FERC Form No. 715
Part 4

TRANSMISSION PLANNING RELIABILITY CRITERIA

The following information submitted for this Part 4 of FERC Form No. 715 consists of PJM's current Planning Criteria, and each member transmitting utility's additional detailed planning criteria document.

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

CRITERIA FOR PLANNING THE DEVELOPMENT OF THE ELECTRIC TRANSMISSION SYSTEM

March 2024

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I INTRODUCTION

A. PURPOSE

With the changes to the electric transmission systems regulations promulgated by FERC under orders 888, 889, and 2000, the transmission planning process has expanded and is led by the PJM Interconnection's Regional Transmission Expansion Plan. The distribution planning process continues to be performed by PSE&G staff. This document is intended to identify the PSE&G specific planning principles, interaction between the transmission and distribution systems, and additional requirements that are needed to assure consistent, safe, and reliable service to customers in the PSE&G service territory.

B. APPLICATION

These criteria are intended to state broad principles or policies rather than design specifications. All connections to the transmission and distribution system whether they are utility owned or not, should adhere to these principles. Arbitrary or unreasonable application of the criteria is to be avoided, and modifications will at times be found justified in unusual situations. For example, higher than average service reliability is usually called for in high load density business areas or for critical loads; and conversely, some lower level of service reliability may be justified in areas of very low load density or when specifically requested by a large customer for reasons of economy. Where more than one criteria covers a given situation, or where both Public Service Electric and Gas Co. (PSE&G) Planning Criteria, the Reliability*First* Corporation (RF) Criteria, the North American Electric Reliability Corporation (NERC) cover the same situation, the criteria resulting in the highest reliability of service shall be applied.

Enhancements to the power system should balance system reliability, ease of operation, environmental concerns, and economics. In order to accomplish these long-term goals operating conditions and procedures should be taken into account in both the design and analysis of the bulk power system. This will ensure the operation of the system is not compromised when changes are made to the power system design. Close attention should be paid to the environmental impact of all changes to the power system. All system enhancements should work in harmony with their surroundings. Each system change should be made with the intention of improving the reliability and/or the economics of the bulk power system. The economics of each option should be considered before a decision is made. A balance of all of these factors will ensure a prudent system enhancement.

C. BASIS

NERC Planning Standards and RF planning criteria shall be the basis for PSE&G Transmission System planning. The facilities that are to be used in the analysis are contained in the PJM Open Access Transmission Tariff facilities list. Although these criteria are for the most part deterministic, the allowed consequences are more severe for those contingencies with a relatively lower probability of occurrence. The development of the criteria is based partly on a balancing of service quality, cost of service and environmental impact.

Other criteria are based on experience; for example, the boundary between acceptable and unacceptable voltage variations. It is recognized that many of the contingencies specified in these criteria occur very infrequently at the specified load levels and system conditions. However, the facilities installed to meet these criteria should provide an overall system capable of meeting the contingencies that do occur in actual operations.

D. ORGANIZATION OF MATERIAL

The ratings required for planning purposes are defined in Section II. The methods used to determine these ratings are consistent with the methods used by the PJM Interconnection, LLC Regional Transmission Organization (RTO). Section III describes the nominal and acceptable voltages at connections to transmission and distribution system customers and acceptable load drop levels and durations. Section IV addresses power quality issues including harmonics and transients. Section V covers the basis for documenting generation, Merchant Transmission, and Special Protective Systems requirements. Section VI covers the Short Circuit requirements, circuit breaker ratings, short circuit duties and pre-fault voltage requirements. Section VII covers Equipment Assessment and Storm Hardening. Section VIII covers additional considerations including tower line crossings, ultimate system design, and series reactors.

The specific contingencies which the system must be able to withstand in order to provide adequate service are defined in the NERC Reliability Standards (TPL-001-5), for generation, transmission, and switching stations. Each element of the system must be adequate for any of the contingencies in any other element of the system; for example the sub-transmission system must be adequate for criteria established for transmission contingencies. Provision for outages in other companies' systems that affect PSE&G facilities is made through the criteria.

For each element of the electric system, the quality of service required for various load levels is given. The acceptable load interruptions and acceptable voltages for the various load levels and contingencies are also stated.

II APPLICABLE RATINGS

Loadings of facilities shall be within appropriate ratings. For Bulk Electric System (BES) Transmission facilities, these ratings should be consistent with those submitted to PJM and documented on their web site as indicated in these criteria. These ratings are based on 35˚C summer and 10˚C winter ambient temperature, and shall be used in the planning of the system. Normal, emergency, and load dump thermal ratings are required for each temperature set (32, 41, 50, 59, 68, 77, 86, 95 ºF). The transfers of load, by readjustment of system facilities following outages, are acceptable means of providing adequate service with the remaining facilities, as defined by PSE&G and/or PJM operations manuals. Special ratings other than those listed below should not be used except under emergency conditions.

A. TRANSMISSION FACILITIES (69 kV AND ABOVE)

1. **Normal Rating:**
This rating, based on the specified ambient air or soil temperature shall be used in both the planning and operation of the system. All loads and transactions that are loaded on the system shall not cause these ratings to be exceeded with all related facilities in service.

2. **Emergency Rating (4 hrs):**
The emergency rating for Transmission facilities is the four hour rating based on the specified ambient air or soil temperature, and it shall be used in both the planning and operation of the system. Contingency loading of the applicable element should not exceed these ratings for more than fifteen (15) minutes. It is assumed that within that time, either generation will be applied or switching shall occur to reduce the contingency loading below the Long Term Emergency (LTE) rating.

4. **Load Dump Rating – Short Term Emergency Rating (15min):**
This is the rating that shall not be exceeded beyond 5 minutes and allows emergency switching. If an event occurs on the system that the loading reaches or exceeds this rating, immediate load dump shall be implemented. This rating shall not be implemented during the planning process but only in operation.

3. **30-Minute Rating:**
This rating is for continuous loadings and provides for the time interval necessary to do any necessary switching to relieve overloads at attended stations or at unattended stations using relays or supervisory control.

III THERMAL AND VOLTAGE ASSESSMENT REQUIREMENTS

A. NOMINAL VOLTAGES (60 Hertz, AC Volts)

Primary: 4,160; 13,200, 26,400
Sub-transmission: 13,200; 26,400
Transmission Non-BES: 69,000
Transmission BES: 138,000; 230,000; 345,000; 500,000

B. ACCEPTABLE VOLTAGES

1. Steady state voltages at transmission stations that are connected to transmission customers shall be in accordance with ANSI C84.1-2020 American National Standard for Electric Power Systems and Equipment - Voltage Ratings (60Hz). At stations that do not have directly connected customers, such as switching stations, the PJM standard voltage range shall apply. The ANSI values are contained in Table 1, Voltage Limitations, except for contingencies for which interruptions are acceptable. In certain special cases, such as service to tall buildings where meters are on upper floors, voltages shall be considered acceptable if within limits at the point of service connection.

2. Customer voltages outside of the limits of Table 1 (Voltage Limitations) are acceptable for a customer whose load power factor is below the Tariff specification of 0.85 if studies indicate that voltages would be within limits if the customer increased his power factor to the minimum Tariff specification.

3. Voltage dips, attributable to the start-up and operation of large customer loads such as motors or arc furnaces, shall be limited as indicated on Figure 1, Permissible Voltage Fluctuations. Special study is required if:

a. The effect on substation or switching station buses exceeds 0.4% of nominal, or
b. The effect on 69-, 138-, 230-, 345-, or 500- kV buses exceeds 0.2% of nominal.

4. Voltage schedules are not included here as they are not criteria. They are, rather, targets to help meet criteria.

5. These voltage criteria will not be applied during imposed voltage reductions.

6. Under normal conditions, the range of voltage variation is not intended to represent the maximum variation as a result of a sudden load increase or the single correction by a voltage regulating device. Rather the range represents an acceptable bandwidth within which customer equipment should operate properly. Single step changes in voltage level either as a result of load changes or voltage regulating devices should be limited to as small an incremental change as can be reasonably obtained with commercially available techniques. Typically, limiting single step changes to 2% or less of nominal voltage is recommended.

TABLE 1

VOLTAGE LIMITATIONS

	Normal			Emergency		
	Max.	Min.	Variation	Max.	Min.	Variation
Transmission Customers % of Nominal	105	98	5(b)	105	95 (a)	5 (b)
Transmission Nodes (c) (d) % of Nominal	105	98	5 (b)	105	95	5 (b)

Notes:

(a) Minimum voltages 3% below these values are acceptable when switching operations not dependent on availability of a traveling operator can be performed to correct the voltage to meet the emergency criteria within 30 minutes. Further voltage reductions are acceptable if automatic switching operations or automatic controls will correct the voltage to applicable minimum values within 2 seconds.

(b) The post transient voltage drop should be consistent with the voltage criteria currently used in actual system operation (i.e. no more than 5% voltage drop and a post contingency voltage of 0.95 per unit or higher).

(c) Transmission Nodes are those Tariff facilities that do not have any wholesale customers directly connected. Example of such facilities is Deans Switching station. Those locations shall be governed by the PJM standard voltage criteria.

(d) Transmission Nodes include 69 kV facilities that do not have any wholesale customers directly connected.

C. ACCEPTABLE LOAD DROP LEVELS AND DURATIONS

Transmission facilities shall be upgraded if any of the criteria below are violated. If the expected load drop (greater than or equal to the values below) will not be restored within the allowed duration shown below, then mitigation efforts, such as providing another circuit, or substation bus configuration, will be required.

Contingency	Facility Type	Maximum Load Drop	Maximum Duration (Any Load Level)
NERC Cat P1	All	175 MW	Momentary
NERC Cat P2/P4/P5/P7	All >100 kV	300 MW	24 Hours
NERC Cat P3/P6	All circuits >100 kV in a "Metropolitan Area"	175 MW	Momentary
	All ≥ 69KV	20 MW	24 Hours

For all substations (except single customer stations) and/or multiple substations that are supplied by only two sources (transformer, PAR, circuits, etc.) and when one source is out (scheduled or forced maintenance) and loss of the remaining source will cause loss of 20MW or more load for more than 24 hours, providing a third source to the substation or to the load area will be required. This criterion will predominantly impact all substations or multiple substations when one of the two supply sources is an underground circuit or an overhead circuit with partial underground sections. When underground circuits fail, repairs can take up to several months to complete.

The Maximum Load Drop is based on the projected station peak load level. It shall apply to stations supplying native load and/or for Merchant Transmission facilities that are supplying native load in another control area.

Notes:

(a) Designated underground metropolitan areas are Newark and Hudson Waterfront

D. NERC CATEGORY P3 & P6 PERMITTED ADJUSTMENTS

Where system adjustment is permitted by NERC Standard TPL-001, the following adjustments can be implemented:

- Generator re-dispatch (reasonable and realistic)
- Switching a shunt device
- PAR adjustment (PJM PARs only)
- Tap changer adjustment

The following are *not* permitted:
- Removal of equipment such as load serving transformers, or circuits.
- Load shed
- Special Protection Systems (SPS)
- Opening breakers

E. MOST SIGNIFICANT GENERATOR

For NERC Category P1, the most significant generator shall be modeled out of service as a pre-existing initial condition.

Following removal of a single element, no Transmission Facility shall exceed its STE. After the outage, the system must be capable of being re-adjusted so all equipment is loaded below its normal rating.

IV POWER QUALITY

A. HARMONICS DISCUSSION

Increased customer usage of non-linear types of loads, such as switched mode power supplies, can create increased harmonic distortion in utility and customer electrical systems. Unrestricted harmonic propagation can result in a variety of electrical and telecommunications problems including increased equipment heating, resonance conditions, fuse and capacitor failures, and telephone interference conditions. At very high levels, harmonic distortion may result in misoperation and/or random drop-out of customer systems.

Typically, harmonics are a function of load conditions where non-linear devices draw electrical power in a non-sinusoidal manner. The resulting current waveform consists of various multiples of 60 Hz power. In electrical systems having a high source impedance, current distortion will affect the voltage waveform more significantly. In addition, harmonic currents being of an unbalanced nature will add in the neutral thus impacting other systems referencing the common neutral system.

Ideally, harmonics can be prevented through utilization of power conversion devices that draw power in as near a sinusoidal fashion as possible. Alternatively, damaging harmonics can be managed by maintaining a low impedance electrical source. Where a low impedance source cannot be provided, various filtering and conditioning techniques are commercially available.

Although PSE&G maintains a fairly low impedance source affording suitable short circuit availability to avoid harmonic distortion of the electrical supply, proper design should include adherence to set harmonic limitations. Institute of Electrical and Electronic Engineers (IEEE) Standard 519-2022, Harmonic Control in Electrical Power Systems, or its latest version, is the definitive utility industry guideline regarding harmonics for both utility and customer systems. PSE&G recognizes this standard and utilizes it in applying appropriate limitations at the point of connection to utility customer's service equipment.

B. TRANSIENT DISTURBANCE DISCUSSION

While system planning criteria traditionally addresses the prevention and minimization of momentary and long term outage contingencies, the resulting redundancy typically increases exposure to transient disturbances. The physics and nature of electrical phenomena dictates that during a short circuit or drastic system reconfiguration, undesirable voltage sags, surges, and swells will occur.

Mitigation and protection from these types of events involves complex review and analysis of the utility system, customer electrical infrastructure and affected equipment and systems.

Ongoing preventive maintenance, maintaining a utility source with low source impedance and fast fault clearing times, and the use of sound design practices are the most effective means of minimizing the impact of transient events. The protection and/or de-sensitization of affected customer equipment and systems has generally been recognized and accepted by both utility and customer segments as the most effective and economic technique of assuring continuous process and equipment up-time. Coordination of designs between utility and customer systems will ensure the highest degree of service quality and continuity based on economic justification.

The use of an equipment susceptibility curve such as the CBEMA (Computer and Business Equipment Manufacturers Association) curve depicted in IEEE Standards 446-1995 and 1100-2005, is recommended as a guide in determining vulnerability of customer equipment and systems to transient events originating from within the utility system.

V. SYSTEM RESERVE REQUIREMENTS

A. MEGAWATT RESERVE

Sufficient megawatt generating capacity shall be contracted and sufficient transmission to provide emergency transfer capability to meet PSE&G reliability criteria. These criteria require that for the PSE&G system the probability of load exceeding the available capacity sources shall not be greater, on the average, than one day in ten years. The installed generation capacity is based on PJM studies.

The Capacity Emergency Transfer Objective (CETO) is the capacity transfer which PSE&G or any designated zone within PSE&G must have in a given year and for a given generation configuration to provide sufficient emergency assistance to meet the reliability criteria stated above. In any given year when the Capacity Emergency Transfer Limit (CETL) is less than the CETO it is necessary to install any of the following types of additional facilities: transmission, demand side management, or additional internal generation. In any given year when there is insufficient generating capacity in interconnected systems for emergency assistance it is necessary to install additional generation.

The basic elements involved in planning the generating capacity reserve requirements of a system include the characteristics of load and generating capacity and capacity benefit of ties. The analysis of system reserve includes consideration of load forecast uncertainty. The analysis of system generating capacity, which consists of units of different sizes and types, includes the following characteristics affecting reliability:

1. Summer emergency rating
2. Seasonal changes in capability
3. Forced outage rate
4. Planned outage rate
5. Maintenance outage rate.

Ties provide the capacity transfer required in an emergency. The available tie capacity is specified as the CETL as defined in PJM Manual 14B.

B. MEGAVAR RESERVE

Sufficient reactive capacity must be provided to maintain adequate bulk power system reliability and to meet customer voltages as described in the various voltage and reliability criteria included throughout these Planning Criteria.

Both load and merchant transmission facilities shall not absorb significant amounts of MVAR's from the transmission system. The minimum power factor from a load or merchant transmission facility shall be 0.98.

The type of reactive to be installed is to be based on an evaluation of the overall system reactive requirements and available reactive sources.

C. SPECIAL PROTECTIVE SYSTEMS

Special Protective Systems (SPS) shall be used only to achieve reliability criteria during maintenance outages. They shall not be used as a substitute for constructing or reinforcing the transmission system. The specific criteria as to type of SPS shall be in accordance with ReliabilityFirst documents.

D. MERCHANT TRANSMISSION FACILITIES

Merchant transmission facilities shall be planned in accordance with the PJM RTEP process. Specific modifications to that process are:

1. Load dump magnitudes and durations for NERC and RF criteria shall be the same as in section III C of this document.
2. Torsional analysis of local generation shall be conducted with the exact same software control system as will be used on the facility.
   a. Changes in software revisions will be re-certified prior to field installation.
   b. Identification of any interactions will be remedied by trip of the merchant facility.
   c. All modes of operation of the merchant facility will be studied.
3. Harmonic analysis and negative sequence injections shall not result in exceeding recommended limits on any existing generator or load with existing sources taken as the base line.
4. Impact on the cathodic protection of existing underground systems shall be predicted and verified after installation.

VI SHORT CIRCUIT REQUIREMENTS

A. SHORT CIRCUIT DISCUSSION

Short circuits are generally caused by insulation failure, flashovers, broken conductors, physical damage, human error, and many others. It is essential to isolate the faulted device from the power source to protect equipment, utility personnel and the general public. Circuit breakers are devices that are used to protect equipment against overcurrent and short circuit conditions and isolate faulty devices from the power source. In the process, they ensure the security of the electric power system and enhance reliability of service. The most serious overcurrents are those created by short circuit faults and, for that reason, it is critical to evaluate the extent of the current flow that each circuit breaker is called upon to interrupt under such fault conditions

Circuit Breaker Short Circuit Ratings

The short circuit rating of a circuit breaker refers to the symmetrical component of short circuit current in rms amperes that the breaker can safely interrupt. The rating is guided by IEEE Standard C37.010 – 2016 which provides specifications for the calculation of rated breaking current, withstand current, making current, and peak withstand current of any circuit breaker. The short circuit interrupting rating of a breaker is usually specified in kilo-amperes (kA) although other units, such as MVA, may also be used.

Short Circuit Duty

The short circuit duty of any breaker is the maximum current that can flow through the breaker into the fault, usually with all lines and generation sources in service. Since the fault may conceivably occur on either side of the breaker, the total fault current that can be delivered to a fault, referred to as the bus total, is generally higher than what any breaker needs to interrupt. For this reason, a detailed short circuit analysis needs to be performed to ensure that all circuit breakers can safely interrupt the fault current that may flow through them for any system short circuit condition. Also affecting the calculation of the fault current going through the breaker is the pre-fault voltage, the clearing time of the breaker and the relationship between real and reactive power flow. In the calculation of short circuit duty for any particular breaker, it is assumed that all other breakers associated with the fault have opened and that the breaker in question is the last fault clearing device to operate.

B. PRE-FAULT VOLTAGE – TRANSMISSION SYSTEM (69-kV and Above)

1. The pre-fault voltage shall be 1.10 per unit for all short circuit calculations at 500-kV and above.
2. The pre-fault voltage shall be 1.05 per unit for all short circuit calculations for all other Transmission voltage levels exceeding 100-kV.
3. The pre-fault voltage shall be 1.05 per unit for all short circuit calculations for Transmission voltage levels below 100-kV.

VII. EQUIPMENT ASSESSMENT AND STORM HARDENING

A. INSIDE PLANT

In order to maintain system integrity and reliability of the transmission system, condition assessment of switching and substation assets will be periodically reviewed. The condition assessment will include physical condition, age, electrical parameters, past history of asset as well as performance of similar equipment in a peer group. The impact on reliability of retiring the facility may be assessed using power flow simulations. Load flow simulation results are not always a good indication of the full system reliability impact of the facility retirement. Load flow analysis is normally performed on peak load, which represents less than 100 hours of the year and does not reflect all other system conditions for which the retired facility may be needed to maintain system reliability. The following are examples of the above mentioned system conditions that would not be reflected in the simulations:

- Remaining load levels beyond peak load
- Future system loads, generation retirements, new generation
- The numerous facility and circuit outages that occurs daily for maintenance or required for construction
- Class H stations and other load connected to and/or supplied by the facility
- Transformer and other long lead time equipment failure.

Load flow simulation results will be considered, but will not be a determining factor in the need for the replacement of the retired facility or potential alternative upgrades.

PSE&G may elect to perform the facility condition assessment internally or hire a third party to perform and/or review the assessment. Based on equipment performance, condition assessment and system needs, recommendations will be made to maintain or replace facilities either in kind or with alternative designs.

Also, in order to maintain system integrity and reliability of PSE&G Stations, PSE&G shall provide redundant facilities to meet sufficient station light and power load requirements including maintaining oil pressure on all pipe type cables. This includes a minimum of two independently fed light and power supplies, each capable of supporting light and power load throughout the station, and generator back-up facilities with black start capability as deemed necessary.

B. <u>OUTSIDE PLANT</u>

Transmission Facilities Underground and Overhead:

In order to maintain system integrity and the reliability of the outside plant system (i.e. external to the station), a condition assessment of overhead and underground assets shall be periodically performed. The condition assessment will include parameters such as physical condition, age, electrical parameters, environmental, and past history of asset as well as performance of similar equipment in a peer group. The impact on reliability of retiring the facility may be assessed using power flow simulations. Load flow simulation results are not always a good indication of the full system reliability impact of the facility retirement. Load flow analysis is normally performed on peak load, which represents less than 100 hours of the year, and does not reflect all other system conditions for which the retired facility may be needed to maintain system reliability. The following are examples of the above mentioned system conditions that would not be reflected in the simulations:

- Remaining load levels beyond peak load
- Future system loads, generation retirements, new generation
- The numerous facility and circuit outages that occurs daily for maintenance or required for construction
- Class H stations and other load connected to and/or supplied by the facility
- Transformer and other long lead time equipment failure.
- Loss of capacity on the system and impact on transfer capability
- Loss of ability to construct future circuits on the ROW

Load flow simulation results will be considered, but will not be a determining factor in the need for the replacement of the retired facility or potential alternative upgrades.

PSE&G may elect to perform the facility condition assessment internally or hire a third party to perform and/or review the assessment. Based on equipment performance, condition assessment and system needs, recommendations will be made to maintain or replace facilities either in kind or with alternative designs.

This recommendation will be based on additional quantitative analysis as well as qualitative concerns. The following will be considered in the recommendation:

1) Effectiveness of the replacement in kind vs the alternative
2) Construction Cost effectiveness
3) Operational performance improvement effectiveness

4) Meeting future requirements of meeting load and maintaining the ability to secure future ROW if existing is forfeited
5) Market efficiency impacts
6) Serving radial load at the plant
7) Preventing cascading or excessive use of margins in the system

Considerations shall be given to ultimate and future transmission system needs. If PSE&G planning anticipates greater system capacity need in the future, design of the replacement facilities and/or alternatives shall include accommodations for future higher capacity, higher voltage, and higher short-circuit ratings as necessary.

In addition, PSE&G may take steps to ensure that its plant is sufficiently resilient to withstand natural disaster and restore load.

VIII ADDITIONAL CONSIDERATIONS

A. TOWER LINE CROSSINGS

Existing line crossings: all existing transmission line crossings greater than 100kV will be identified and tested to ensure that a structure or overhead conductor failure leading to a trip of the circuits below does not cause system operations problems or reliability concerns. If operational, maintenance or reliability concerns exist, the appropriate system upgrades will be implemented to alleviate these concerns. The following analysis will be performed to determine system issues and reliability violations/concerns:

- Impact on scheduled and forced maintenance work, safety and other circuit outage.
- Impact on system operations during these maintenance outages
- The amount of load interrupted and the duration of interruption
  - No more than 300MW of load interruption shall be allowed
  - Duration should not exceed 4 hours
  - No more than 100MW of load interruption would be allowed if outage duration exceeds 4 hours.
- Load flow analysis during the PSE&G planning annual review to determine future impact on PSE&G system operation and reliability

Future line crossings: during system planning and construction design phases of future projects, all efforts should be made to avoid overhead circuit crossings. In the event that avoiding tower line crossing is difficult, the above analysis tests would be performed to ensure reliability. If the analysis results show concerns, the crossing will be avoided or a system upgrade to address these concerns should be incorporated in the project.

B. ULTIMATE SYSTEM DESIGN CONSIDERATIONS

PSE&G forecasts long range system needs and determines long range ultimate system configuration. Due to high density populated areas in New Jersey and the difficultly of attaining new greenfield ROW in New Jersey, significant consideration should be given to the full utilization design of facilities to be constructed. If PSE&G planning anticipates greater need in the future, design shall include accommodations for future higher capacity, higher voltage, and higher short-circuit ratings as necessary.

C. SERIES REACTORS

Series reactors shall not be installed on circuits to control flow. Legacy reactors shall be retired if no longer required. If legacy reactors fail or are retired due to age and/or condition, they shall not be replaced.

D. SYSTEM MAINTENANCE CONDITION ANALYSIS

The system shall be developed such that during light load, if a single element is out of service for maintenance and unscheduled contingencies occur, circuit loadings will not exceed applicable ratings.

PSE&G system load will be based on lowest historical load value observed over the previous three years.

Generation modeling will be based on economic generation dispatch and only full units will be modeled.

E. PLANNING FOR NON-FIRM TRANSFERS

Common mode outage analysis shall be performed for non-firm transfers. This shall include:

-stuck breakers
-double-circuit tower lines
-bus faults

Non-firm transfers will be developed using actual flows from the prior three years.

Anticipated future conditions such as announced generation and merchant transmission changes shall be included in the analysis.