Thermal Requirements

I. Generation Dispatch

(1) For Summer Peak Load Conditions: Dispatch all generation at delivery rights capacity and at maximum facility output.

(2) For Winter Peak Load Conditions: Turn off solar generation (historical peak is pre-dawn) and dispatch remaining generation as for summer peak load.

(3) For Light Load Conditions (30% of peak load): Turn off peaking generation. Dispatch remaining generation as for summer peak load.
II. Contingencies

(1) All lines In: No facility shall exceed its normal rating.

(2) Contingency loss of any one facility (line, line section, transformer, or generator): No facility shall exceed its long-term (4-hour) emergency rating.

(3) Contingency loss of any one facility (line, line section, transformer, or generator), and the outage of any one facility at a generation location: No facility shall exceed its long-term (4-hour) emergency rating.
## ODEC Line Voltage Limits

<table>
<thead>
<tr>
<th></th>
<th>kV</th>
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<tbody>
<tr>
<td><strong>High</strong></td>
<td></td>
<td>74</td>
</tr>
<tr>
<td>per unit</td>
<td></td>
<td>1.07</td>
</tr>
<tr>
<td><strong>Normal</strong></td>
<td></td>
<td>65.5</td>
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<tr>
<td><strong>Low</strong></td>
<td></td>
<td>0.95</td>
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<tr>
<td><strong>Emergency</strong></td>
<td></td>
<td>65</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td></td>
<td>0.94</td>
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<tr>
<td><strong>Voltage Drop</strong></td>
<td></td>
<td>6.9</td>
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<tr>
<td>percent</td>
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<td>10%</td>
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</tbody>
</table>

**Voltage Drop**: 6.9 percent

**Normal Low Voltage Limit**: 65.5 kV

**Emergency Low Voltage Limit**: 65 kV

**High Voltage Limit**: 74 kV

**Per Unit Values**:
- High: 1.07
- Normal Low: 0.95
- Emergency Low: 0.94
- Voltage Drop: 10%
I. A radial 69 kV transmission line shall feed no more than 10,000 consumers, 50 megawatts of load, or have more than 700 MWMiles of exposure (MW-Mile = Peak MW X Radial Line Length). Once a radial loading limit exceeds any of these thresholds, an additional transmission source is required. This may be a separate source, or it may be a loop back to the source of the original radial line.
II. Circuit breakers will be installed on all line terminal positions in substations. Circuit switchers or circuit breakers with appropriate controls are acceptable for transformer high side protection, provided they meet the interrupting requirements.

III. By-passing of protective devices such as breakers and circuit switchers shall not be allowed for maintenance unless the bypass equipment provides adequate protection.
IV. New transmission lines shall have only two terminals.

V. New injection and withdrawal points shall use a ring-bus design. Addition of a facility that would result in more than 6 terminals to the ring bus shall instead be installed as a breaker and a half design.
All new generation facilities will be required to install two modes of relay speed communications for protection and control of the system, one mode of which must be fiber optic. These communications shall extend from the generator location to all terminals or switching locations on the system that if opened as part of an N-2, N-1-1, or N-1 during maintenance condition, would cause any portion of the ODEC system to separate from the rest of PJM and be in an island with the generator. Specifics of this requirement will be detailed in a Facilities Study. New baseload and supplemental projects requiring conductor addition or replacement will also replace the existing static conductor with OPGW, if OPGW does not already exist at the location.