OPERATING CODE: OC9 TRANSMISSION MAINTENANCE SCHEDULING

A Report for PPC
COMMENTARY / ASSUMPTIONS RELATING TO TRANSMISSION MAINTENANCE SCHEDULING (OC9)

This commentary will not be part of the Code but is intended to outline some of the assumptions considered, and issues arising, in preparation of the relevant sections of the Code.

The HTSO shall be obliged to schedule maintenance of transmission plant to fulfil its obligations under its authorisation relating to secure operation of the Transmission System.

The agreement between the HTSO and the Transmission Owner will have to address issues such as definition of transmission maintenance requirements, scheduling and consequence of changes to the transmission maintenance programme.

Transmission maintenance scheduling in the Greek deregulated electricity market will be facilitated by three separate documents referred to directly or indirectly in the Operating Code:

1. Specification of Transmission maintenance criteria
2. Statement of Transmission maintenance programme requirements
3. The Transmission maintenance schedule

To avoid confusion a brief description of the nature of each of these documents is given below:

Transmission maintenance criteria

These are developed by the HTSO in consultation with the Transmission Owner and approved by the regulator (RAE). They specify the general standards to which the transmission system must be maintained. They can be prescriptive (e.g. “each 400kV breaker must have a complete overhaul every 12/15 years, an inspection every 3 years and a test every year”) or they can be built around more advanced maintenance philosophies such as condition monitoring (e.g. “SF6 breakers will have a complete overhaul when circuit breaker timing – pole synchronism and operating time- have degraded to…”). All subsequent documents (programme and schedule) are based on this important document.

Transmission maintenance programme

This document is developed by the transmission owner, based on the transmission maintenance criteria, in consultation with the HTSO. If there is a dispute about how the criteria are interpreted and implemented in the programme this will be arbitrated by the RAE. This document lists the nature of maintenance that will be carried out on an element and the required outage duration (e.g.” Breaker XYZ needs an outage of 3 weeks for an overhaul”).

Transmission maintenance schedule

This is developed by the HTSO in consultation with the transmission owner. It will give a specific outage (time, date and duration) for specific equipment (e.g. “Breaker XYZ will be on outage from...”
0700hrs Monday week 23 to 1700hrs Friday week 26”). The maintenance schedule will try to balance the requirements of the transmission asset owner to maintain his asset and preserve its integrity (and hence the overall long term reliability of the transmission system) with the short term security requirements of the transmission system. In the event of a dispute with respect to the transmission schedule the RAE will be called to arbitrate.

Following the production of the maintenance schedule, the actual maintenance work will be carried out by the transmission owner. Maintenance work will be subject to audit by the HTSO.

OC9 details a scheme whereby indicative, provisional and committed programmes and schedules are produced by various parties 3, 2 and 1 years ahead of the Maintenance Year respectively

A graphical representation of the iterations and consultation the committed program and schedule go through is shown in the following diagram.
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Arbitration possible following first iteration

- TO Submits Maintenance Programme Requirements
- HTSO Monitor Requirements
  - Agree
  - HTSO study requirements
    - Feasible Schedule Available
      - Yes
        - Produce firm schedule
          - Schedule Administrator
            - TO Review Schedule
              - TO agrees schedule
                - Close Agreement
              - TO does not agree schedule
                - TO Revises Requirements
      - No
        - HTSO Propose Alternatives
          - Next Page
HTSO Propose alternatives → Present alternatives to TO → TO judges alternatives are feasible → Agree and Close

TO judges alternatives are infeasible → TO Propose Alternatives

HTSO Receives proposal

HTSO evaluates proposal → Accept TO proposed alternatives

HTSO evaluates Solution Proposal

TO propose alternatives

Suggest to TO

TO Accept → Close and end
OC9.1  INTRODUCTION

OC9.1.1 Secure operation of the Greek electricity system requires that maintenance of Generation Units and the Transmission System be carried out in a timely and orderly fashion. This is essential in order to enable the HTSO to fulfil its obligations relating to operation of the Transmission System, with due regard to Plant requirements and resource limitations. The mechanisms by which this is achieved for Transmission Plant are formalised in this Operational Planning Code (Transmission).

OC9.2  OBJECTIVE

The primary objective of OC9 is to ensure the development and implementation of a Transmission Outage Schedule (TOS), consistent with requirements for the secure and economic operation of the Transmission System, and with the needs of the Transmission Owners (TO) in respect of Plant maintenance requirements and resource limitations.

In order to achieve this objective, OC9 defines:

OC9.2.1.1 the procedure for formal notification of Transmission Maintenance Program Requirements by Transmission Business Unit TO to the HTSO; and

OC9.2.1.2 the procedures by which the Transmission Maintenance Programme Requirement are reviewed by the HTSO, in consultation with the TO;

OC9.2.1.3 the procedure for formal notification of their Outages by Grid Connected Customers to the HTSO.

The procedures and timelines for the production of the TOS by the HTSO.

OC9.2.2 OC9 shall apply to all proposed Outages that may affect the transfer capability of any element of the Transmission System.

OC9.3  SCOPE

Operational Planning applies to the HTSO and to the following, each of which is a User under this OC9:
OC9.1  The Transmission Owner (TO);

OC9.2 The Distribution System Network Operator (DSO);

OC9.3  Grid Connected Customers.

OC9.4  OUTAGE SCHEDULING

OC9.4.1  The Maintenance Year will run for the twelve month period from 1st July until 30th June inclusive.

OC9.4.2 Throughout OC9 the current Maintenance Year shall be defined as Maintenance Year MY and the following year as Maintenance Year MY+1. The Outage planning process shall commence not later than three (3) Maintenance Years prior to the Scheduled Operational Date or from the date of the relevant agreements, whichever is the later.

OC9.4.3 In rolling over the Transmission Maintenance Programme Requirements from one Maintenance Year to the next, for every year except the first year of the planning process:

submissions by the TO for Maintenance Year MY+1 should reflect the Provisional Maintenance Programme Requirements submitted the previous year for the same period; except, in any such case, to the extent that the TO is reasonably responding to changed circumstances. This does not require TO to explain changes unless explicitly required to do so by the HTSO. The aggregate of all TO's Maintenance Programme Requirements is the Transmission Outage Programme Requirement that will comprise the Committed Maintenance Programme Requirement (CMPR), Provisional Maintenance Programme Requirement (PMPR), and Indicative Maintenance Programme Requirement (IMPR).

OC9.4.4 On the first Business Day of July, TO shall submit to the HTSO, for each Transmission Element, Outages, estimates of the Forced Outage Probabilities and:

(a) the CMPR for Maintenance Year MY+1. Other than in the first year after the planning process has commenced, this will be based on the previous year's PMPR for Maintenance Year MY+2, which period through the passage of time has now become Maintenance Year MY+1, and any changes may only reflect the TO's reasonable response to changed circumstances;

(b) the PMPR for Maintenance Year MY+2; and
(c) the IMPR for Maintenance Year MY+3 to Maintenance Year MY+5.

TO shall specify with regard to each of their Transmission Elements, the start date and time and the duration of each Outage.

OC9.4.5 In scheduling Outages, and in relation to all other matters under OC9, the TO must act reasonably and in good faith. Without limitation to such obligation, the TO should act in accordance with Good Industry Practice in planning their Outages and, in particular, so as to avoid a situation arising in which the TO is obliged to schedule an Outage at short notice by reason of obligations imposed upon the TO by statute as a consequence of the TO not having planned in accordance with Good Industry Practice, for example, by not having planned sufficiently in advance its Outages for any defined time limit.

OC9.4.6 When submitting proposed Outages for inclusion in the CMPR, PMPR and IMPR, TO shall, unless they reasonably substantiate that an Outage is inflexible, specify:

OC9.4.6.1 an alternative preferred window, or alternative preferred windows, of opportunity within each year for any Outage;

OC9.4.6.2 the minimum Outage duration which would be acceptable, if less than the scheduled Outage duration;

OC9.4.6.3 situations where the paralleling of Outages of two or more of its Transmission Elements may be required, desirable, undesirable or not possible;

OC9.4.6.4 a priority order associated with the various Outages scheduled by the TO;

OC9.4.6.5 any Outages where it is particularly desirable that they should take place within the year scheduled; or

OC9.4.6.6 any Outage where its timing is dependent on a Generation Unit run hours.

OC9.4.7 Details of proposed Outages for Maintenance Year MY+3 to Maintenance Year MY+5 are required to signal adequately in advance major Outages which could impact on Capacity Adequacy or on the secure and economic operation of the Transmission System and are indicative only. In rolling over the Transmission Outage Programme Requirements from one year to the next TO shall not be constrained in making any submission by any previous IMPR.

OC9.4.8 Between 1st July and 31st August of Maintenance Year MY, the HTSO shall carry out a security analysis of Maintenance Year MY+1 to Maintenance Year MY+5 in light of proposed Outages and other relevant matters including Outages of Generation Units, Interconnection and load growth. In the event that TO’s Outages as proposed have a detrimental effect on system security or economy the HTSO will highlight the impact to
TO.

OC9.4.9 Any concerns which the HTSO may have with the Transmission Outage Programme Requirements must be notified to TO by the end of August in Maintenance Year MY.

OC9.4.10 Between the end of August in Maintenance Year MY and the end of September in Maintenance Year MY any concerns raised by the HTSO shall be discussed with TO. The HTSO will enter into discussions with TO in an attempt to find a resolution. The detailed consultation, feedback and arbitration process is shown in the diagram accompanying OC9.

OC9.4.11 The HTSO shall issue to TO a Transmission Outage Schedule for Maintenance Year MY+1 to Maintenance Year MY+5 by the fifth (5th) Business Day of November in Maintenance Year MY, comprising the Committed Transmission Outage Schedule (CTOS) for Maintenance Year MY+1, the Provisional Outage Schedule (POS) for Maintenance Year MY+2 and the Indicative Outage Schedules (IOS) for Maintenance Years MY+3 to MY+5.

OC9.4.12 On the first Business Day of July, Grid Connected Customers shall submit to the HTSO:

(i) Outages for Maintenance Year MY+1. Other than in the first year after the planning process has commenced, this will be based on the previous year’s submission for Maintenance Year MY+2, which period through the passage of time has now become Maintenance Year MY+1, and any changes may only reflect the Grid Connected Customers’ reasonable response to changed circumstances;

(ii) Outages for Maintenance Year MY+2.

(iii) Outages for Maintenance Year MY+3 to Maintenance Year MY+5.

OC9.4.13 Grid Connected Customers shall specify the start date and time and the duration of each Outage.

OC9.4.14 When submitting proposed Outages, Grid Connected Customers shall, unless they reasonably substantiate that an Outage is inflexible, specify:

an alternative preferred window, or alternative preferred windows, of opportunity within each year for any Outage;

the minimum Outage duration which would be acceptable, if less than the scheduled Outage duration;

any Outages where it is particularly desirable that they should take place within the year.
scheduled.

OC9.4.15 Any concerns which the HTSO may have with the Outage requirements of a Grid Connected Customer must be notified to the Grid Connected Customer by the end of August in Maintenance Year MY.

OC9.4.16 Between the end of August in Maintenance Year MY and the end of September in Maintenance Year MY any concerns raised by the HTSO shall be discussed with the Grid Connected Customer. The HTSO will enter into discussions with the Grid Connected Customer in an attempt to find a resolution.

OC9.4.17 The HTSO shall issue to the Grid Connected Customer an Outage schedule for Maintenance Year MY+1 to Maintenance Year MY+5 by the fifth (5th) Business Day of November in Maintenance Year MY, comprising the Outage schedule for Maintenance Year MY+1, Maintenance Year MY+2 and for Maintenance Years MY+3 to MY+5.

OC9.5 CHANGES TO THE COMMITTED TRANSMISSION OUTAGE SCHEDULE (CTOS) WITHIN THE IMPLEMENTATION YEAR MAINTENANCE YEAR MY

OC9.5.1 A request for a change to an Outage included in the CTOS or an additional Outage may be initiated either by the HTSO or by TO or by a Grid Connected Customer at any time.

OC9.5.2 Request initiated by the HTSO:

OC9.5.2.1 The HTSO may at any time request from TO a change in the timing or duration of any Outage of one of TO’s Transmission Elements in the CTOS.

OC9.5.2.2 TO may respond by either declining the request, or by agreeing to the request (in which case the CTOS shall be deemed to be amended accordingly). TO shall make every reasonable effort to co-operate with changes requested by the HTSO.

OC9.5.2.3 If TO responds by agreeing to the request subject to specific conditions, the HTSO may respond by either confirming agreement to those conditions, in which case the conditions specified by the TO shall be deemed to have been accepted, or by declining agreement. Where the HTSO agrees to the conditions the CTOS shall be deemed to be amended accordingly. Where the HTSO declines to agree to the conditions, then the HTSO may negotiate with the TO as to revised or alternative conditions, which would be acceptable.

OC9.5.3 Outage change initiated by a TO:
OC9.5.3.1 TO may at any time request the HTSO for a change in the timing or duration of any Outage of one of the TO's Transmission Elements in the CTOS.

OC9.5.3.2 Where a change to the CTOS is proposed by TO, the HTSO shall evaluate whether the change is likely to have a detrimental effect on the secure and economic operation of the Transmission System. This shall be done within a reasonable time frame, taking into consideration the extent of the change and the timing of the Outage.

OC9.5.3.3 Where, in the sole judgement of the HTSO, the request is not likely to have a detrimental effect on the secure and economic operation of the CTOS then the HTSO shall amend the CTOS accordingly. The TO shall be advised by the HTSO that the change has been accepted.

OC9.5.3.4 Where, in the sole judgement of the HTSO, the Outage change is likely to have a detrimental effect on the secure and economic operation of the Transmission System then the HTSO shall not amend the CTOS. The HTSO shall contact the TO and inform the TO that the change to the CTOS has not been accepted, the HTSO shall at the TO’s request enter into discussions with the TO to facilitate an alternative modification which may meet the requirements of the TO while not having an unacceptable effect on the secure and economic operation of the Transmission System. In the event that the TO wishes to avail of an alternative modification, it shall submit a change request in accordance with OC9.5.3.1.

OC9.5.3.5 Where the TO has been notified that the change to the CTOS has not been accepted, but in the view of the TO it must force the Transmission Element to be unavailable due to technical or safety issues, then the TO shall inform the HTSO immediately in accordance with the requirements to submit Declarations of Availability.

OC9.5.4 Outage change initiated by a Grid Connected Customer:

OC9.5.4.1 A Grid Connected Customer may at any time request the HTSO for a change in the timing or duration of one of its Outages.

OC9.5.4.2 Where a change to an Outage is proposed by a Grid Connected Customer, the HTSO shall evaluate whether the change is likely to have a detrimental effect on the secure and economic operation of the Transmission System. This shall be done within a reasonable time frame, taking into consideration the extent of the change and the timing of the Outage.

OC9.5.4.3 Where, in the sole judgement of the HTSO, the request is not likely to have a detrimental effect on the secure and economic operation of the Transmission System then the HTSO shall amend the Outage accordingly. The Grid Connected Customer shall be advised by the HTSO that the change has been accepted.
OC9.5.4.4 Where, in the sole judgement of the HTSO, the Outage change is likely to have a detrimental effect on the secure and economic operation of the Transmission System then the HTSO shall not amend the CTOS. The HTSO shall contact the Grid Connected Customer and inform the Grid Connected Customer that the change to the CTOS has not been accepted, the HTSO shall at the Grid Connected Customer’s request enter into discussions with the Grid Connected Customer to facilitate an alternative modification which may meet the requirements of the Grid Connected Customer while not having an unacceptable effect on the secure and economic operation of the Transmission System. In the event that the Grid Connected Customer wishes to avail of an alternative modification, it shall submit a change request in accordance with OC9.5.4.1.

OC9.6 OTHER INFORMATION TO BE NOTIFIED

OC9.6.1 The HTSO may, where the secure and economic operation of the Transmission System would be at risk, request alterations to maintenance notified under OC9.5.1. The HTSO shall make reasonable endeavours to give as much notice as possible for such requests for alterations. Where the HTSO makes such a request, the TO shall comply with the request in arriving at the TO's final programme for such maintenance.

OC9.6.2 The DSONetwork Operator and Grid Connected Customers shall co-operate with the HTSO in all phases of Outage planning to promote and ensure system security.