



**System Operator - Generation  
Certification Examination Content Outline -2009**

**I. Generation Control and Performance: 35 items** (Recall: 14, Application: 21, Analysis: 0)

1. Analyze weather to determine impact on: load forecast.
2. Analyze weather to determine impact on: generation availability.
3. Interpret the results (e.g., times, fuel schedules, operating limits) of the day ahead schedule.
4. Schedule the generation that is called for in the day ahead schedule.
5. Analyze and input unit operating parameters into eMkt (e.g., costs, availability, limits).
6. Analyze regulation requirement and availability.
7. Respond to request to operate unit different from day ahead schedule.
8. Analyze differences in forecasted load and actual.
9. Monitor PJM real-time dispatch signal.
10. Interpret calculated bus Locational Marginal Price (LMP's).
11. Compare unit performance to real-time dispatch signal.
12. Evaluate unit fuel status/availability.
13. Monitor and respond to plant alarms/limits.
14. Monitor regulation resource performance/availability.
15. Support reactive testing of units.
16. Monitor and respond to PJM All-Call.
17. Monitor Area Control Error (ACE).
18. Monitor frequency.
19. Evaluate Area Control Error (ACE).
20. Evaluate frequency.
21. Coordinate start-up of units.
22. Perform start-up of units (locally) in response to directive.
23. Coordinate adjustments to unit output.
24. Adjust unit output (locally) in response to directive.
25. Coordinate unit reactive output.
26. Maintain generator voltage schedule.
27. Maintain transmission voltage schedule.
28. Coordinate the shutdown of units.
29. Start-up units which can include SCADA or other electronic applications/software.
30. Control unit output which can include SCADA or other electronic applications/software.
31. Adjust reactive output which can include SCADA or other electronic applications/software.
32. Shut down units which can include SCADA or other electronic applications/software.
33. Update limits for min, max, emergency min, max emergency, and any incremental loading schedule.
34. Monitor and respond to substation equipment, line alarms, and dispatch personnel if needed.
35. Analyze and respond to relay action and other system disturbances if necessary.

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36. Monitor access to control room.
  37. Utilize three-part communications in real time operational messages.
  38. Ensure proper information transfer during shift turnover.
  39. Monitor zonal system costs.
  40. Monitor regional/company system loads.

**II. Emergency Operations: 25 items** (Recall: 5, Application: 5, Analysis: 15)

1. Respond to request to cost cap unit.
2. Initiate emergency procedures.
3. Respond to emergency procedures.
4. Implement back-up control center recovery plan.
5. Test and operate from back-up control center.
6. Implement NERC Emergency Alert Levels (e.g., EEA, TEA, SEA).
7. Respond to NERC Emergency Alert Levels (e.g., EEA, TEA, SEA).
8. Issue or respond to request for 100% synchronized reserves.
9. Issue or respond to Heavy Load Voltage Schedule.
10. Respond to PJM issued Alerts, Warnings, and Actions.
11. Conduct all procedures related to capacity shortages.
12. Conduct all procedures related to light load conditions.
13. Conduct all procedures related to conservative operations (e.g., solar magnetic disturbances (SMDs), contingencies, actuals, thermal, reactive).
14. Conduct all procedures related to severe weather.
15. Monitor and report suspected or actual physical or cyber attacks.
16. Compile and submit Supplemental Status Report (SSR).
17. Ascertain system status after disturbance.
18. Disseminate information on system status.
19. Implement restoration procedures.
20. Direct the operation of blackstart generating units.
21. Perform start-up of blackstart generating units.

**III. Operations Planning and Scheduling: 15 items** (Recall: 6, Application: 9, Analysis: 0)

1. Take requests from field personnel for generation outages.
2. Coordinate planning of generation outages with engineering, field personnel, transmission companies, and PJM if applicable (eDART).
3. Analyze any hydro unit or other unit fuel, regulatory, (e.g., lake level restrictions) or environmental issues affecting plant availability or bidding strategy.
4. Evaluate scheduling strategy for generating units.
5. Analyze and compile unit price and/or cost offers.

**IV. Computer/Telecommunication Systems: 5 items** (Recall: 1, Application: 1, Analysis: 3)

1. Evaluate performance of computer systems (e.g., EMS, GMS, SCADA, Security Analysis Program).
2. Verify the integrity of data links, and quality of data.
3. Operate telecommunications equipment (e.g., phone systems, radio system, satellite phone).
4. Operate computer systems (e.g., EMS, SCADA, PC's).

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**V. Reporting: 10 items** (Recall: 10, Application: 0, Analysis: 0)

1. Submit generation offers and/or self-scheduled units via PJM eMkt tool by published deadline.
2. Submit regulation offers via PJM eMkt tool by published deadlines.
3. Submit synchronous reserve offers via PJM eMkt tool by published deadlines.
4. Submit Day Ahead Scheduling Reserve offers via PJM eMkt tool by published deadlines.
5. Report changes in Generator Reactive Capability via eDART.
6. Report changes in Automatic Voltage Regulator (AVR) status via eDART.
7. Report changes in Generator Governor status via eDART.
8. Verify and confirm daily capacity numbers via GEN Checkout.
9. Validate and report Instantaneous Reserve Check (IRC) data.
10. Validate and report Reactive Reserve Check (RRC) data.
11. Report real-time unit limits to PJM via eMkt.
12. Report to management and key personnel important system information/developments while observing communication protocols.
13. Report required system information/developments to governmental agencies.
14. Report unit availability/outage status both orally and electronically.
15. Document system events and conditions via written/electronic logs and/or reports.
16. Report line and equipment availability/outage status both orally and electronically.
17. Report any schedule changes to PJM complying with established time constraints.

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