20817 | 0.29221 |
| 40 | 41 | 0.661 | 0.17847 | 0.25052 |
| 41 | 42 | 0.408 | 0.11016 | 0.15463 |
| 42 | 43 | 0.516 | 0.13932 | 0.19556 |
| 43 | 44 | 1.073 | 0.28971 | 0.40667 |
| 44 | 45 | 0.677 | 0.18279 | 0.25658 |
| 45 | 46 | 0.867 | 0.23409 | 0.32859 |
| 46 | 47 | 0.746 | 0.20142 | 0.28273 |
| 47 | 48 | 1.054 | 0.28458 | 0.39947 |
| 40 | 49 | 0.491 | 0.13257 | 0.18609 |
| 42 | 50 | 0.508 | 0.13716 | 0.19253 |
| 47 | 51 | 1.151 | 0.31077 | 0.43623 |
| 1 | 40 | 1.027 | 0.27729 | 0.38923 |
| 1 | 22 | 1.027 | 0.27729 | 0.38923 |

表2 典型日居民负荷参数

**Table 2 Typical daily residential load parameters**

| 时间 | 有功功率（p.u.） | 无功功率（p.u.） |
| --- | --- | --- |
| 0:00 | 0.28 | 0.05 |
| 1:00 | 0.23 | 0.05 |
| 2:00 | 0.21 | 0.05 |
| 3:00 | 0.20 | 0.04 |
| 4:00 | 0.19 | 0.04 |
| 5:00 | 0.19 | 0.05 |
| 6:00 | 0.20 | 0.05 |
| 7:00 | 0.26 | 0.05 |
| 8:00 | 0.44 | 0.05 |
| 9:00 | 0.36 | 0.05 |
| 10:00 | 0.32 | 0.04 |
| 11:00 | 0.15 | 0.05 |
| 12:00 | 0.10 | 0.05 |
| 13:00 | 0.13 | 0.04 |
| 14:00 | 0.13 | 0.04 |
| 15:00 | 0.18 | 0.04 |
| 16:00 | 0.26 | 0.04 |
| 17:00 | 0.34 | 0.05 |
| 18:00 | 0.44 | 0.06 |
| 19:00 | 0.65 | 0.06 |
| 20:00 | 0.57 | 0.06 |
| 21:00 | 0.42 | 0.05 |
| 22:00 | 0.37 | 0.05 |
| 23:00 | 0.29 | 0.05 |

表3 农网各节点光伏容量

**Table A3 Photovoltaic capacity of each node in rural network**

|  |  |  |  |
| --- | --- | --- | --- |
| 序号 | 所属馈线 | 节点 | 容量（MW） |
| PV1 | I | 11 | 1 |
| PV2 | I | 15 | 0.8 |
| PV3 | I | 16 | 1 |
| PV4 | III | 49 | 1.5 |
| PV5 | III | 51 | 1 |

表4 典型日分布式电源出力数据

**Table A4 Typical daily output data of distributed generator**

| 分布式电源类型 | 光伏（p.u.） | | | | | 小水电（p.u.） | 分布式风电风速（m/s） |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 晴天 | | | | 阴天 （雨雪天） | 丰水期 |
| 时刻 | 一季度 | 二季度 | 三季度 | 四季度 |
| 0:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.840 | 4.407 |
| 1:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.843 | 6.612 |
| 2:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.845 | 6.835 |
| 3:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.847 | 7.98 |
| 4:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.838 | 7.979 |
| 5:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.842 | 7.84 |
| 6:00 | 0.067 | 0.115 | 0.000 | 0.000 | 0.000 | 0.829 | 7.497 |
| 7:00 | 0.189 | 0.207 | 0.106 | 0.060 | 0.001 | 0.837 | 6.689 |
| 8:00 | 0.236 | 0.370 | 0.229 | 0.133 | 0.043 | 0.841 | 5.642 |
| 9:00 | 0.451 | 0.531 | 0.351 | 0.253 | 0.036 | 0.836 | 4.449 |
| 10:00 | 0.641 | 0.873 | 0.558 | 0.432 | 0.059 | 0.838 | 4.043 |
| 11:00 | 0.854 | 0.984 | 0.781 | 0.656 | 0.085 | 0.833 | 3.961 |
| 12:00 | 0.965 | 1.000 | 0.895 | 0.835 | 0.174 | 0.840 | 3.897 |
| 13:00 | 0.941 | 0.950 | 0.882 | 0.810 | 0.092 | 0.835 | 3.316 |
| 14:00 | 0.774 | 0.839 | 0.651 | 0.593 | 0.081 | 0.836 | 2.205 |
| 15:00 | 0.523 | 0.686 | 0.438 | 0.381 | 0.034 | 0.831 | 2.297 |
| 16:00 | 0.347 | 0.502 | 0.215 | 0.172 | 0.002 | 0.832 | 2.508 |
| 17:00 | 0.151 | 0.321 | 0.109 | 0.093 | 0.002 | 0.834 | 2.966 |
| 18:00 | 0.000 | 0.168 | 0.000 | 0.000 | 0.000 | 0.839 | 3.457 |
| 19:00 | 0.000 | 0.026 | 0.000 | 0.000 | 0.000 | 0.839 | 3.61 |
| 20:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.833 | 3.636 |
| 21:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.840 | 3.275 |
| 22:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.846 | 3.095 |
| 23:00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.845 | 2.775 |

注：小水电装机容量为150kW。

表5 农村配电网节点居民负荷信息

**Table A5 Rural distribution network nodes residential load information**

|  |  |  |  |
| --- | --- | --- | --- |
| 节点 | 最大负荷（kW） | 节点 | 最大负荷（kW） |
| 1 | 60 | 27 | 70 |
| 2 | 245 | 28 | 70 |
| 3 | 80 | 29 | 35 |
| 4 | 140 | 30 | 70 |
| 5 | 35 | 31 | 140 |
| 6 | 140 | 32 | 140 |
| 7 | 70 | 33 | 240 |
| 8 | 35 | 34 | 140 |
| 9 | 70 | 35 | 35 |
| 10 | 70 | 36 | 210 |
| 11 | 220 | 37 | 35 |
| 12 | 100 | 38 | 70 |
| 13 | 175 | 39 | 140 |
| 14 | 70 | 40 | 280 |
| 15 | 140 | 41 | 140 |
| 16 | 140 | 42 | 100 |
| 17 | 70 | 43 | 210 |
| 18 | 70 | 44 | 140 |
| 19 | 70 | 45 | 280 |
| 20 | 245 | 46 | 140 |
| 21 | 105 | 47 | 280 |
| 22 | 105 | 48 | 70 |
| 23 | 70 | 49 | 210 |
| 24 | 35 | 50 | 280 |
| 25 | 35 | 51 | 140 |
| 26 | 70 |  |  |