October 14, 1998

GENERATOR UNAVAILABILITY SUBCOMMITTEE

Gregory R. Marquis, Chair	Potomac Electric Power Company
Bayard S. Koch	Baltimore Gas and Electric Company
Michael R. Mayer	Conectiv
David J. Pomian	GPU Service
James J. Dolan	PECO Energy Company
Francis W. Ozimek	PP&L, Inc.
Michael A. LaFalce	Public Service Electric and Gas Company
James W. Kirby, Secretary	PJM Interconnection, L.L.C.

Dear Subcommittee Members:

Rules and Procedures for Determination of Generating Capability

Enclosed is the current version of the "Rules and Procedures for Determination of Generating Capability" (The Green Book). This contains all the revisions approved at the October 10, 1991 PJM Operating Committee Meeting. It will be placed on the PJM WEB page as soon as practical.

The Generating Capability Rating Procedures Task Force (GCRPTF) is in the process of updating this manual to be compliant with the Reliability Assurance Agreement and emerging industry markets and trends. As soon as this review is complete, it will be forwarded to the GUS for your approval. Upon your approval, this updated version will replace the previous one on the WEB.

Sincerely,

Thomas M. Moleski
Chairman, GCRPTF

Attachment
Cc: GCRPTF w/o attachment
R. O. Hinkel w/o attachment

PJM Manual for

RULES AND PROCEDURES FOR DETERMINATION OF GENERATING CAPABILITY

Manual M-21

Revision: 00
Effective Date: October 14, 1998

Prepared by
Generating Capability Rating Procedures Task Force
PJM Interconnection, L.L.C.

PJM Manual for

Rules and Procedures for Determination of Generating Capability

Table of Contents

Revision History

Approval REV-1

Revision History REV-1

Introduction

Purpose INT–1

Section 1: Net Capability

1.1 General 1-1

1.2 Summer Net Capability 1-3

1.3 Winter Net Capability 1-4

1.4 System Limitations 1-4

Section 2: Available Capability

2.1 General 2-1

2.2 Weekly Available Capability 2-2

2.3 Weekly Summer Net Capability 2-2

2.4 Weekly Unavailable Capability 2-2

Section 3: Limited Energy Resources

3.1 General 3-1

3.2 Fuel Shortages 3-2

3.3 Reduction in Net Capability 3-3

3.4 Forecast Unavailable Capabilities 3-3

Section 4: Transmission Limitations

4.1 General 4-1

4.2 Determination 4-1

4.3 Limitations Based on Outages 4-1

4.4 Limitations During Forecast Periods 4-1

Appendix A: Determination of Available Capability of Limited Energy Resources

Appendix B: Determination of Transmission Limitations

Appendix C: Net Capability Verification Guidelines

Appendix D: Deferred Maintenance Guidelines

Approval

Approval Date: 10/14/98
Effective Date: 10/14/98

R. O. Hinkel, Manager

Capacity Adequacy Planning

Revision History

Revision 00 (10/14/98)

This is the first release of the ***PJM Manual for Rules and Procedures for Determination of Generating Capacbility (Green Book)*** under new format.

Introduction

Purpose

These rules and procedures for determining the capability of generating units on the systems of the PJM Interconnection have been adopted to provide uniformity for planning, operating, accounting and reporting purposes, and have been designed to meet the following two requirements in the coordinated operation of the PJM Interconnection.

(1) Net Capability of generating units installed and scheduled for installation on the systems of PJM is required for planning and reporting purposes and for use in accounting for deficiencies of a PJM system in meeting its contract capacity obligations under the PJM Agreement as sup-emented. For the same reasons, there is need to define certain limitations that prevent the simultaneous utilization of the total of the system's separate unit Net Capabilities.

(2) Available Capability of generating units installed on the systems of PJM is required for planning and daily operating purposes and for use in accounting for deficiencies of a PJM system in meeting its contract capacity obligations under the PJM Agreement as supplemented.

The rules and procedures recognize the difference in types of generating units installed on the systems of PJM and the relative ability of units to maintain output at stated capability over a specified period of time. Factors affecting such ability include fuel availability, stream flow for hydro units, reservoir storage for hydro and pumped storage units, mechanical limitations, system operating policies, and others. Whenever a unit or plant output cannot be maintained at its stated capability during the time specified, it shall be considered as a limited energy resource and the stated capability of the system of which it is a part may require modification in accordance with the procedures set forth in Section 3, Limited Energy Resources, for purposes of planning, operating and accounting.

Section 1: NET CAPABILITY

1.1 General

1.1.1 Net Capability shall mean the number of megawatts of electric power which can be delivered by an electric generating unit or station of a system after its date of commercial operation without restriction by the owner under the conditions and criteria specified herein and shall be determined as the gross output of the unit or station less power generated and used for unit auxiliaries and other station use required for electrical generation.

1.1.2 Without restriction means that Net Capability values so deter-mined are available for utilization at the request of the PJM Interconnection Office (IO) for supply of operating capacity and energy before any operating procedures are placed in effect anticipatory to a voltage reduction on the PJM system except as such utilization may at times be limited in duration by water or fuel availability.

1.1.3 The determination of the Net Capability of a combined-cycle unit will depend on the structure of the complete unit and its components. The steam turbine and combustion turbines shall adhere to the existing guidelines set forth in this reporting manual. In the case of thermally dependent components, the determination of the Net Capability shall require the operation of both combustion turbine and steam components simultaneously.

1.1.4 The determination of the Net Capability of a steam unit or plant shall recognize the use of any procedures for increasing unit output such as turbine over-pressure, boiler overrating, cycle modification or any others which are normally utilized in operation.

1.1.5 The determination of Net Capability for a combustion turbine unit shall be consistent with the owner system policy with respect to maximum out-put.

1.1.6 The determination of Net Capability for a hydro or pumped storage plant shall recognize the head available giving proper consideration to operating restrictions and the reservoir storage program during a normal plant cycle at the probable time of the PJM peak.

1.1.7 The determination of the Net Capability of a nuclear unit shall recognize its nuclear fuel management program and any restrictions (except as noted in 1.1.10) imposed by regulatory authority.

1.1.8 The determination of the Net Capability of a non-utility generator (NUG) shall recognize the following three cases:

1.1.8.a. A NUG which supplies energy and/or capacity to the utility and which has no process electrical load.

1.1.8.b. A NUG which supplies energy and/or capacity to the utility and which has process electrical load as part of the utilities' load.

1.1.8.c. A NUG which supplies energy and/or capacity to the utility and which has process load which is also served by the NUG generator.

In cases "1.1.8.a" and "1.1.8.b", the preferred procedure is to treat the NUG in a manner similar to that of a utility's unit. In case "1.1.8.c", the preferred test procedure is to meter the generation of NUG along with the plant process electrical load. When the option of metering only the net output to the utility is used, estimated values supported by documentation should be supplied for gross generation, station service, and (where applicable) NUG process load.

1.1.9 The Net Capability of a planned steam or combined-cycle unit shall be based on the manufacturer's guarantee or estimate of performance. The Net Capability of a planned combustion turbine or combined-cycle unit shall give recognition to the elevation of the unit location, the type of fuel available for use, and owner system policy with respect to the maximum output. The Net Capability of a planned hydro unit shall be based on the owner system's estimate of head in accordance with 1.1.6.

1.1.10 After a unit is in operation, its Net Capability shall be based on current operating performance or test results. Both Summer and Winter Net Capability values shall be confirmed annually. If adequate data is available from normal operation to confirm Net Capability values during the seasonal peak period, no test is required. Units for which the foregoing data is not available shall be tested to confirm Summer and Winter Net Capability values. When a known change occurs in the Net Capability of a unit, or is indicated by operating data or test results, it shall become effective as soon as possible except as noted in 1.1.11.

1.1.11 The Net Capability of a unit shall not be reduced to reflect unplanned deratings or temporary capacity restrictions provided it is the intention of the owner to restore the reduced capability. The time of this restoration may depend on availability of parts and scheduling of the outage required for repairs. If the owner does not intend to restore the reduced capability by the end of the next Planning period, a reduced Net Capability value may become effective at the request of the owner. The owner shall then notify the Operating Committee in writing.

1.1.12 All or any part of a unit's capability that can be sustained for a number of hours of continuous operation commensurate with PJM load requirements, specified as 12 hours, shall be considered as unlimited energy capability. All or any part of a unit's capability shall be considered as limited energy capability only for those periods in which it does not meet the foregoing criteria for sustained operation. Such limited energy capability will be used to meet the energy requirements of PJM and depending on the extent to which it meets these requirements such capability may be reduced as provided in Section 3 of these rules.

1.1.13 Each PJM system shall be responsible for the determination of Summer and Winter Net Capability values, and for reporting same to the Operating Committee. The Operating Committee shall be responsible for the establishment of test procedures required to confirm such values including any amount which must be treated as limited energy capability.

1.1.14 The Net Capability reported for a unit following its date of commercial operation shall in no case exceed an amount determined by the owner in accordance with 1.1.1 and 1.1.10 but for PJM accounting purposes may initially be less than that amount. The extent of any such reduction in reported cap-ability may be determined by the company in such manner as will permit the most effective use of its own resources. A unit or portion thereof placed in service and accepted by the I0 for operating purposes may be reported and accounted for as negative unavailable before it is placed in commercial operation.

1.2 Summer Net Capability

1.2.1. The Summer Net Capability of each unit or station shall be based on summer conditions and on the power factor level normally expected for that unit or station at the time of the PJM summer peak load.

1.2.2. Summer conditions shall reflect the 50% probability of occurrence (the median) of temperature and humidity conditions of the time of the PJM summer peak load. Conditions shall be based on local weather bureau records of the past 15 years, updated at 5 year intervals. When local weather records are not available, the values shall be estimated from the best data available.

1.2.3. For steam units, summer conditions shall mean, where applicable, the probable intake water temperature of once-through or open cooling systems experienced in June, July, and August at the time of the PJM peak each weekday. For combustion turbine units, summer conditions shall mean, where applicable, the probable ambient air temperature and humidity condition experienced at the unit location at the time of the annual summer PJM peak.

1.2.4. The determination of the Summer Net Capability of hydro and pumped storage plants shall be based on operational data or test results taken once each year at any time during the year. The same operational data or test results can be used for the determination of the Winter Net Capability.

1.2.5. For combined-cycle units, summer conditions shall mean where applicable, the probable intake water temperature of once-through or open cooling systems experienced in June, July, and August at the time of the PJM peak each weekday, and the probable ambient air temperature and humidity condition experienced at the unit location at the time of the annual summer PJM peak.

1.3 Winter Net Capability

1.3.1. The Winter Net Capability of each unit or station shall be based on winter conditions and on the power factor level normally expected for that unit or station at the time of the PJM winter peak load.

1.3.2. Winter conditions shall reflect the 50% probability of occurrence (the median) of temperature and humidity conditions at the time of the PJM winter peak load. Conditions shall be based on local weather bureau records of the past 15 years, updated at 5 year intervals. When local weather records are not available, the values shall be estimated from the best data available.

1.3.3. For steam units, winter conditions shall mean, where applicable, the probable intake water temperature of once-through or open cooling systems experienced in December and January at the time of the PJM peak each weekday. For combustion turbine units, winter conditions shall mean, where applicable, the probable ambient air temperature and humidity condition experienced at the unit location at the time of the annual winter PJM peak.

1.3.4. The determination of the Winter Net Capability of hydro and pumped storage plants shall be based on operational data or test results taken once each year at any time during the year. The same operational data or test results can be used for the determination of the Summer Net Capability.

1.3.5. For combined-cycle units, winter conditions shall mean where applicable, the probable intake water temperature of once-through or open cooling systems experienced in December and January at the time of the PJM peak each weekday, and the probable ambient air temperature and humidity condition experienced at the unit location at the time of the annual winter PJM peak.

1.4 System Limitations

1.4.1. Certain system limitations may at times prevent the simultaneous utilization of the total Net Capabilities of the units in a system. Such limitations may include, but are not necessarily confined to, the availability of energy or fuel, and transmission limitations. The determination of energy and fuel limitations is described in section 4 and Appendix A, and of transmission limitations in Section 4 and Appendix B.

Section 2: AVAILABLE CAPABILITY

2.1 General

Available Capability of a system shall be the sum of the reported Summer Net Capabilities for all units installed on a system less the Planned Outages and Deratings, Unplanned Outages and Derating, and Miscellaneous Adjustments. All such modifications shall be measured, except as to 2.1.3 (a), during the hour of the daily system peak load. Reductions of capability shall be reported as positive quantities and increases as negative, and the net used as a reduction from the Summer Net Capability values.

2.1.1. Planned Outages and Deratings shall be a reduction from the Sum-mer Net Capability of a unit due to equipment out of service or other restrictions as defined in the PJM Report on Generating Unit Performance Definitions.

2.1.2. Unplanned Outage and Deratings shall be:

2.1.2.a. A reduction from the Summer Net Capability of a unit due to equipment out of service or other restrictions as defined in the PJM Report on Generating Unit Performance Definitions; and

2.1.2.b. For planning and accounting purposes required by the PJM Agreement as supplemented, an additional daily reduction in the capability of a system due to energy limitations determined in accordance with section 3 of the Rules and Procedures.

2.1.3. Miscellaneous Adjustments shall be:

2.1.3.a. A reduction from the Summer Net Capability of any equipment out of service for any reason not covered by 2.1.1 and 2.1.2 and which could not be made ready, upon notice, to carry load at its reported Summer Net Capability value, as modified by (b) and (c), within six hours.

2.1.3.b. A reduction from the Summer Net Capability of a unit or plant which could not be produced because of higher circulating water temperatures, higher ambient air temperatures, reduced head on hydro plants, and other causes consistent with the PJM Report on Generating Unit Performance Definitions.

2.1.3.c. An increase from the Summer Net Capability of a unit or plant which was produced or was capable of production over the specified period and was reported in operation or available for scheduling by the I0, because of lower circulating water temperatures, lower ambient air temperatures, recent condenser cleaning, higher stream flows, etc., and other causes such as a new unit operating for test.

2.1.3.d. The actual output, at the time of a system's daily peak load, of a unit or portion thereof, operating for test and not included in the Summer Net Capability of the system.

2.1.3.e. A reduction in the reported Summer Net Capability of a system which could not be delivered to load areas because of area or system transmission limitations as specified in Section 4.

2.2 Weekly Available Capability

2.2.1. Weekly Available Capability of a system shall be the arithmetical average of that system's daily Available Capability as determined in 2.1 above for each weekday, excluding holidays, recognized by the I0 for accounting purposes.

2.3 Weekly Summer Net Capability

2.3.1. Weekly Summer Net Capability of a system shall be the arithmetical average of that system's total reported Summer Net Capability values for all units installed at the time of the system peak load on each weekday, excluding holidays, recognized by the I0 for accounting purposes.

2.4 Weekly Unavailable Capability

2.4.1. Weekly Unavailable Capability of a system shall be the algebraic difference between the average values determined in 2.2 and 2.3.

Section 3: LIMITED ENERGY RESOURCES

3.1 General

3.1.1. The available output of all or any part of a unit's capability which is considered limited energy capability in accordance with 1.1.12 shall be utilized, as hereafter specified, on a daily basis excluding weekends and holidays to determine what amount, if any of such capability, is the equivalent of unavailable capability of unlimited resources. Such amounts of unavailable capability shall be determined both for actual and forecast conditions for use in PJM planning and accounting as follows:

3.1.1.a. Unavailable capability based on actual hourly loads, actual average daily river flows, actual outages of limited energy resources and other conditions applicable to the day, will be used as an addition to unplanned forced events in the after-the-fact accounting for capacity as provided in 2.1.2 (b).

3.1.1.b. Forecast unavailable capabilities based on daily computations but expressed as monthly averages and based on predicted load shapes, experienced probabilities of river flows or output, scheduled capacity additions, and predicted outages of limited energy resources will be for use in the determination of capacity requirements of PJM and the member companies as follows:

3.1.1.b.i. To the extent that the forecast unavailable capabilities under summer and winter operating conditions exceeded the amount specified in 3.3.3, the forecast excess will be applied as a reduction in the net capabilities of systems owning the limited energy resources.

3.1.1.b.ii. All forecast unavailable capabilities, except the portion applied in (i) for summer conditions, shall be used as an addition to forecast average unplanned forced events.

3.1.2. The available capability of limited energy resources of PJM shall be determined by fitting the total daily energy of these resources into the peak of the daily PJM load curve (to the best advantage of the limited energy resources) so as to minimize the required operation of unlimited resources. The total daily energy of the limited energy resources shall include all energy which is available or renewable only on a daily basis plus any additional daily energy available from the drawdown or refill of storage on a weekly or longer basis.

3.1.3. Whenever the determinations in 3.1.2 result in some amount of unavailable capability due to energy limitations, this amount shall be allocated among the several companies owning limited energy resources. Each company's own limited energy resources shall be tested on its own load curve to determine the resultant unavailable capability of that company's resources due to energy limitations, and each company shall

then be allocated a share of the total PJM unavailable capability due to energy limitations in proportion to the ratio of its unavailable capability on its own load curve to the sum of such unavailable capabilities for all companies.

3.1.4. The available capability of limited energy resources shall be determined, and any unavailable capability shall be allocated on the basis of data and procedures specified in Appendix A.

3.1.5. The Operating Committee shall maintain records of daily Available Capabilities of limited energy resources on the PJM system and of the resulting unavailable capabilities and their allocations, and shall review from time to time the determination of the effects of limited energy on the forecast Net Capabilities and Available Capabilities.

3.2 Fuel Shortages

3.2.1. If any generating capability is classified as limited energy capability because of fuel shortages, the determination of the amount of avail-able capability of such limited energy resources will depend on the predictability of the limited fuel supply.

3.2.1.a. When the limited fuel supply is predicted in advance for forecast conditions, it shall be treated as all other limited energy resources in fitting its total daily energy into the daily PJM load curve.

3.2.1.b. When the limited fuel supply is not predicted in advance for forecast conditions but is imposed on any member company by external conditions (such as national policies, strikes, fuel supplying companies, etc.), the determination of available capability shall be made in two steps. First, a determination shall be made for all other limited energy resources to obtain the unavailable capability of these resources. Second, another determination shall be made for the total limited energy resources, including those for which fuel is limited by external conditions, but fitting this total available energy into the load curve and obtaining a second value for unavailable capability. The amount of unavailable charged to the fuel limited resources shall be the difference between the values obtained in the first and second determination.

3.2.2. If any unavailable capability charged to fuel limited resources is determined under 3.2.1 (b), this amount shall be allocated by making the same two determinations of unavailable capability as are required and by determining the additional unavailabilities charged to fuel limited resources on each owner company's own load curve. The unavailable capabilities on the PJM load curve that are charged to the' fuel limited resources determined under 3.2.1 (b) shall then be allocated in proportion to the additional unavailabilities on the load curves of the owning companies. In no case shall the amount so allocated to any company, as a result of the separate allocation for fuel limited resources, exceed the additional unavailability on its own load curve. Any amount of additional unavailable that cannot be allocated on this basis shall be allocated on the basis applicable for all other limited energy resources under 3.1.3.

3.3 Reduction in Net Capability

3.3.1. Energy limitations that cause reductions in load carrying cap-ability are in some respects similar to unplanned forced events in unlimited energy capability. In either case, if the limitations on energy or reductions in capability are sufficiently severe, failure to carry load may result. Since the reported Net Capabilities of unlimited energy units are not reduced to reflect unplanned forced events experience, it is reasonable not to reduce the reported Net Capabilities of limited energy resources simply on the basis of energy limitations, unless such limitations are expected to be unusually severe at the time of the PJM peak load.

3.3.2. Whenever the forecast weighted average daily unavailable cap-ability of limited energy resources of PJM, determined in accordance with 3.4.1 for the months of July and August (for determination of Summer Net Cap-ability) and December and January (for determination of Winter Net Cap-ability), is an amount which exceeds a specified percentage of the unlimited net capabilities of the total limited energy resources of PJM, such excess amount shall be applied as a reduction of the Net Capabilities of these re-sources. Such reductions shall be allocated among the owners of limited energy resources, generally in accordance with 3.1.3 and Appendix A except that, as to each owner, only that portion of the unavailable capability which exceeds the specified percentage of its own limited energy resources shall be used in determining the allocation factor.

3.3.3. The specified percentage shall be 12%, based on the recent actual weighted average PJM forced outage rate for thermal units less the actual weighted average PJM forced outage rate for hydro units, such averages based on three years of experience. The specified percentage shall be changed by the Operating Committee to conform to changes in unplanned forced events experience.

3.4 Forecast Unavailable Capabilities

3.4.1. The forecast monthly average unavailable capability of the limited energy resources of PJM shall be determined and allocated in accordance with 3.1.3, based on appropriately estimated daily load shapes and on experienced probabilities of river flow or output, scheduled capacity additions, and predicted outages of limited energy resources. Whenever the Net Capabilities of limited energy resources of PJM are reduced in accordance with 3.3.2, then that amount of unavailable capability that has been applied as a reduction of the Net Capabilities of PJM and the member companies for summer conditions shall be subtracted from the respective forecast average monthly values of unavailable capability.

3.4.2. Average monthly values of unavailable capability for PJM deter-mined in 3.4.1 and reductions in Net Capabilities determined in 3.3.2, to the extent they are significant shall be used as input to the calculations of Forecast Requirements of the Interconnection. Values lower than 2.5% of the Net Capability of the PJM Limited Energy Resources are

considered to have an insignificant effect on the calculations of requirements, but may be included as input at the discretion of the P&E Committee.

3.4.3. The average monthly values of unavailable capability in excess of the reduction in summer Net Capability for each system determined in 3.4.1 for the 12 months of each Planning period, shall be averaged to determine the average annual addition to unplanned forced events. The ratio of this average addition to the average total of the system's Net Capabilities for the planning period shall be used as an addition to its forecast forced outage rate.

Section 4: TRANSMISSION LIMITATIONS

4.1 General

4.1.1. The availability of transmission capacity may limit the output of a unit, station, area or an entire system. The limitation may be the deliberate result of planning, the unintended result of delays in construction, the result of planned outages for maintenance or reconstruction, or the result of an unplanned forced outage for various reasons. The resulting effect on the availability of generating capacity is to be determined and be classified, based on the cause and extent of the transmission limitation.

4.2 Determination

4.2.1. Transmission limitations shall be determined as required for after-the-fact accounting and in forecast periods for use in the determination of capacity requirements of PJM and the member companies, by comparison of transmission capability with the excess of the Net Capabilities for a unit, station, area or system over the peak load for the day or period under consideration, with adjustment as necessary for firm purchases and sales, use of jointly owned units, and unavailable generating capability. The Net Capabilities used in such determination shall be appropriate for the season of the peak load under consideration. Transmission limitations shall be determined on the basis of data and procedures specified in Appendix B.

4.3 Limitations Based on Outages

4.3.1. A transmission limitation caused by an outage of transmission facilities shall be recognized in the after-the-fact accounting as follows:

4.3.1.a. When the limitation affects a unit or station, the amount of the limitation shall be considered as either a Planned or Unplanned Outage or Derating (as defined by the PJM report on Generating Unit Performance Definitions) in the determination of Available Capability as provided in 2.1.1 and 2.1.2.

4.3.1.b. When the limitation affects an area or system, the amount of the limitation shall be considered as a Miscellaneous Adjustment to the reported Summer Net Capability of a system as provided in 2.1.3 (d).

4.4 Limitations During Forecast Periods

4.4.1. Examination must be made to determine transmission limitations during forecast periods and any such limitations predicted shall be accounted for as follows:

4.4.1.a. Limitations predicted during July and August {1) which affect a unit or station shall be recognized in the reported Summer Net Capability of such unit or station, and (2) which affect an area or system shall be recognized as a reduction in the total Summer Net Capabilities of units of the system in the determination of its System Capacity (as defined in the PJM Contract).

4.4.1.b. Limitations predicted during December and January (1) which affect a unit or station shall be recognized in the reported Winter Net Capability of such unit or station, and (2) which affect an area or system shall be recognized as a reduction in the total Winter Net Capabilities of units of the system.

4.4.1.c. Limitations predicted during forecast periods other than as specified in {a) shall be recognized in the determination of forecast average Miscellaneous Adjustments.

APPENDIX A: Determination of Available Capability of Limited Energy Resources

The determination of this Available Capability shall be made: (A) for each weekday, after-the-fact, based on certain actual data and on procedures set forth below in further detail; and (B) for study and forecast purposes, based on probabilities of river flow and other appropriately assumed future conditions and on procedures otherwise consistent with the daily determination.

A. Daily Determinations - A determination shall be made by the Interconnection Office for each weekday, excluding holidays, of the Available Capabilities: (1) of the total limited energy resources operated on the PJM load curve and (2) if any Unavailable Capability is thus determined, of the limited energy resources of each company operated on the respective company load curve. These determinations involve the following steps:

(1) Determine for the limited energy resources that amount of energy which is available or renewable only on a daily basis.

(2) Determine that amount of additional daily energy available from the drawdown and refill of storage on a weekly or longer basis.

(3) Determine the Available Capability of the limited energy resources by fitting the total daily energy (sum of 1 and 2) into the peak of the daily load curve (to best advantage of the limited energy resources, but observing all necessary limitations on their use) so as to minimize the required operation of other generating capacity. The Available Capability is the difference between the daily peak and the required maximum generation of such other capacity.

B. Daily Energy - The energy that is available or renewable only on a daily basis should be determined for the various types of capacity as follows:

(1) Limited energy thermal capacity - if the unit or incremental capacity of a unit that provides such limited energy output can be considered available under the general provisions for "Available Capacity," Section 2.1, then the associated energy should also be considered available. The energy output of thermal capacity may be limited either by inability to operate continuously at high levels of output or by fuel availability.

(2) Run-of-river hydro without weekly storage - for those plants that must generate daily whatever amount of energy is available from river flow, the available energy is that part of the actual daily generation which was, or could have been generated within the daily period of operation of all the limited energy resources, as determined by the load curve.

(3) Run-of-river hydro with weekly storage - for those plants that can operate in part on the basis of weekly storage, the daily available energy (whether or not actually generated and without regard to actual storage use) should be the daily amount normally available for the actual river flow experienced on that day. Such amounts are to be shown by appropriate equations, curves or tabulations of energy versus river flow.

(4) Storage hydro - for those plants that operate on a seasonal storage basis, the available energy will be determined as described below under item 2(b).

(5) Pumped storage - the daily available energy (whether actually generated or not and without regard to actual storage use) should be the amount of energy that can be normally replaced by daily pumping within a period determined by load shape or other appropriate limitation, but not including economy of operation. The daily available energy shall be reduced, as compared to that normally replaced on a daily basis, by an amount corresponding to any pumping foregone because of unscheduled equipment outage or other limitation (other than economy) during the prior normal pumping period.

C. Additional Energy From Storage - for those plants which have storage that can be used on a weekly or longer basis, the additional amount of energy that is available should recognize that, within limits, the use of storage can be shifted from one day to another to fit system needs. The same amount of storage energy need not be used and ordinarily will not be used on every day; and general PJM experience has indicated a use of storage energy, on one or two days per week, at an average rate approximately double the rate which could be maintained on every weekday. Such use of storage appears to be a reasonable representation of the use that could and would be made of storage energy to meet normal capacity requirements. It shall therefore be assumed, in determination of available capacities, that the daily available energy from use of storage on any weekday will be twice the amount that could be used on every weekday. The amounts of additional daily energy from storage for the various types of capacity shall be determined as follows:

(1) Run-of-river hydro with weekly storage - the daily amount shall be 40% of the available weekly storage as limited by the smaller of (i) flow available for weekend refill or (ii) excess of total usable storage over that required for daily operation. Amounts are to be shown by appropriate equations, curves or tabulations of storage energy versus river flow; and each daily amount shall be determined on the basis of an assumed constant flow throughout the week.

(2) Storage hydro - the total available daily energy at such plants shall be 40% of the greater of (i) the amount scheduled as available for generation during the week or (ii) the actual plant generation during the week whenever additional energy becomes available.

(3) Pumped storage - the daily amount shall be 40% of the additional stored energy that can be replaced only by weekend pumping. The amount of weekend pumping shall be considered to be the useful reservoir capacity less the pumping that could have been done on a daily basis in the absence of any unscheduled outage.

(4) If the energy output of thermal capacity is limited by fuel availability and such availability is determined on a weekly or longer basis, rather than by daily deliveries, for example, then the available energy on each day shall be (comparable to that for storage hydro) 40% of the greater of (i) the amount scheduled as available for generation during the week or (ii) the actual plant generation during the week whenever additional energy becomes available.

Because the above specified use of storage energy at various types of plants is the principal factor in the determination that is not related to actual current conditions, its validity shall be re-examined from time to time by the Operating Committee; and, if necessary, change shall be made in the above specified procedures.

D. The Daily Load Curve - the total of the daily available energy amounts, as described in 1 and 2 above, shall be fitted into the daily load curve to "firm up" the maximum amount of limited energy capacity. A direct determination of the available capacity in KW shall be made from a tabulation of peak capacity versus energy at the level indicated by the avail-able energy. Recognition of the various limitations that may apply is important at this point in the computations. These include at least the following:

(1) The usable amount of energy as determined in 1 and 2 above for any plant shall be no more than that plant could generate within the daily period of operation of all limited energy resources. (Alternatively, if the amount from 1 and 2 above is more than the plant can generate in the period determined by the load shape, the plant and its energy may be dropped out of the computation and be temporarily treated as an unlimited energy resource. This shall be the normal treatment of the run-of-river plants in period of adequate flow.)

(2) The amount of available capacity for any plant that is firmed up by its available energy shall not exceed the physical capability of the plant during the peak hour of the day. This physical capability shall be determined by head, unit outages, and capacity limitations due to ice, trash, heat, or other causes.

(3) A check shall be made, even when the total available capacity of the limited energy resources appears to be energy limited, to determine if some part of this capacity may not be energy limited (i.e., may be limited by physical capability). This is particularly likely in very low flows, when the run-of-river plants will be energy limited, but the pumped storage may not be. Under these conditions, the available capacity of the pumped storage is limited to its physical capability on the peak hour. At high flows, the situation may reverse.

E. Determination for Study and Forecast Purposes - Forecasts of Unavailable Capability, including those due to energy limitations, are needed under the terms of the PJM contract as supplemented, and similar forecasts are required for study of additional limited energy installations. Such forecasts shall be basically consistent with the above specified determinations for after-the-fact conditions; but certain difference in method of computation are appropriate in recognition of the nature of uncertainties inherent in all such forecasts. The Operating Committee shall review these procedures with respect to new capacity to determine if modifications are required.

(1) Susquehanna River Flow - For forecast purposes, the flow of Susquehanna River shall be considered on a probability basis related to each month's experience over a long period. That is, for various ranges of river flow there shall be an assigned probability of occurrence for each month, based on the recorded experience in that month for 50 or more years. For this purpose, flow records accumulated at any one plant on the Susquehanna River (initially, Safe Harbor) may be used for all plants, with appropriate factors for conversion to daily energy.

(2) Hydro Plants on Other Rivers - There are now in operation in PJM several small hydro plants (Deep Creek, Piney and Wallenpaupack) on other rivers or streams, not within the Susquehanna River drainage. Because the flow in these other rivers is not related to the flow in the Susquehanna River, and no correlations have been developed, and because the plants are small, it is satisfactory for forecast purposes to assign to each of these plants for each month a fixed amount of generation per day which is reasonably representative of less than average flow conditions. So long as these other plants are small and the available river flow is unrelated to the Susquehanna River flow, the forecast shall be based on this approximate representation of the available energy at such plants.

(3) Pumped Storage and Limited Energy Thermal Capacity - The available energies for these plants on a forecast basis shall be consistent with those used, or which would be used in the after-the-fact determinations.

(4) Load Curves - Forecasts of Unavailable Capability shall be based on the use of forecast energy amounts in forecast daily load curves. Such daily load curves shall be based on the adjustment of one or more years of experienced loads to be representative of the higher loads by the future years for which forecasts are required. The method of adjustment shall be specified by the Planning and Engineering Committee and shall be consistent with that used for other PJM purposes.

F. Adjustment for Unavailability Due to Unit Outages - Because hydro and pumped storage units are likely to be scheduled for inspection and maintenance at those times when their Available Capability would otherwise be limited by the available energy, recognition shall be given to the probability (related primarily to river flow) of the overlapping of unavailability due to both planned and unplanned maintenance outages and energy limitations. In the forecasting of Unavailable Capability, planned and

unplanned maintenance outages shall be recorded at their full amounts and durations, and average unavailability due to energy limitations shall be appropriately reduced by an amount that recognizes the probability of overlap between the two causes of unavailability.

APPENDIX B: Determination of Transmission Limitations

When determining the capability of a unit, station, area or system and the availability of this capability for PJM contract purposes, it is necessary to examine the ability to deliver the capability to the load areas. In order to make this examination, the following standard formula is presented to determine if a Transmission Limitation exists.

$$\begin{aligned} \textit{Transmission Limitation} &= \textit{Net Capability} + \textit{Firm Capacity Sales}^{(1)} \\ &- \textit{Firm Capacity Purchases}^{(2)} - \textit{Peak Load} \\ &- \textit{Unavailable Capacity} - \textit{Transmission Capability}^{(3)} \end{aligned}$$

(1) Includes only sales that must be delivered outside the System and any other system's share of jointly owned internal generation.

(2) Includes system's share of jointly owned external generation and purchases from outside the System.

(3) Transmission Capability of any transmission path must be compatible with the values used for emergency ratings as specified in the PJM Operating Principles and Standards and for parallel paths must be such a total that the loading of no line exceeds its emergency rating.

A. Daily Unavailability Due to Transmission Limitation

A Transmission Limitation associated with a unit or station shall be determined for each weekday excluding holidays using the standard formula with the following data:

Item	**Unit**	**Station**
Net Capability	Unit Net	Station Net
Firm Capacity Sale	Only when part of unit or station is jointly owned or is specified source of Firm Sale.	
Firm Capacity Purchase	Not Applicable	Not Applicable
Peak Load	Local Bus Load	Local Bus Load
Unavailable Capability	Of Unit	Of Station
Transmission Capability	For Lines Available	Foe Line Available

A Transmission Limitation associated with an area or system shall be determined for each weekday excluding holidays using the standard formula with the following data:

Item	**Unit**	**Station**
Net Capability	Unit Net	Station Net
Firm Capacity Sale	Only when part of unit or station is jointly owned or is specified source of Firm Sale.	Total Value
Firm Capacity Purchase	Not Applicable	Total Value
Peak Load	Of Area	Of System
Unavailable Capability	Of Units in Area*	Of Units on System*

(*Including Unavailability of Units or stations due to Transmission Limitation)

B. Negative Values of Transmission Limitations

When the determination shows a negative Transmission Limitation the value shall be considered as zero for all cases except the daily System determination.

A negative value of Transmission Limitation as a result of the daily System determination can be considered as negative Unavailable Capability up to the value of the Transmission Limitation applied to the System Capacity. If there is no Transmission Limitation applied to the System Capacity then any negative value of Transmission Limitation as a result of the daily System determination shall be considered as zero.

APPENDIX C: NET CAPABILITY VERIFICATION GUIDELINES

PURPOSE

These guidelines are to supplement the requirements set forth in the PJM Rules and Procedures For Determination of Generating Capability (Green Book) by setting forth requirements for Net Capability verification, reporting and review of results to assure uniform and consistent compliance. These guide-lines address questions that occur frequently at the Generating Capability Ratings Procedure Task Force (GCRPTF) meetings.

A. Philosophy of Net Capability Verification

(1) Responsibility

a. Member Companies through the GCRPTF are responsible to comply with these requirements at their own expense

b. GCRPTF consists of representatives from each member Company signatory to the Supplemental Agreement and an I0 representative serving as secretary. The GCRPTF is responsible to review verification and to tender recommendations to the Operating Committee. Nonconformance(s) shall be communicated in writing to the Operating Committee.

c. The Operating Committee Member is responsible for the approval of Net Capability verification reports and Company compliance to these guidelines.

d. Individual Company Task Force members are responsible as delegated by their Company Operating Committee Member for the collection and reporting of net capability verification results.

e. Verification of NUG capability is the responsibility of the utility which declares that net capability as installed capacity.

(2) Exceptions and Deviations.

a. Exceptions to and deviations from these Net Capability verification guidelines shall be by Operating Committee approval. These exceptions shall be made in writing prior to the end of the test window for known occurrences such as environmental restrictions and fuel limitations.

B. Net Capability Verification

(1) Net Capability verification is to demonstrate the maximum Net Capability of each unit. If that Net Capability was not demonstrated during the verification window, a reduction or derating shall be enacted to account for the deficiency.

(2) Both Summer and Winter Net Capability shall be confirmed annually during the verification windows that correspond to the seasonal peak periods:

a. Summer verification window shall be the first day of June through the last day of August.

b. Winter verification window shall be the first day of December through the last day of February.

(3) If adequate data is available from normal operation to confirm Net Capability values and to satisfy the reporting requirements during the seasonal verification window, no test is required. Units for which the foregoing data is not available shall be tested to confirm Summer and Winter Net Capability values. A test shall include any unit brought on-line or a unit that is on-line and its mode of operation altered for the specific purpose of capability verification.

(4) If a unit does not meet its stated Summer or Winter Net Capability due to a temporary condition, the deficiency shall be covered by the appropriate outage/reduction(s) from the date of the problem. If a capability deficiency is uncovered during this verification, a reduction covering the deficiency shall be coded retroactive to June 1 or January 1 for summer and winter verification windows, respectively.

(5) Net Capability verification is required outside of the verification period when an outage or reduction occurred prior to or during the verification period which prevented demonstration of maximum Net Capability. The Net Capability shall be demonstrated by either operating performance data or test result.

C. Reporting

(1) Two standardized forms are provided to facilitate the review of results:

a. Attachment One is the Individual unit PJM Net Capability Verification Reports to be used for documenting operating performance or test data.

b. Attachment Two is the PJM Verification Summary Report.

(2) Net Capability Verification Reports shall be approved by the Operating Committee Member.

(3) Reports shall be submitted to the GCRPTF Secretary no later than September 30th and March 31st for the summer and winter verification periods, respectively. copies of the summary sheets shall be mailed to the GCRPTF Members.

(4) Outages and reductions for the discrepant capability greater than 1 MW (Rated Net Capability less the Corrected Test Net Capability) shall be recorded on the reports, including:

a. MW's out shall be reported on the Capability Reporting Form along with a brief explanation of the reason completed by Plant personnel.

b. The MW reduction shall be covered in the Summary Report notes with event data including: MW reduction, NERC event type, NERC event number, cause code, event start date and time, event end date and time (if appropriate). The Summary Report shall be submitted by the GCRPTF member.

(5) When the owner has submitted output adjustment methodology and received GCRPTF approval, the following output corrections may be made:

a. For combustion turbines or combined-cycle units, ambient air temperature correction.

b. For steam or combined-cycle units, circulating water temperature correction.

c. For cogeneration units where heating system extraction steam limits the output, a limited steam flow correction.

(6) Units shall be verified and reported on a block basis as opposed to an individual basis when the units are rated and dispatched as a block.

(7) Net Capability Verification Reports shall be submitted to the GCRPTF Members for verification outside of the verification period to document end of outages or reductions (reference paragraph B.5).

(8) Reports shall indicate the nearest whole MW output for units rated 10 MW's or greater, and the nearest one-tenth MW output for units rated less than 10 MW. When a figure is to be rounded to fewer digits than the total number available, the procedure adapted from ISO-R370, should be as follows:

a. When the first digit discarded is less than 5, the last digit retained should not be changed. For example, 3.463 25, if rounded to three digits, 3.46.

b. When the first digit discarded is greater than 5, or if it is a 5 followed by at least one digit other than O, the last digit retained should be increased by one unit. For example, 8.376 52, if rounded to four digits, would be 8.377; if rounded to three digits 8.38.

c. When the first digit discarded is exactly 5, followed only by zeros, the last digit retained should be rounded upward if it is an odd number, but no adjustment made if it is an even number. For example, 4.365, when rounded to three digits, becomes 4.36. The number 4.355 would also be rounded to the same value, 4.36, if rounded to three digits.

D. Review

(1) A GCRPTF Working Group composed of the immediate past chairman, the present chairman, next apparent chairman, and the secretary {I0 member) shall review all reports to verify completeness of records and verify outage tickets as required.

(2) Each owner shall have a representative in attendance (GRCPTF member or alternate) at the GCRPTF verification review meeting.

(3) The verification review should be reported to the Operating Committee including a summary report, reflecting all units which have not met their Net Capability for three consecutive summer or winter test periods. The summary report will include documentation of the problem from the appropriate company and corrective action taken to prevent the problem from recurring, if possible. It should also be noted on this summary report, if any of these units were tested outside of the test periods being reviewed.

PJM Net Capability Verification Report

COMPANY_____.

1. Plant and Unit No.	_____	
2. NERC Unit Identification	_____	
3. Method: (check one)	Operational _____	Test _____
4. Date	___/___/___	
5. Start Time	____:____	
6. End Time	____:____	
7. Corrected Test Net Capability – MW	__ __ __ __.__	
8. Rated Net Capability – MW	__ __ __ __.__	
9. Difference-MW (±)	__ __ __ __.__	
	RATED	OBSERVED
10. Main Steam Temperature- °F *	__ __ __ __.__	__ __ __ __.__
11. Reheat Steam Temperature- °F *	__ __ __ __.__	__ __ __ __.__
12. 2nd Reheat Steam Temperature- °F*	__ __ __ __.__	__ __ __ __.__
13. Main Steam Pressure- PSIG *	__ __ __ __.__	__ __ __ __.__
14. Air Dry Bulb Temperature °F	__ __ __ __.__	__ __ __ __.__
15. Cooling Water Temperature °F	__ __ __ __.__	__ __ __ __.__
16. Extraction Steam Flow – 1000 LB/Hr.	__ __ __ __.__	__ __ __ __.__
17. Reactive Generation-MVAR (±)	__ __ __ __.__	
18. Gross Generation-MW	__ __ __ __.__	
19. Station Use-MW	__ __ __ __.__	
19a. NUG Process Load	__ __ __ __.__	
20. Test Net Capability-MW	__ __ __ __.__	
21. Cooling Water Correction-MW (±)	__ __ __ __.__	
22. Air Correction-MW (±)	__ __ __ __.__	
23. Extraction Steam Flow Correction-MW (±)	__ __ __ __.__	
24. Total Power-MVA	__ __ __ __.__	
25. Power Factor	__ __ __ __.__	
26. Explanation for Difference		
MW	__ __ __ __.__	
Explanation		

SIGNED:_____ APPROVED:_____

STATION MANAGER MEMBER
PJM OPERATING COMMITTEE

* Data is optional and not required by PJM

Specific Instructions – PJM Net Capability Verification Report

Line 1 Company plant and unit number identification.

Line 2 Use NERC numerical designations only.

Line 3 Indicate Test, if unit started or current operating load changed for capability verification.

> Indicate Operational, if unit is currently operating at capability rating. Historical data is also acceptable; two (2) hour average (steam and combined-cycle units), one (1) hour (combustion turbines and diesel units).

Line 4 Enter date of test - month, day, and year.

Line 5 Enter time of test start- use military time.

Line 6 Enter time of test end, use military time.

Line 7 In MW, the Net Test Capability (Line 20) plus Water Correction (Line 21) for steam units - Otherwise Test Net Capability (Line 20) plus Air Correction (Line 22) for combustion turbines.

Line 8 In MW, the Current Net Capability - First character - S (Summer) W (Winter) Remaining characters - Rated Net Capability.

Line 9 In MW, the Corrected Net Capability (Line 7) minus Rated Net Capability (Line 8); - Include (-,) sign.

Line 10 Enter data for steam or combined-cycle units - Temp.(^{o}F), Pressure (PSIG). Otherwise enter NA.

Line 11 Enter data for steam or combined-cycle units - Temp.(^{o}F), Pressure (PSIG). Otherwise enter NA.

Line 12 Enter data for steam or combined-cycle units - Temp.(^{o}F), Pressure (PSIG). Otherwise enter NA.

Line 13 Enter data for steam or combined-cycle units - Temp.(^{o}F), Pressure (PSIG). Otherwise enter NA.

Line 14 Enter data for combustion turbines, combined-cycle and cooling tower steam Units only (^{o}F) - Otherwise enter NA.

Line 15 Enter data for steam or combined-cycle units (^{o}F). Otherwise enter NA.

Line 16 Enter data for approved extraction steam units only (1000 LB/hr) Otherwise enter NA.

Line 17 In MVAR, enter (+) into system (LAG); (-) into unit (LEAD). Enter two (2) hour average for steam units.

Line 18 In MW, enter two (2) hour average for steam or combined-cycle units.

Line 19 In MW, enter two (2) hour average for steam or combined-cycle units.

Line 20 In MW, enter NUG process electrical load.

Line 21 In MW, enter Gross Generation (Line 18) minus station use (Line 19) minus NUG Process Load (Line l9a).

Line 22 In MW, for steam or combined-cycle units - if correction curves are available. Otherwise enter NA.

Line 23 In MW for combustion turbine or combined-cycle units. Otherwise enter NA.

Line 24 In MW for approved extraction steam units only. Otherwise enter NA.

Specific Instructions - PJM Net Capability Verification Report (continued)

Line 25 In MVA, Vector sum, Gross Generation (Line 18) and Reactive Generation (Line 17.).

Line 26 Gross Generation (Line 18) divided by Total Power (Line 24).

Line 27 Line 2 Enter narrative to explain negative difference (Line 9) Otherwise narrative requirement is optional.

PJM Capability Verification Report Summary

Plant / Unit NERC ID	Period _____ Capability		Period _____ Capability		Period _____ Capability		MW Reduction	NERC Event		NERC Code	Start		End		Notes
	Rating	Diff.	Rating	Diff.	Rating	Diff.		#	Type		Date	Time	Date	Time	
Notes:											Member, GCRPTF _____				
											Date _____				
											Revision # _____				

Specific Instructions – PJM Capability Verification Report Summary

1. Company	Reporting Company Name.
2. Plant / Unit (NERC ID)	Enter plant name, unit number, and NERC identification number.
3. Period	Enter the test period, (example: S83,W83/84).
4. Capability 4a. Rating	Enter Rated Net Capability – MW (Line 8 from PJM Net Capability Verification Report)
4b. Difference	Enter Difference – MW (±) (Line 9 from PJM Net Capability Verification Report)
5. Megawatt Reduction	Enter the megawatt reduction assigned to each NERC outage event. Event data can have more than one entry for the difference reported. Megawattt reduction can be greater than difference reported.
6. NERC Number	Enter the corresponding NERC event number.
7. NERC Event Type	Enter NERC Event Type and Class as defined in the PJM Generating Unit Performance Definitions for each megawatt reduction.
8. NERC Cause Code	Enter the NERC Cause Code as defined in the PJM Generating Unit Performance Definitions for each NERC Event.
9. Start / End 9a. Date	Enter Start/End month, day, and year(example: 01/30/84).
9b. Time	Enter Start/End time, use military time (example: 14:29).
10. Notes	Enter a sequence number. Use the sequence number as a reference to the narrative in the space provided at the bottom of the summary or use a sseparatepage. If no event information exists, assign a sequence number and explain in the notes.
11. Member GCRPTF	GCRPTF member's signature.
12. Date	Enter reporting month, day and year.
13. Revision Number	Enter sequential revision number. The first issuance of the report is revision number zero.

APPENDIX D: Deferred Maintenance Guidelines

GUIDELINE FOR CLASSIFICATION OF EXTENDED DURATION OUTAGES RESULTING FROM VOLUNTARY DEFERRAL OF REPAIRS TO GENERATING UNITS

The purpose of this guideline is to define a procedure for implementing a PJM policy, which permits the voluntary deferment of generating unit repairs for financial reasons while minimizing the effect that such a deferment has on the determination of forecast installed reserve obligations and allocations.

During periods of high PJM system installed reserves, it may not be economically feasible to perform extensive repairs on units with high operating costs, since such units are unlikely to be called on to supply load. Whenever such a unit fails and is not repaired immediately, the outage associated with the failure is lengthened due solely to company economic and system reserve conditions, rather than to any special nature of the unit failure. PJM reserve obligations and allocations are both based in part on company outage history. The straightforward inclusion of the total time associated with a deferred maintenance outage in a company's outage history leads to a pessimistic model of unit repair time.

The PJM companies recognized that in times of lower excess system installed reserved; units would be repaired with minimum delay, since system conditions would dictate more frequent unit operation. The procedure outlined in the following paragraphs is designed to allow companies to single out those outages which are lengthened due solely to company economic constraints, so that such outages can be more accurately modeled in PJM planning studies.

It should be noted that a company requesting deferred maintenance status for a unit agrees to attempt accelerated repairs in the event of an Operating Committee determination that the unit is required to bolster PJM system or sub-area reserves. Also, the physical coding of such outages in the PJM outage data base is not changed as a result of application of this procedure. Neither is the deferred maintenance classification recognized for any uses of the outage data base other than the determination of forecast installed reserve obligations and allocations.

Scope of Application

This procedure may be applied to an outage on any generating unit or portion thereof, so long as repairs are to be deferred for at least 90 days due solely to company financial constraints.

Procedure

A. In the event that a unit is out of service in the unplanned forced classifications *, either wholly or partially, and repairs are to be deferred for at least 90 days due solely to company financial constraints, the owning company shall have the option to request that the portion of the outage associated with the deferment be excluded from consideration as an unplanned forced outage in planning studies. Authority to grant or deny such a request rests with the PJM Operating Committee, as advised by the Maintenance Committee and the Interconnection Office.

B. A request for official recognition of the voluntary deferment period must include the following information:

(1) Name of unit.

(2) MW of installed capability affected.

(3) Is this a reduction in unit capability, or a full outage?

(4) Starting date of original unplanned forced outage.

(5) Planned return to service date.

(6) Scope of repairs required.

(7) Estimate of unplanned forced outage time required to effect repairs to the unit. This estimate should be based on crews working a 40-hour week and must include any time waiting for manpower or parts to become available of for technical problems to be solved.

C. Copies of each request will be sent to the Maintenance Committee and the Interconnection Office, as well as to the Operating Committee.

(1) The Maintenance Committee will review the scope of required repairs compare with the estimated repair time, and advise the Operating Committee on the adequacy of the repair time estimate.

(2) The Operations Planning Department of the Interconnection Office will analyze the effect of the repair deferment on PJM system reserves and risk during the outage period, as well as sub-area reserves (if the unit is located in a deficient area) and make recommendations to the Operating Committee.

* The basis for his definition is set forth in IEEE Standard 762 entitled "Definitions for Use in Reporting Electric Generating Unit Reliability, Availability and Productivity".

D. The Operating Committee can either approve or disapprove a request for deferred maintenance status based on the recommendations of the Maintenance Committee and the Interconnection Office.

(1) If the Operating Committee disapproves the request, the entire outage duration will be considered as unplanned forced outage time and will be accounted for as such on all planning studies.

(2) If the Operating Committee approves a request for deferred maintenance status for a particular unit, relevant information concerning the deferral period will be passed to the Generator Unavailability Subcommittee, of the Planning and Engineering Committee, so that the outage can be properly modeled in all planning studies.

(3) The revised modeling of any approved deferred maintenance outage for planning study purposes is a manual process. Reporting of the outage in the PJM outage database will not be affected by Operating Committee approval or disapproval of a deferral period.

(4) After-the-fact accounting is not affected by Operating Committee action on the deferral request. Such a unit will be considered unavailable for purposes of after-the-fact accounting whether or not the Operating Committee grants a deferred maintenance request.

Extensions to Existing Deferral Periods

A. If a unit has not been repaired by the planned return-to-service date, its outage classification for planning study purposes will revert back to unplanned forced as of the planned return-to-service date, unless an extension to the deferral period is allowed by the Operating Committee.

B. Any request for an extension to an existing deferral period should be handled just like any new request for deferred maintenance status, with the owning company proposing a revised in-service date for review by the Operations Planning Branch of the Interconnection Office and final action by the Operating Committee.

C. Because of the system planning aspects of the deferred maintenance classification, all requests for extensions to existing deferral periods should be made as soon as possible after determination that company financial constraints will not allow repair of a particular unit to begin before the original planned in-service date.

Returning Deferred Maintenance Units to Service

A. Voluntary Return by Owning Company

(1) The company owning a unit with deferred maintenance status should keep all interested parties notified of any changes in the expected return-to-service date of the subject unit.

(2) If a company decides to delay the return to service of a deferred maintenance unit, an extension of the deferral period may be requested as outline above.

(3) A company may decide to return a deferred maintenance unit to service at any time prior to the originally scheduled return date. If such a decision is made, the outage will be classified as follows:

(4) No additional unplanned forced outage time will be assigned to a unit repaired and reported available for service at any time after the minimum 90-day deferral period but before the original return-to-service date.

(5) If a unit is repaired and returned to service prior to the minimum 90-day deferral period, the outage duration will be classified as forced for planning study purposes.

B. Return Requested by Operating Committee

(1) When dictated by changing system conditions, the Operating Committee can request that companies owning units with deferred repairs effect the repair of the subject units in order to bring PJM system or sub-area installed reserves up to more acceptable levels.

(2) Should such a recall become necessary, units which have been granted extensions to their original deferral periods will be the first ones called back to service.

(3) If a unit is repaired and returned to service at the request of the Operating Committee, no additional unplanned forced outage penalty will be assigned, even if the repairs are completed prior to the end of the original 90-day deferral period.

(4) If a company is not able to respond to a recall request on a deferred maintenance unit, the outage on the unit in question will be considered unplanned forced for planning study purposes, after a period of time equal to the estimated repair time.

Control

A. The Operations Planning Branch of the Interconnection Office will analyze system conditions and make recommendations to the Operating Committee regarding each request for a new or extended deferral period.

B. On a continuing basis, the Interconnection Office will review system conditions to determine the impact of existing deferred maintenance on PJM operations.

(1) The Interconnection Office will make recommendations to the Operating committee concerning the need for accelerated return of units on deferred maintenance.

(2) Reserve and risk criteria used shall be approved by the Operating Committee.