

Candidate Bulletin PJM System Operator Certification Program

Section 1. INTRODUCTION

Goals

The goals of the PJM System Operator certification Program are to:

1. Protect the welfare of the general public.
2. Establish the scope of required knowledge and skills of system operators who operate on the PJM system to be: the daily operations-related knowledge and skills needed to implement procedures for normal, emergency and restoration conditions.
All system operators must understand and be able to implement the relevant operations-related procedures as presented in the PJM Manuals to ensure reliable operation of the PJM Regional Transmission Organization (RTO).
3. Identify those personnel on the PJM system who must be a PJM Certified System Operator.
4. Administer a program of examinations to certify those individuals who possess the knowledge and skills required of system operators who operate on the PJM system.

Section 2. Who must be a PJM Certified System Operator?

Who and When

System operators who operate on the PJM system, are in direct communication with the PJM System Operator, and perform daily operations-related functions at the direction of the PJM System Operator during normal, emergency and/or system restoration states must be PJM certified. PJM system operators must also be PJM certified. Opportunity to sit for the PJM System Operator Certification Exam is open to others.

Effective 7/1/2009, new transmission and generation operators and operators by companies integrating into PJM have one year to earn PJM certification. Additionally, uncertified operators must be supervised by a PJM certified system operator available in person or for generation operators available by phone.

Effective 7/1/2010, transmission LCC system operators and those transmission system operators employed by companies integrating into PJM must be PJM certified before operating on the PJM system.

Although system operators are the only group on the PJM system required to be PJM certified, other system participants including marketers and generation plant control room operators are encouraged to sit for the PJM System Operator Certification exam due to their impact on reliability. Opportunity to sit for the PJM System Operator Certification exam is open to others.

Certification Examinations

There are two PJM Certification Exams: one for Generation System Operators and the other for Transmission System Operators. Details are as follows:

System Operators who participate in the real time operations of the PJM system by dispatching generation resources and performing other generation-related real time duties of a Market Operation Center (MOC), and PJM system operators are required to complete and pass the PJM Generation Examination.

System Operators who participate in the real time operations of the PJM transmission system and perform other transmission-related real time duties of a Local Control Center (LCC), and PJM system operators are required to complete and pass the PJM Transmission Examination.

Dual Certification

System operators operating on the PJM system who perform both generation and transmission tasks must be PJM certified in both generation and transmission.

Since there is no overlap of the Content Outlines, a combination examination is not available.

Any individual may apply for, pay the appropriate fees and complete both the PJM Generation and the Transmission Examinations.

NERC System Operator Certification

The NERC System Operator Certification Program is targeted to system operators employed by Operating Authorities directly responsible for conforming with NERC policies. All PJM system operators must be NERC certified having earned one of the following NERC credentials: Transmission Operator, Balancing and Interchange/ Transmission Operator, or Reliability Coordinator.

PJM established a requirement that effective 12/31/2011, all LCC Transmission system operators must be both PJM and NERC certified having earned the one of the following NERC credentials: Transmission Operator, Balancing and Interchange/ Transmission Operator, or Reliability Coordinator.

Term of Certification

Effective 7/1/03, a PJM System Operator certificate is valid for five years.

Effective 7/1/09, new and renewed PJM System Operator certificates are valid for three years.

Recertification

There are two ways a PJM System Operator Certificate can be renewed;

1. Before the certificate for a PJM certified system operator expires; apply for, take and pass the same PJM certification exam for which they hold a valid certificate: Generation System Operator or Transmission System Operator.
2. For five year PJM Certificate: on a rolling five year basis complete at least two hundred (200) hours of NERC approved CEH training related to the PJM credential which has been recorded in the PJM Learning Management System (LMS). Those who fail to get

credit for 200 continuing training hours per five year period must apply for, take and pass the appropriate PJM exam before their current PJM certificate expires.

3. Effective 7/1/09, the term for a PJM Certificate was changed to a rolling three year period. To renew a three year PJM recerticate the operator must earning one hundred forty (140) hours of NERC approved CEH Operating Topics training related to the PJM credential. Of the one hundred forty hours, thirty (30) hours must be Simulation training.
4. Effective 7/1/09, operators renewing five year PJM certificates will be issued a three year certificates.

Prerequisites

There are no training or work experience requirements that candidates must satisfy before they can apply to sit for a PJM certification exam.

Completion of one or more of PJM training programs for system operators is highly recommended. For initial training the Generation 101, 201, 301, and Operations 101 course series or the Transmission 101 and Operations 101 courses are highly recommended, followed by the Initial Training Program (ITP). On a continuing basis, completion of the annual PJM System Operator Seminar is highly recommended together with participation in PJM emergency preparedness drills.

Section 3. Subject Matter of the Exam

a. Content Outlines. The results of a Job Analysis has determined that there are two discrete sets of tasks performed by system operators in the PJM RTO systems.

A Generation Content Outline details the common tasks performed by the system operators who dispatch generation resources and perform other generation-related real time duties.

A Transmission Content Outline details the common tasks performed by system operators who operate transmission facilities and perform other transmission-related real time duties.

The Content Outlines serve as the basis for the specific examinations: Generation or Transmission. Each question on an exam must link to a particular task listed in the relevant Content Outline.

To access the Content Outlines, go to:

<http://www.pjm.com/services/training/train-sys-op.html>

- b. There are two examinations: Generation and Transmission. Each Exam consists of 90 multiple-choice questions in the content areas listed below. 20 additional new unofficial questions appear in the Exam to validate them for possible future use.

- c. An individual may apply for and complete the PJM Generation and the Transmission Examination. Since there is no significant overlap between the Content Outlines for the two examinations, there is no combination examination available.

Generation:	# items
I. Generation Control and Performance	35
II. Emergency Operations	25
III. Operations Planning and Scheduling	15
IV. Computer/Telecommunications Systems	5
V. Reporting	<u>10</u>
Total	90 items

Transmission:	# items
I. System Reliability Coordination	40
II. Emergency Operations	35
III. Operations Planning and Scheduling	5
IV. Computer/Telecommunications Systems	5
V. Reporting	<u>5</u>
Total	90 items

d. Resource Documents

The exams are based on the following:

PJM Manuals (versions in effect December, 2005)

- Control Center Requirements, M-01
- Transmission Operations, Manual M-03
- Pre-Scheduling Operations, M-10
- Scheduling Operations, M-11
- Dispatching Operations, M-12
- Emergency Operations, Manual M-13
- Generator Operational Requirements, M-14D
- System Restoration, M-36

Versions of the Manuals in effect December '05 can be found on the PJM System Training and Certification webpage:

<http://www.pjm.com/services/training/train-sys-op.html>

Basic principles of interconnected system operations. Reference books for study, include:

- PJM Initial Training Program manuals,
- Generation 101, 201, 301, and Operations 101 course series manuals,
- Transmission 101 and Operations 101 course manuals, and
- PJM System Operation Seminar manuals from annual programs.

- e. **Sample Exams** – a Generation and a Transmission sample exam can be found on the PJM System Training and Certification webpage:

<http://www.pjm.com/services/training/train-sys-op.html>

- f. **Exam Process:** The examination process entails completing one of two exams: Generation or Transmission. Each exam is composed of objective multiple choice questions administered by a computer testing service (Prometric, part of the Thomson Corporation) at designated locations. PJM has partnered with the NERC System Operator Certification Program to access the Prometric system.

Section 4 How to Apply

On-line Application Form

The application for a PJM System Operator Certification Examination can be accessed from the NERC System Operator Certification webpage .

<https://soc.nerc.net/registration/default.aspx>

A link to the [NERC.net user account registration webpage](#) is on the PJM Certification webpage.

<http://www.pjm.com/services/training/train-sys-op.html>

Electronic submission is the only method of applying for a PJM Certification Examination. Utilizing the electronic submission process affords the candidate additional functionality not available through traditional application processes. Once a candidate is registered, they will have their registration information and examination history information available to them at anytime.

Electronic application for an exam is a two-step process:

You must first establish an account in the System Operator Certification database. If you already have a user account, sign-in to your account to access the on-line application.

If you have forgotten your user name or password, contact the NERC office at phone number 609-452-8060 (Mo-Fri, 8:am-4:pm Eastern).

- ✓ When setting up an account, enter your name exactly as it appears on your primary form of identification. The only types of acceptable primary IDs are driver's license, passport or military ID with both a picture and a signature.
- ✓ Also, remember the User Name and Password you entered.
- ✓ Once the Account Registration is submitted, the Account is immediately available.

The next step is accessing your account.

- ✓ Click on Logon to access the online exam application process.
- ✓ Select Authorization to Test button.
- ✓ Scroll down to the PJM exams and highlight the exam you wish to take then submit.
- ✓ Select method of payment: Credit Card (VISA or Master Card only) or Pay by check. Mail the check and printed page to:

North American Electric Reliability Council
Princeton Forrestal Village
116-390 Village Boulevard
Princeton, NJ 80540-5731

From PJM website, go to: <http://www.pjm.com/services/training/train-sys-op.html> Click on NERC/PJM Account Registration Form.

Cash will not be accepted.

Processing of Applications

Applications are accepted year round. Allow two weeks for the processing of your application and receipt of notification that you are approved to take an exam.

An application is complete and processed only when all required information is provided and fees are received. An “Authorization to Test Letter” (ATT), including the assigned Candidate Authorization Number, will be sent to each eligible candidate by NERC. Incomplete applications will be returned to the Candidate with an explanation as to why the application was returned.

Fee Schedule**

Schedule	Member*	Non-Member
Application or Re-Certification	\$150	\$300
Re-Test	\$150	\$300
Withdrawal	\$50	\$50
Bad Check/Credit Application	\$25	\$25

Notes: *Members include employees of PJM and PJM member organizations, and governmental representatives.

 **All funds shall be payable in U.S. dollars.

Eligibility Period

Eligibility to take the Examination remains in effect for one year from the date the Candidate Authorization Number is issued. Candidates are encouraged to schedule an appointment to sit for the Examination promptly. If a Candidate fails to schedule and take the Examination during the one-year eligibility period, the Candidate shall forfeit all payments made to NERC. Candidates who fail to take the Examination within the one-year of eligibility must submit a new application and pay the full fee to be considered for eligibility again.

Before scheduling an Examination, you MUST do the following:

- Download the PJM System Operator Certification Exam Candidate Bulletin from the PJM website. Copies are also available by calling Ray Gross at (610-666-8890) or PJM Customer Service at (610-666-8980).

- Review all parts of PJM Candidate Bulletin.
- Complete the Application form and submit it to NERC, along with the appropriate fee(s).
- Receive an Authorization to Test Letter (ATT) from NERC declaring that you are eligible to take the PJM Examination and assigning you a unique Candidate Authorization Number. The letter will also provide instructions on how you may arrange the location, date, and time of your Examination. **The Candidate Authorization to Test Number (ATT) will be needed when you contact Prometric to schedule the Examination.**

Note: When you schedule your examination, you will receive a confirmation number. Please retain this number, as it will be useful should you have to use Prometric’s automated cancellation system. Prometric will not mail you a confirmation notice.

Examination Sites

The PJM certification exams are available at Prometric Testing Centers by way of partnering with the NERC Certification Program's relationship with Prometric. There are over 300 sites available throughout the United States and Canada. For a Prometric Test Center near you, go to the NERC Certification website then click on Prometric and do a search by providing information on your location.

Scheduling an Examination

NERC will send you a Candidate Authorization to Test Number and instructions about the identification items that you must bring on the day of the Examination. To schedule your Examination location, date, and time you must contact Prometric as soon as possible. Testing Center appointments are high in demand by other professions. Waiting to schedule your appointment may significantly limit the locations, dates, and times available.

A Prometric representative will confirm your Candidate Authorization Number, name, address, and telephone number. Prometric will then advise you of the available testing locations, dates, and times. Please make sure the Prometric representative is aware of any location, date, or time preference you might have.

Once the location, date, and time are selected, **record that information.** Prometric will **not** mail you a confirmation notice.

Examination Schedule

Testing is available on a year round basis. Examinations may be administered on any Monday through Saturday. Examinations may be taken on any day that accommodates your schedule and where and when an examination space is available.

Section 5. Examination Process

The examination process entails completing one of two PJM exams: Generation or Transmission. Each exam is composed of objective multiple choice questions administered by a computer testing service (Prometric, part of the Thomson Corporation) at designated locations. PJM has partnered with the NERC System Operator Certification Program to access the Prometric system.

General Information About The Examination

- The computer-based Examination will present the Candidate with a total of 110 objective, multiple-choice questions. Of these, 90 are “official” Exam questions. In addition, there are 20 questions that are being “piloted” to validate them for possible future use. The candidate will not be able to distinguish “official” questions from “pilot” questions.
- There are two sample exams located on the PJM System Operator Training and Certification web page. These sample exams contain items that illustrate the range of questions addressed by each exam. Samples exams do not reflect the full range of possible questions that may be found in an exam in terms of content or level of difficulty of actual exam questions. To access the sample exams go to:

<http://www.pjm.com/services/training/train-sys-op.html>

Day of the Examination

Time at Testing Center

Plan to arrive at the Prometric Testing Center at least 15 minutes early to check in. You should allocate at least 3.75 hours to accommodate the total time you might be at the testing center. This includes:

EXAMINATION TIME ALLOCATION	
Examination Stages	Time Allocation
Administration & Review of Candidate Identification	15 min.
Computer-Based Tutorial	15 min.
Examination	2 hours & 45 min.
Post-Examination Exit Survey	15 min.
Total Time to be Allocated:	3 hours & 30 min.

Computer Familiarization

A 15-minute tutorial on operating instructions for the computer-based Examination will be provided before the start of the Examination. The tutorial is self-explanatory, and no prior computer knowledge is needed. You may bypass this feature if you wish (not recommended).

Computer-based testing allows you to skip questions, mark them, and return to them later. During the Examination, you may change your answer to any question. A clock is on the screen at all times indicating the time remaining. Before exiting the Examination, the computer will indicate any question(s) you have marked for review or those that remain unanswered.

Post Examination Exit Survey

At the completion of the Examination, you will be invited to complete a brief questionnaire on your reactions to the exam experience and and the quality of the Prometric staff and services.

This is also your opportunity to comment on the content of the Examination and to challenge any Examination question(s) or answer(s). Since the order of the questions is randomized, you need to identify the content of the item or the answer of concern and what your concern is.

Comments and Challenges

Complaints and challenges will be made according to the PJM Certification Dispute Policy. To access the PJM policy go to:
<http://www.pjm.com/services/training/train-sys-op.html>

Results and Awarding of Certificates

As soon as the candidate exits an examination, a screen appears with pass/fail results. Before exiting the Prometric Testing Center, a copy of this display will be provided. This will be an **unofficial** summary of the exam results.

After grading and analysis of the exam results, an official summary will be mailed to the candidate. This is done by the end of the month following when the exam was taken.. The official summary will include the grade achieved and the percentage of correctly answered questions in each content category.

If you have not received your certificate or score report within 10 weeks of taking a PJM examination, contact PJM.

If your address changes after submitting your application for the exam electronically, you can make the necessary changes yourself through the NERC website. If you mailed or faxed your application, please contact John Taylor at NERC (609-452-8060) or john.taylor@nerc.net

Candidates who pass an examination will receive the PJM Certified System Operator certificate noting the area of practice: Generation or Transmission. The date of the certificate will be the day the candidate took the Examination. PJM Certificates are valid for five years.

Testing Center Requirements

Identification

You will be **required** to show the following items before being admitted to the Examination:

- Two forms of identification:
 - ✓ The only types of primary IDs that will be accepted are: driver's license, passport, or military ID with a current photo and signature. The Candidate's name on the document **must** be the same as on the NERC Authorization to Test letter.
 - ✓ Acceptable forms of secondary ID are: Employer's ID card, Credit Card, or Debit Card with either the Candidate's signature or recent photo.
- Candidate Confirmation Number received at the time of scheduling the Exam appointment with Prometric.

Candidates unable to provide the identification documents will not be admitted to the Examination.

Testing Center Regulations

- Candidates who arrive more than 15 minutes after the start of the Examination appointment may not be seated for the Examination, depending on the criteria established by that Testing Center. Late arrivals who are not permitted to take the Examination will be considered a ***no show*** and must re-apply and pay the fee to take the Examination.
- No reference materials, calculators, or recording equipment may be taken into the Examination. Candidates will be provided a keyed locker to store personal items while taking the Examination.
- No test materials, documents, notes, or scratch paper of any sort may be taken from the Examination.
- Visitors will not be permitted during the Examination.
- Testing Center staff are instructed to only answer questions about testing procedures. They cannot respond to inquiries regarding the Examination content.
- During the Examination, candidates may use the restrooms, however, the Examination clock will continue running during such times.
- Candidates may not leave the testing center until they have finished the Examination.
- Smoking is not permitted in any testing center.
- Any candidate giving or receiving assistance, or making a disturbance, will be required to turn in their examination materials, exit the Examination room, and leave the Testing Center.
- PJM will not score the Examination results or refund any fee to a candidate who violates security guidelines, or attempts to impersonate another candidate.

Cancellations and No Shows

- You may cancel and reschedule an Examination appointment by calling Prometric at the toll free number listed in your Authorization-to-Test Letter.
- Your request to cancel must be no later than 12 noon, local Test Center Time, two days (Monday-Saturday excluding local holidays) before the Examination date.
- If the cancellation is accepted, you may reschedule the Examination date within your period of eligibility without paying an additional fee.
- If you are late in canceling your Examination appointment, do not appear for it, or arrive too late (15 minutes past your scheduled Examination appointment) you will be considered a ***no show***.
- All ***no shows*** will have to re-apply to take the Examination and again pay the Test fee.

Term of Certification

A PJM System Operator certificate issued before 7/1/09 is valid for five years.

A new or renewed PJM System Operator certificate issued on or after 7/1/09 is valid for three years.

Change of Name or Address

If you have a change of name and/or address during that period, send notification to Trainingsupport@pjm.com and specify you are updating your certification record. In addition, update your NERC user account.

PJM Re-Certification

There are two ways a PJM System Operator Certificate can be renewed;

5. Before the certificate for a PJM certified system operator expires; apply for, take and pass the same PJM certification exam for which the individual holds a valid certificate: Generation System Operator or Transmission System Operator.
6. To renew a five year PJM Certificate: earn at least two hundred (200) hours of NERC approved CEH training related to the PJM credential which has been recorded in the PJM Learning Management System (LMS). Those who fail to earn the 200 continuing training hours must apply for, take and pass the appropriate PJM exam before their current PJM certificate expires. Those who qualify for renewal will receive a PJM certificate which is valid for three years.
7. To renew a three year PJM Certificate: earn at least one hundred forty (140) hours of NERC approved CEH training of which thirty (30) hours must be approved for Simulation training. The training must be related to the PJM credential which has been recorded in the PJM Learning Management System (LMS).

Minimum Time between Examinations

Candidates who fail an examination must re-apply to re-take the Examination but must wait 30 calendar days from the date of the failed exam to re-test.

Candidates who pass the PJM Certification Examination may take the Examination no sooner than 30 months after the date they were last certified.

Confidentiality and Non-Disclosure for the PJM System Operator Certification Examinations

The Candidate is expected to maintain the confidentiality of the content of PJM System Operator Certification Examination for which the Candidate submitted an application and was permitted to complete. The Candidate must not disclose the Examination questions in whole or part to others, nor share with others the concepts and procedures that are the basis for the Exam questions.

The value of the PJM System Operator Certification credential is contingent on maintaining the security of the PJM Certification Examinations. Applying for a

PJM System Operator Certification Examination implies that the Candidate has read the PJM Candidate Bulletin in its entirety and agrees to conform with the above stated expectations.

A Candidate who shares Examination questions with others for whatever reason reduces the value of the PJM System Operator Certification credential as a measure of the system operator's capability to safely and reliably operate on the PJM system.

Third Parties

PJM will verify to Third Parties that an individual has successfully passed a PJM Certification Examination if the Third Party provides the name and address of the individual. No further information will be provided.

Special Accommodations/Disabilities

Allowance will be made for all documented requests for special testing conditions. Applicants must note their request(s) on the application and provide supporting documentation. Disability requests must be supported by a letter (original copy) from a recognized health care provider and be signed by a licensed physician or psychologist. All other requests must be similarly supported. PJM will review each request and for those approved will ensure appropriate accommodations are provided. The decision will be included in "Authorization to Test Letter" when sent to the applicant.

Note: All Testing Centers are in compliance with the regulations governing The Americans with Disabilities Act (ADA).

Withdrawal from Examination Process

As described in the Eligibility Period section of this Bulletin, the eligibility period is for one year from the date the Candidate Authorization Number is issued. If a Candidate wishes to withdraw from this process within the stated period for any reason, they must notify NERC in writing by completing and forwarding (via fax, mail, or electronically) the Candidate Withdrawal Form. This completed form must be postmarked on or before the last eligibility day. Candidates who submit this form within the time period will be reimbursed for the fees submitted less the Withdrawal Fee in effect at the time of the application. Failure to properly withdraw will result in the Candidate forfeiting all submitted fees.

Examination Change Request

If a Candidate wishes to change the PJM examination that they are registered to take, they must notify NERC in writing by completing and forwarding (via fax, mail, or electronically) the Candidate Examination Change Form. This Change Form must be submitted at least 30 days prior to the expiration of the Candidate's eligibility period. The Candidate will be provided with a new Candidate Authorization Number.