

Grid Code Awareness Program: Operating Code 2 : Outage And Other Related Planning-Transmission Outage

By :

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**The Malaysian Grid Code Awareness Programme Funded by
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Operating Codes No.2 (OC2): Outage and Other Related Planning

1. Introduction
2. Objective of OC2
3. Scope
4. ICOMS
5. Procedures

Introduction

OC2.1 Introduction

OC2.1.1 Operating Code No. 2 (OC2) is concerned with the coordination between the GSO and Users through the various time scales of planned outages of Plant and Apparatus on User's Systems which may affect the operation of the Grid System and/or require the commitment of (alternative) resources by the GSO.

Objectives of OC2

OC2.2 Objectives

OC2.2.1 The objectives of OC2 are to:

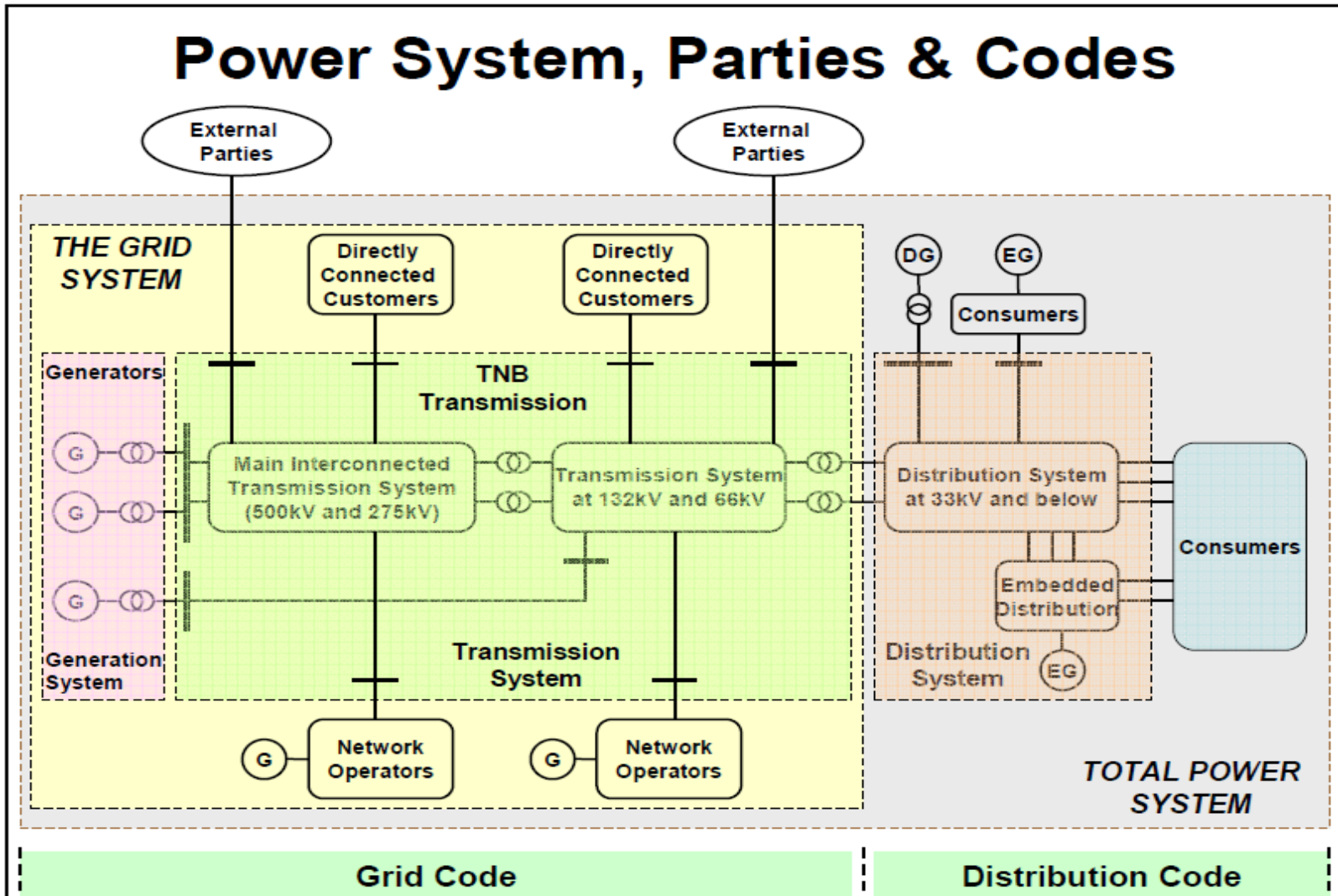
- (1) Enable the GSO to coordinate generation and transmission outages to achieve economic operation and minimise constraints;
- (2) to set out procedure including information required and a typical timetable for the coordination of planned outage requirements for Generators;
- (3) to set out procedure including information required and a typical timetable for the coordination of planned outage requirements for other Users that will have an effect on the operation of the Grid System; and
- (4) to establish the responsibility of the GSO to produce an Operational Plan on the Grid System.

OC2.3 Scope

OC2.3.1 This Code applies to the GSO and the following Users:

- (1) All Generators with CDGUs;
- (2) All Generators with Generating Units not subject to Dispatch by the GSO, with total on-site generation capacity equal to or above 30MW where the GSO considers it necessary;
- (3) TNB Transmission;
- (4) Distributors;
- (5) Directly Connected Customers where the GSO considers it necessary;
- (6) Network Operators; and
- (7) Interconnected Parties.

Model Used in MGC



ICOMS-Integrated Commissioning & Outage Management System

ICOMS

ICOMS-Integrated Commissioning and Outage Management System

Tool to request, process, approve and produce report for outages.

Developed in-house by Cik Roslina Md Yassin

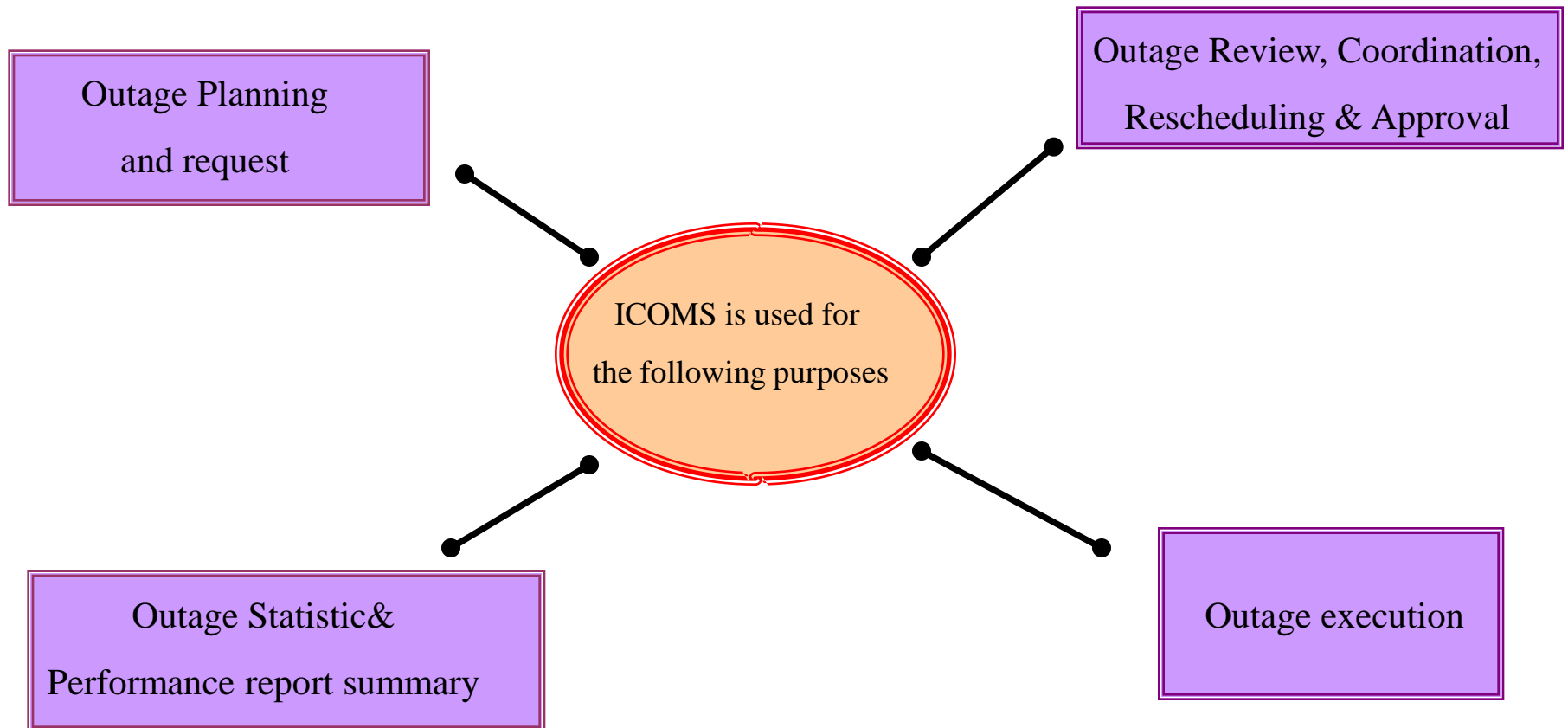
It has 3 main modules – Transmission Outage, Project Outage and Generator Outage.

Project started in 2009 and 1st version was rolled out on Jan 2010.

2nd Version rolled out on Jun 2010

3rd version rolled out in Sept 2011 and it was a major revamp of ICOMS ver. 2 due to the MGC requirements.

Function of ICOMS



ICOMS: Login page

Integrated Commissioning and Outage Management System (ICOMS)



Outage Guideline

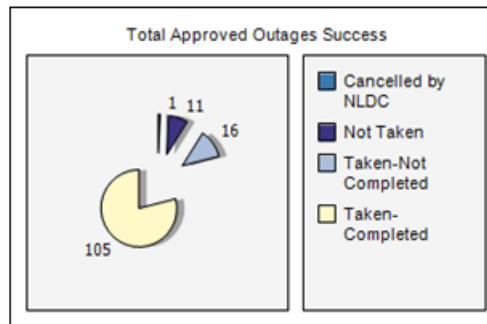
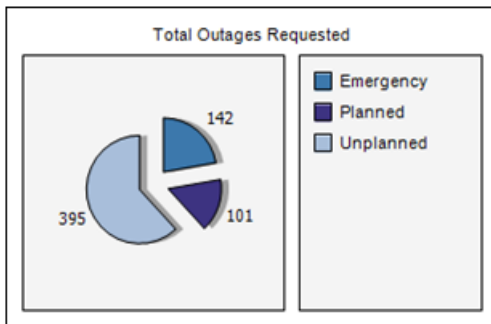
Transmission Outage Process

Commissioning Database

Generator Outage Process

As of Today for May 2013

Total : 838



Log In

Username:

Password:

Remember me next time.

[Forgot Password?](#) [New Registration?](#)

DATE SLOT AVAILABILITY

Request slots have been limited to 30 requests per day. Please check the date before proceed.

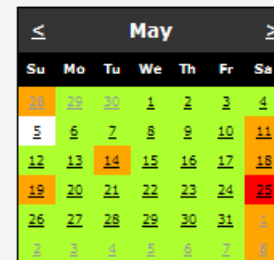
LEGEND:

- No available slot
- Running Low
- Still available
- No request

CHECK FOR OUTAGE INFORMATION

Start Date: Station:

Start/End Date	Region/Station	Equipment Info	Request Status / NLDC Progress Status
Monday ,May 13 2013 8:00AM Monday ,May 13 2013 10:00PM	SELG /KPAR	275kV North Bus Additional Equipment:	Approved / Pending Job Description: Routine Maintenance Routine Maintenance Prot (Busbar MNT) (PIC Amirul 019-8842101) Study Remark:
Monday ,May 13 2013 8:30AM Monday ,May 13 2013 5:30PM	NSEM /KPLH	132KPLHSPTG1 Additional Equipment:	Pending / Pending Job Description: Routine Maintenance Routine Maintenance; To perform primary and secondary routine maintenance including condition monitoring works. Study Remark:
Monday ,May 13 2013 9:00AM Monday ,May 13 2013 6:00PM	PPNG /BLIN	132/33kV 45MVA T1 Additional Equipment:	Approved / Pending



PROCEDURES

PLANNED OUTAGE

OC2.4.2. Grid Owner

OC2.4.2 Grid Owner

OC2.4.2.1 In each Year, by the end of September of Year 0, Grid Owner shall provide the GSO with an "Indicative Transmission Outage Schedule" which covers Year 1 up to Year 5. The schedule will contain the following information:

- (1) details of proposed outages of transmission equipment on Transmission System;
- (2) details of any trip testing and risk of any transmission equipment trip associated with each trip test;
- (3) details of identifiable risk of transmission equipment trip arising from the work carried during the outage; and
- (4) other information known to Grid Owner which may affect the reliability and security of the Grid System.

OC2.4.2.2 Grid Owner

OC2.4.2.2 In each calendar year by the end of September of Year 0, Grid Owner shall provide the GSO with a “Provisional Transmission Outage Schedule” which covers Year 1 on a daily basis which for the avoidance of doubt means providing information for each day of Year 1 beginning 1st of September and ending 31st of August. This schedule shall be submitted, in a format agreed by the GSO, and takes account of the Operational Plan described in OC2.5, comprising of:

- (1) type of transmission outages;
- (2) the period of each outage consistent with the Operational Plan;
and
- (3) any other outages as required by statutory organisations or for statutory reasons.

OC2.4.3 Network Operators and Distributors

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OC2.4.3.1 In each calendar year, by the end of September of Year 0, each Network Operator or Distributor shall provide the GSO with an "Indicative Network Outage Schedule" which covers Year 1 up to Year 5. The schedule will contain the following information:

- (1) details of proposed outages on their Systems which may affect the performance of the Grid System or requiring switching operation in the Grid System;
- (2) details of any trip testing and risk of it causing trip of any transmission equipment in the Grid System;
- (3) other information known to the Network Operator or the Distributor which may affect the reliability and security of the Grid System.

OC2.4.3.2 Network Operators or Distributors shall submit details of any changes made to the information provided above to the GSO as soon as practicable.

OC2.4.4 Directly Connected Customers

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OC2.4.4.1 Each Directly Connected Customer upon the request of the GSO shall provide the GSO within a reasonable time period agreed with the GSO an "Indicative Network Outage Schedule" which covers Year 1 up to Year 5 that will contain the following information:

- (1) details of proposed outages on their Systems which may affect the performance of the Grid System or requiring switching operation in the Grid System;
- (2) details of any trip testing and risk of it causing trip of any transmission equipment in the Grid System;
- (3) other information known to the Directly Connected Customer which may or may affects the reliability and security of the Grid System.

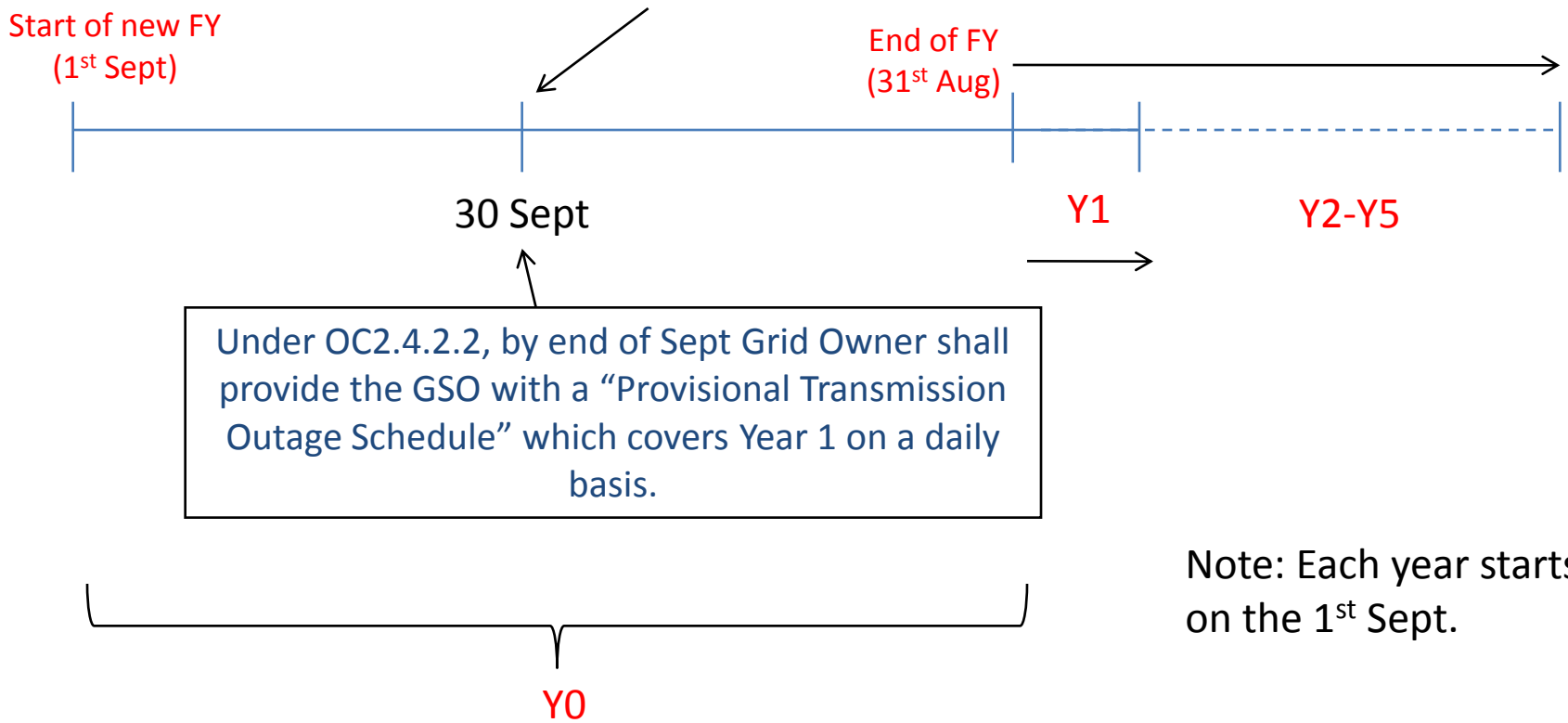
OC2.4.4.2 Following submission of the above information, the Directly Connected Customers shall inform the GSO the details of any changes made to the information as soon as practicable.

OC2.4.5 Interconnected Parties

OC2.4.5.1 Because Interconnected Parties have knowledge of both generation and transmission outages on the Power Systems they are involved with, it is the responsibility of the Single Buyer and GSO to ensure that agreements are put in place and reviewed regularly with each Interconnected Party for exchange of information on operation in the Interconnected Party's System that may effect the Grid System.

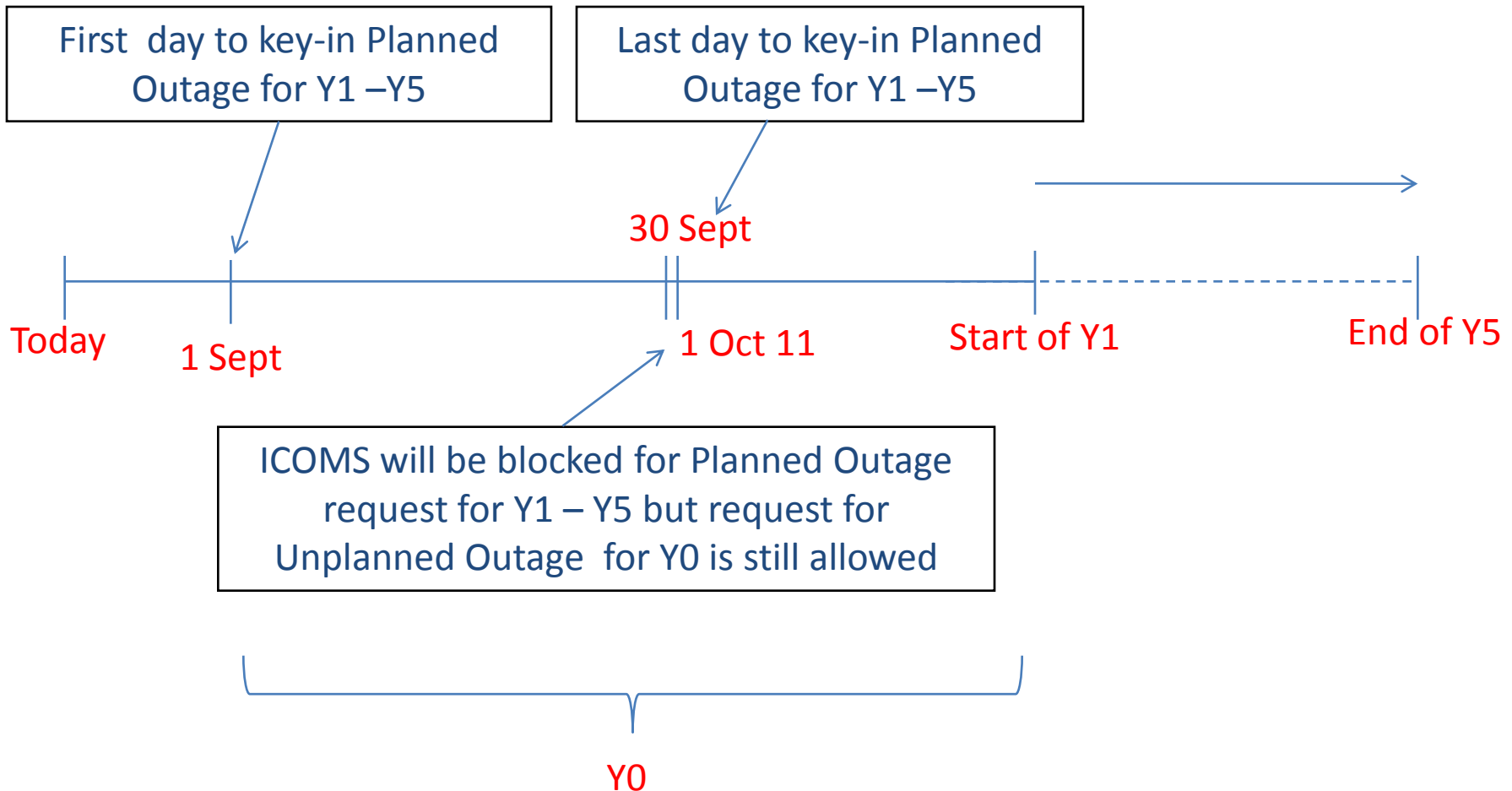
OC2.4 Submission Of Planned Outage Schedules by Users - summary

Under OC2.4.2 -2.4.4, by end of Sept Grid Owner, Network Operator & Distributor and Directly Connected Customer shall provide the GSO with an “Indicative Transmission Outage Schedule” which covers Year 1 to Year 5.



Note: Each year starts on the 1st Sept.

Planned Outage Request in ICOMS in Y0



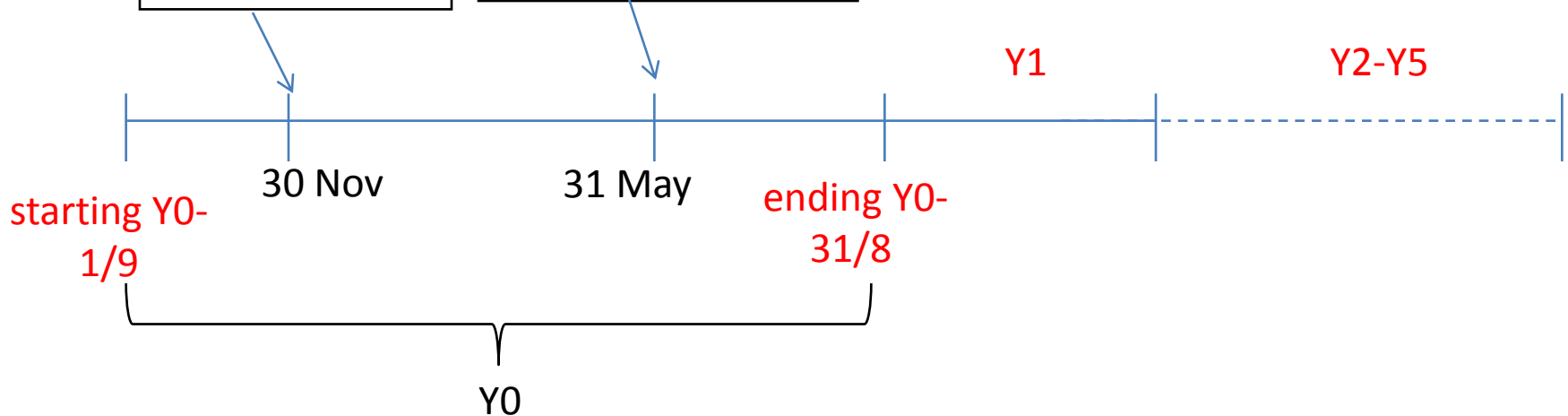
PLANNED OUTAGE -Action by GSO

OC2.6 Planning Of Transmission Outage by GSO

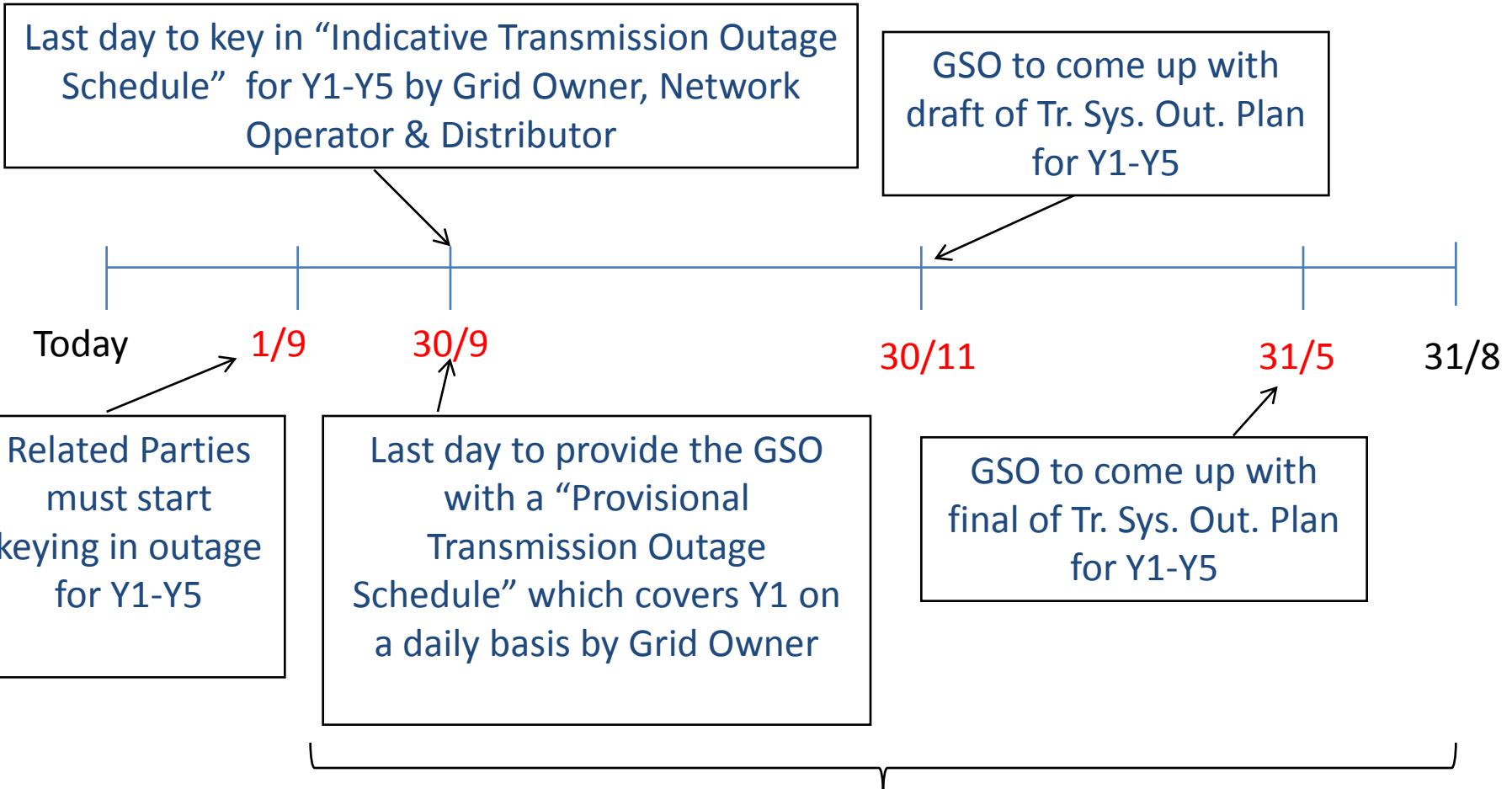
OC2.6.1 GSO will have to prepare a

2.6.1.3 Draft of Tr. Sys. Outage Plan for Y1-Y5

2.6.1.6 Final Tr. Sys. Outage Plan covering Y1 to Y5



Summary of Planned Outage Submission and Planning



Note: Each year starts on the 1st Sept.

Y0

UNPLANNED OUTAGE - Short Duration Unplanned Outage

OC2.6.2 Operational Planning Timescales for Y0 – Unplanned Outage

OC2.6.2.6 There may be a requirement to undertake an unplanned outage which in this OC2 means a maintenance outage not included in the Final Operation Plan established by the GSO by the end of May of Year 0. Where an Unplanned Outage has a duration of two (2) days or less it is termed a Short Duration Unplanned Outage.



Notification For Unplanned Outage

OC2.6.2.7 The required notification of a Short Duration Unplanned Outage by the Grid Owner depends on the duration of the outage and the plant or apparatus or equipment being taken out of service. For plant or apparatus or equipment taken out of service other than as provided for in OC2.6.2.8 the following provisions apply:

- (1) For outages of less than one (1) day, the notification period should be not less than fourteen (14) business days before the earliest start date.
- (2) For outages whose duration is more than one (1) day but not more than two (2) days, the notification period should be not less than one (1) calendar month before the earliest start date.

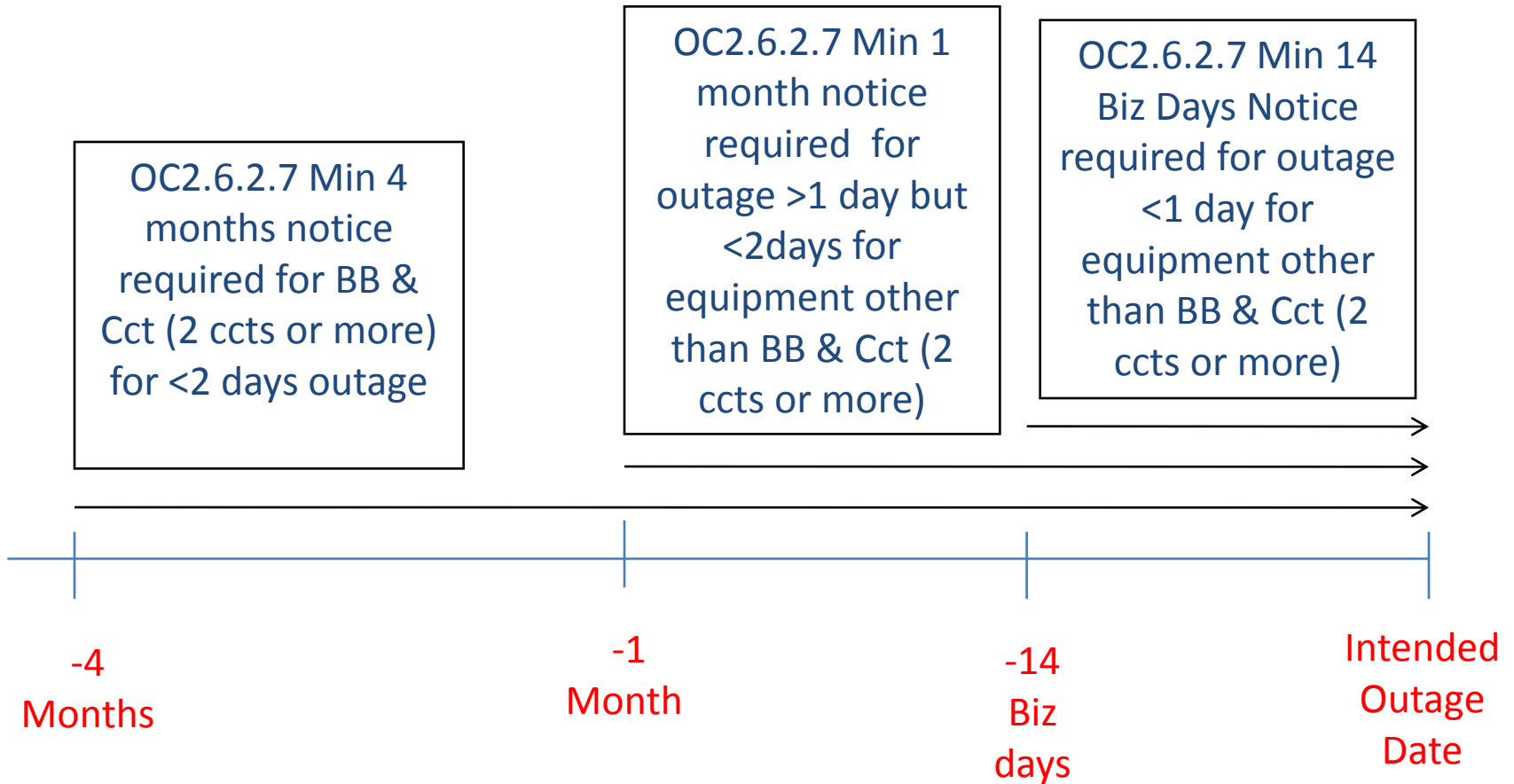
OC2.6.2.7 For outages of a substation busbar or all circuits on a right-of-way (which may be two (2) or more circuits on that right-of-way), notification for a Short Duration Unplanned Outage should not be less than four (4) calendar months before the earliest outage date.

1-Outage notification depends on plant/apparatus and outage duration.

**2- Plants - BB or circuits (for 2 or more)
-other than BB or circuits (for 2 or more)**

**3-Outage duration - <1 day
- >1 day but <2 days**

OC2.6.2 Notification required for Unplanned Outage



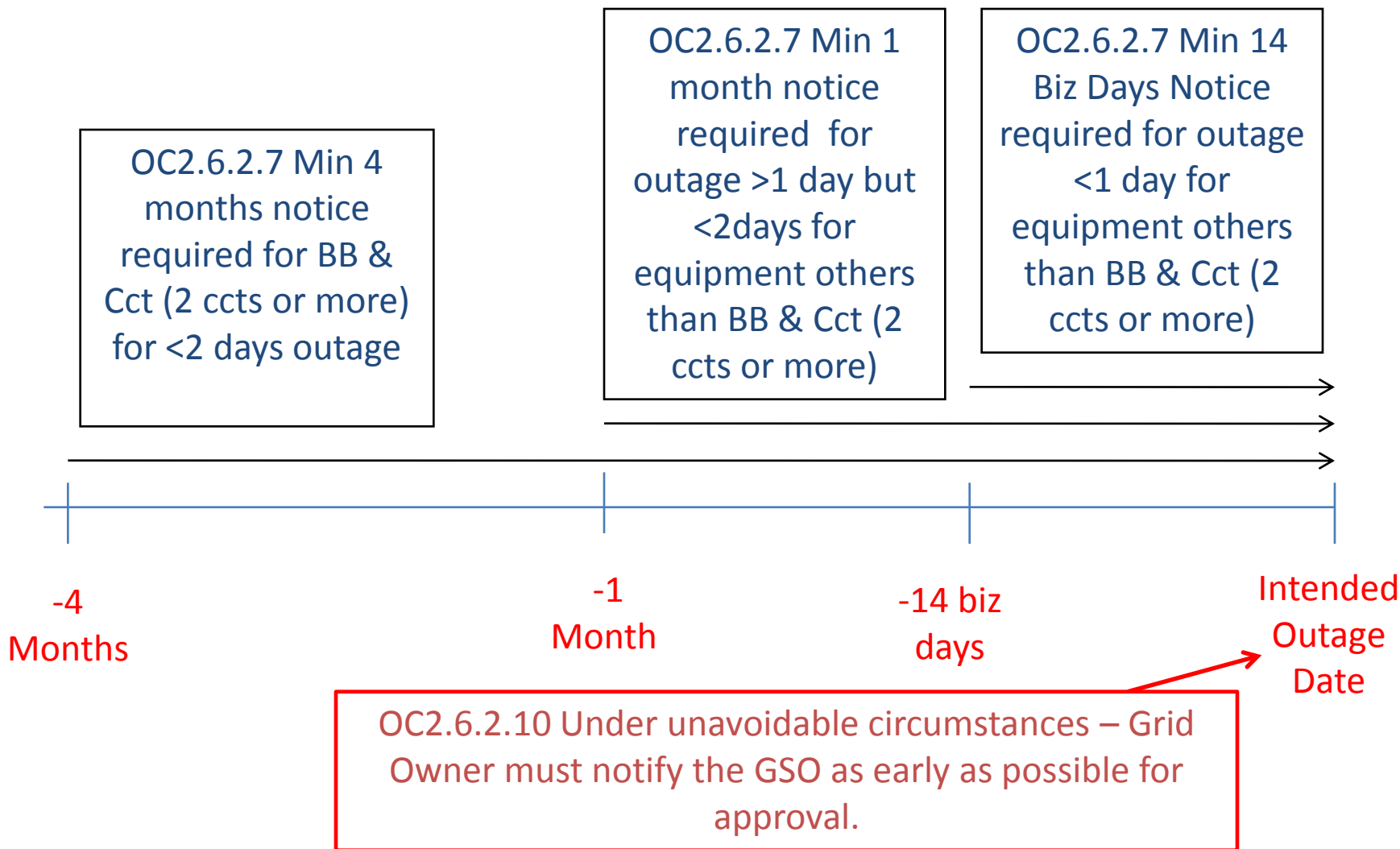
UNPLANNED OUTAGE - Other Than Short Duration Unplanned Outage

OC2.6.2.10 Unplanned Outage- other than Short Duration Unplanned Outage

OC2.6.2.10 Where due to unavoidable circumstances the Grid Owner needs to arrange an Unplanned Outage (other than Short Duration Unplanned Outage) then the Grid Owner must give as early as possible notification of the Unplanned Outage and submit it to the GSO for approval. This will normally be provided in writing but where this is not possible, it may be provided by telephone or other electronic means provided that it is acknowledged by both the parties i.e. the GSO and the Grid Owner. Notification must provide:

- (1) full details of all Plant and Apparatus affected by temporary capacity restrictions;
- (2) the expected start date and start time of the Unplanned Outage;
- (3) the estimated return to service time and date of the Plant and Apparatus affected, and the time and date of the removal of any temporary capacity restrictions; and
- (4) details of possible restrictions, or risk of trip, on other Plant and Apparatus due to the Unplanned Outage.

OC2.6.2.10 Required Notification for Unplanned Outage- other than Short Duration Unplanned Outage

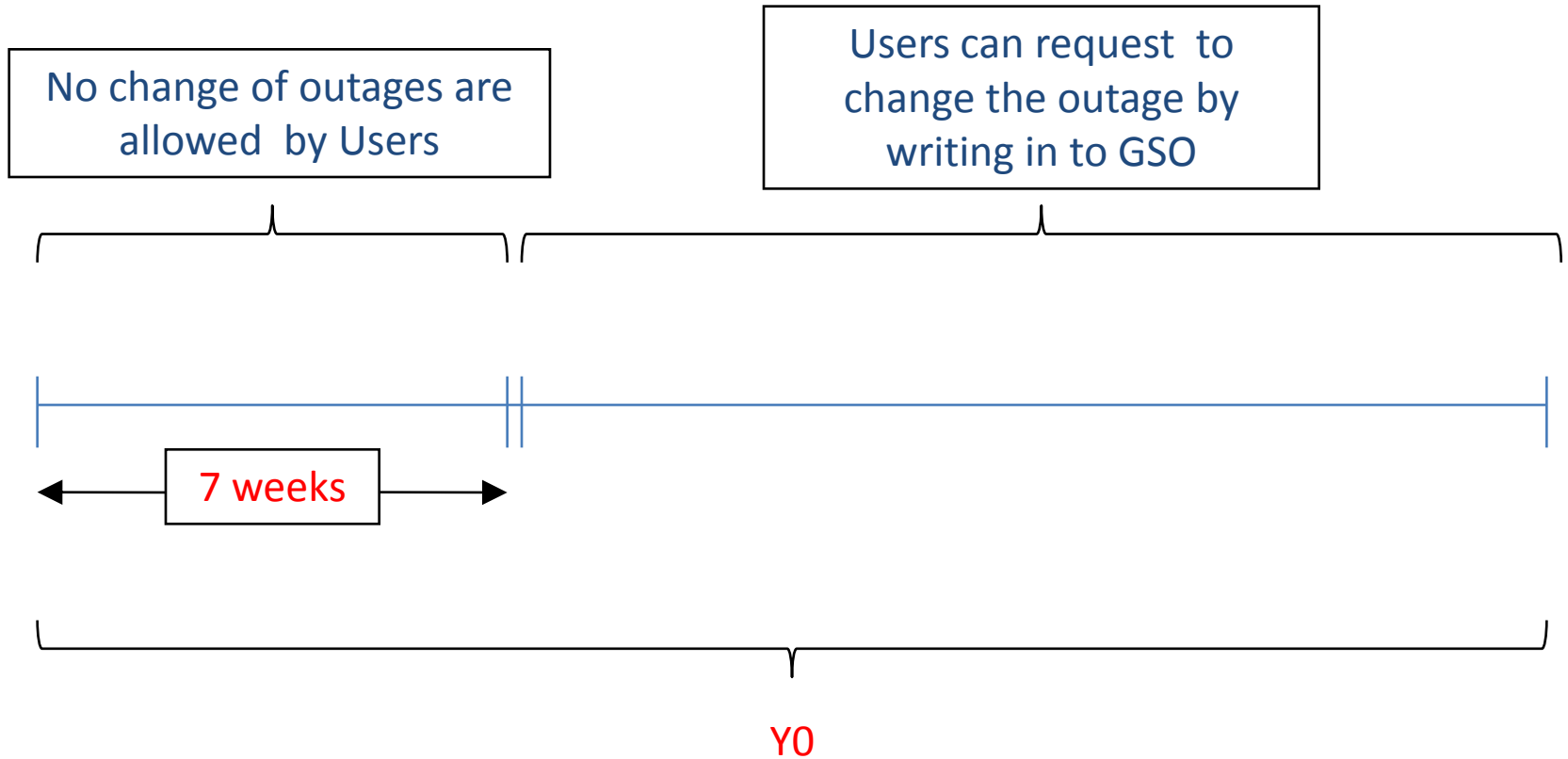


Request For Changes Of Outages

OC2.6.2.2- Request for changes of outages

OC2.6.2.2 Each User may at any time during Year 0 request the GSO in writing for changes to the outages defined by them under OC2.4 in relation to that part of Year 0, excluding the period 1-7 weeks from the date of request, the GSO shall determine whether the changes are possible and shall notify the User in question whether this is the case as soon as possible, and in any event within fourteen (14) days of the date of receipt by the GSO of the written request in question.

OC2.6.2.2- Request for changes of outages



Programming Phase

OC2.7.1 Outage Report

OC2.7.1 The GSO shall prepare a preliminary outage programme for the eighth (8th) week ahead, a provisional plan for seven (7) week ahead, firm plan for one (1) week ahead and the Day Ahead plan.

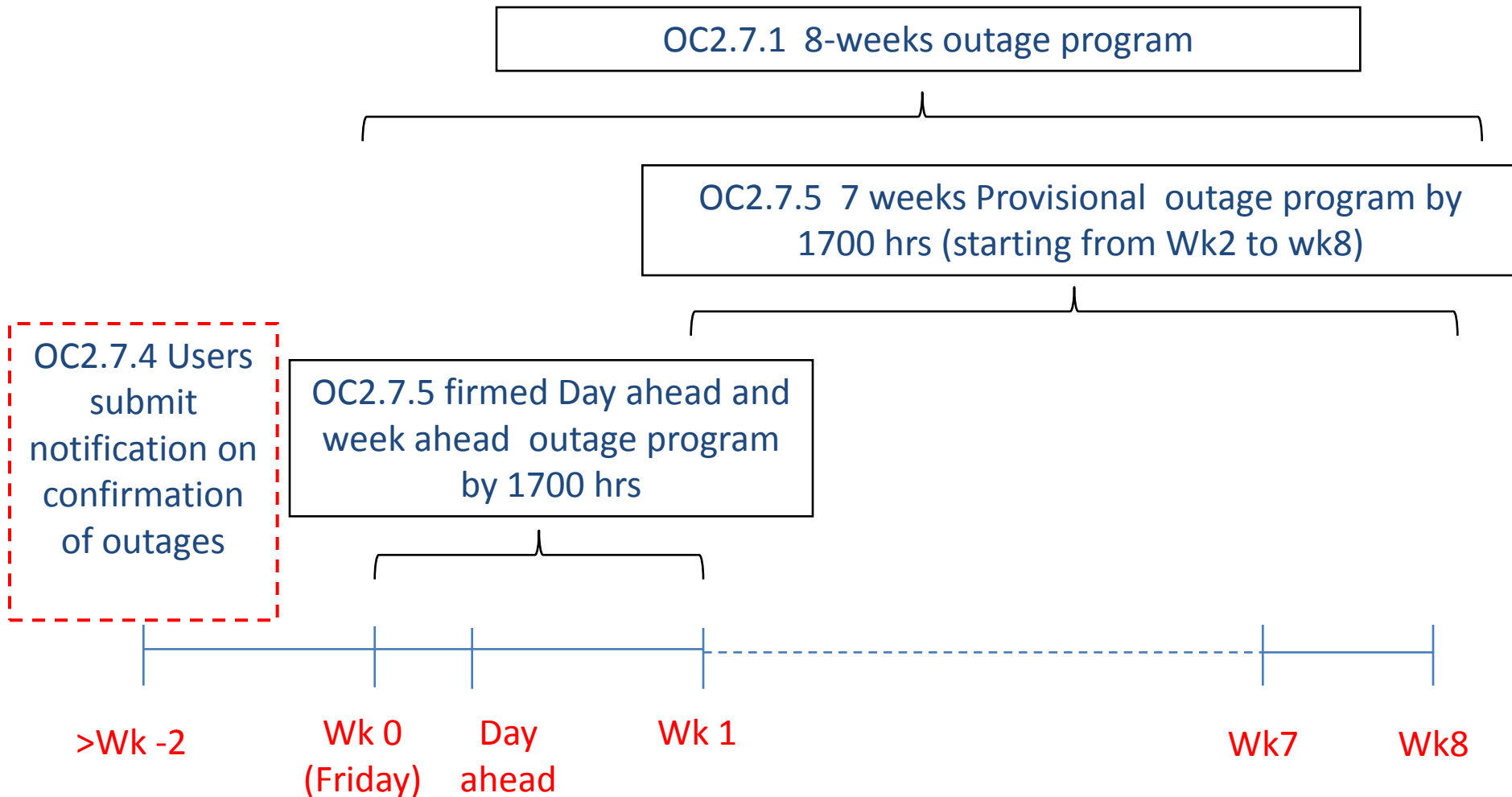
OC2.7.5 By 1700 hours each Friday the GSO shall prepare:

- (1) Seven (7) week ahead provisional outage programme;
- (2) One (1) week ahead firm outage programme; and
- (3) A Day Ahead outage programme for the weekend through to the next normal Working Day.

OC2.7.4 Outage Confirmation

OC2.7.4 Users shall submit to the GSO, notification on confirmation of outages involving their Systems in not less than two (2) weeks prior to the date of each outage.

OC2.7 Programming Phase-Summary



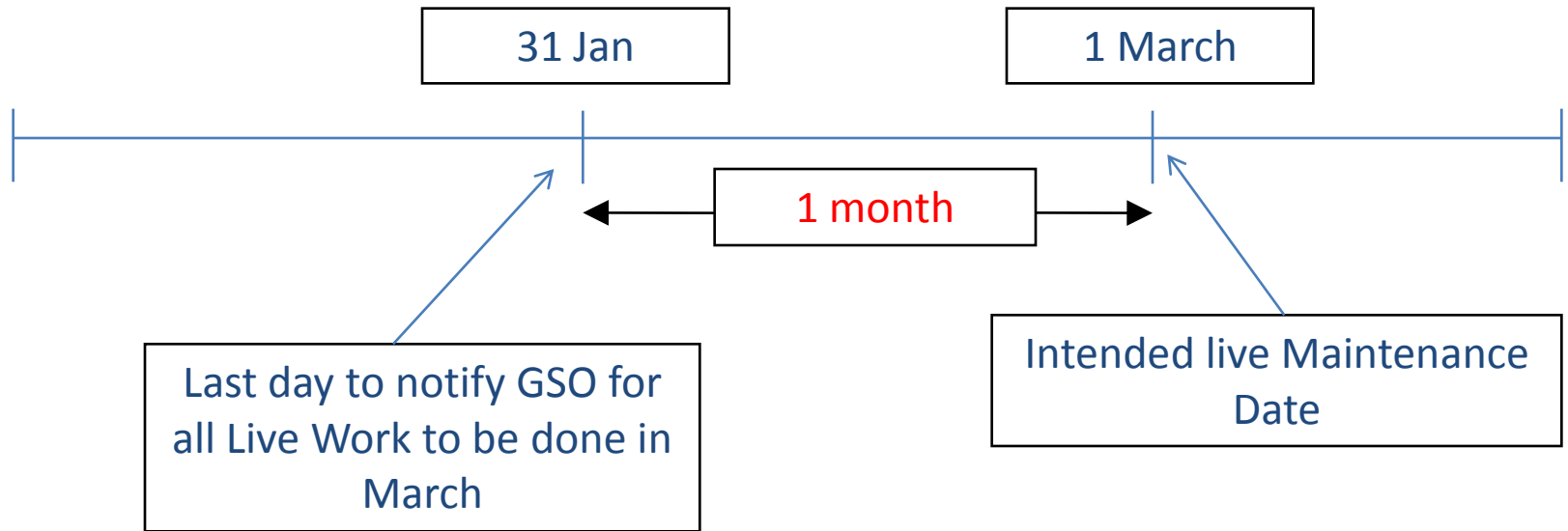
Live Apparatus Working

OC2.8.1 Scheduled Live Apparatus Working

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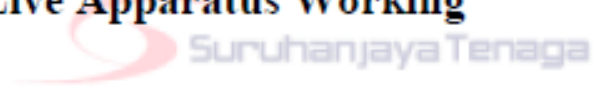
OC2.8.1.1 Where the Grid Owner wishes to undertake Live Apparatus Working within its planned maintenance schedule it will inform the GSO of the requirement at least one (1) month prior to the intended start date. The GSO having due regard to the integrity and security the Grid System and safety will either agree or refuse the request. If the GSO refuses the request it will discuss the intended start and completion date of the proposed works with the view to agreeing revised intended start and completion dates with the Grid Owner.

OC2.8.1 Scheduled Live Apparatus Working...cont



OC2.8.2 Unplanned Live Apparatus Working

OC2.8.2 Unplanned Live Apparatus Working



OC2.8.2.1 Where the Grid Owner in unavoidable circumstances finds it necessary to carry out Live Apparatus Working under circumstances other than as described in OC2.8.1 it will inform the GSO of its intention to carry out such Live Apparatus Working giving the intended start time and date and seeking acceptance by the GSO. The GSO having due regard to the integrity and security of the Grid System and safety will either accept or refuse the request. Acceptance will not be unreasonably withheld.

OC2.8.2.2 In the event that safety of personnel or Plant or Apparatus or Equipment or the Total System is likely to be prejudiced by the proposed Live Apparatus Working it will not be undertaken.

OC2.8.3 Live Apparatus Working at the request of the GSO

OC2.8.3 Live Apparatus Working at the Request of the GSO

OC2.8.3.1 Where the GSO following examination of the Transmission Outage Plan determines that a scheduled outage might need to be refused because it might prejudice the security and integrity of the Grid System and following discussion with the Grid Owner alternative outage dates cannot be agreed, the GSO may request the the Grid Owner to undertake Live Apparatus Working having due regard to the alternate security and integrity of the Grid System imposed by Live Apparatus Working in replacement of the outage.

OC2.8.3.2 The Grid Owner having due regards to all circumstances pertaining, as a result of the change from an outage to Live Apparatus Working, shall accept or reject such request. Acceptance will not be unreasonably withheld.



THANK YOU



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