
 <b>CALIFORNIA ISO</b> <small>California Independent System Operator</small>	<b>TRANSMISSION  MAINTENANCE  PROCEDURES</b>	<b>Procedure No.</b>	<b>3</b>		
		<b>Standard Maintenance Reporting System (SMRS)</b>		<b>Version Number</b>	<b>3</b>
				<b>Approved Date</b>	<b>7/21/05</b>
				<b>Effective Date</b>	<b>7/21/05</b>

# Standard Maintenance Reporting System (SMRS)

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### **3.1 PURPOSE**

Sections 2.4 and 6.2 of Appendix C, prescribes the need for a Standard Maintenance Report (SMR) format. New PTOs should develop a final Standard Maintenance Reporting System (SMRS) before the end of their third year under ISO Operational Control. In addition, Section 6.2 allows PTOs to present a SMR to the ISO, in either electronic or paper format.

### **3.2 SCOPE**

This procedure describes the development of a SMRS and the SMRS criterion to ensure PTOs consistently gather and deliver useful information. Keeping a SMRS functional is an ongoing process and as such, this system should evolve through regular and ongoing enhancements. These enhancements may include, but are not limited to content, format, and data collection frequency.


### **3.3 FORMATS**

#### **3.3.1 Spreadsheets**

A spreadsheet format will provide a summary of Maintenance activities performed during the reporting period (see Table 1). These listed activities represent summary level data as described in each PTOs Maintenance Practices.

Since each PTOs Maintenance Practices and record keeping methods are different, there may be some disparity in data submittals. For example, one utility may record Transmission Line Circuit patrols by circuit, while another may record the same activity by structure. Footnotes may be inserted on the spreadsheet as needed.

Each data file shall contain 8 columns: Equipment Type, No.of Facilities, Maintenance Task, Maintenance Unit, Planned, Actual, Exception from Planned, and Notes. See Table 1 for example of a SMRS spreadsheet form.

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### 3.3.2 Text

Text documents if utilized, will contain the following information:

- Reason for differences between a PTO's Maintenance Practices and the submitted spreadsheet summary
- Any explanation of the spreadsheet data
- A discussion of actions or activities planned for future years.

## 3.4 SCHEDULE

### 3.4.1 Planning SMR

A Planning SMR for the current year should be created during the first quarter of each calendar year to estimate the number of substantial Maintenance activities anticipated for completion during the current year. This SMR encourages advanced planning and provides timely comparison of Maintenance activity in prior years. The PTO, the effective year of the report, and SMRS\_Planning shall be incorporated into the file name in that order (e.g. SCE1998SMRS\_Planning.xls).


The ISO may informally report to a PTO any identified trends and observations resulting from the comparison of previous SMRs.

### 3.4.2 Actual SMR

An Actual SMR (with text) for the previous calendar year will be submitted to the ISO by March 1<sup>st</sup> of the following calendar year. The PTO, the effective year of the report, and SMRS\_Actual shall be incorporated into the file name in that order (e.g. SCE1998SMRS\_Actual.xls).


### 3.4.3 Midyear Actual SMR

A midyear Actual SMR (w/o text) for January 1 through June 30 of the current calendar year should be submitted to the ISO by Sept 1, but may be requested by the ISO no later than July 1. The ISO will specify the equipment types to be included in this version. The PTO, the effective year of the report, and SMRS\_Midyear shall be incorporated into the file name in that order (e.g. SCE1998SMRS\_Midyear.xls).

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### **3.5 SMRS REPORT DEFINITIONS**


<b><u>Column Heading</u></b>	<b><u>Definition</u></b>	<b><u>Sample Input</u></b>
Equipment Type	Asset name and/or Maintenance description. Based on lists from TCA Appendix C Section 5.2	Line Patrol/Inspection Circuit Breaker
No. of Facilities	Number of equipment in the population. Annotate when number includes non-ISO facilities. A separate line item shall be used.	105 Circuits 1000 Transformers
Maintenance Task	Description of task. One or more per Equipment Type. Varies between PTOs consistent with their filed maintenance practices.	Trees Removed Oil Tests
Maintenance Unit	Unit maintenance will be tracked by. (Planned and Actuals) varies between PTOs	Circuits Breakers Structures
Planned	Annual number of tasks planned for the year. NA when planning is not applicable to the Maintenance task.	A number or "NA"
Actual	Actual number of tasks completed. Cumulative for the year.	A number
Exception From Planned	Text describing exceptions or differences between planned and actual	"Winter storm prevented completing all line patrols. Will not impact reliability. Remainder of circuits will be patrolled in following year."
Notes	Text to provide information NOT related to exceptions	"Insulator inspections included in line patrol task"

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**TABLE 1 (SMR Example Spreadsheet Format)**


Each PTO's inspection and Maintenance Practices and records differ in format. Therefore, there may be some difference in data provided by each PTO. For example, one utility may record transmission line patrol by circuit, while another may record the data by structure. It is suggested to follow this example format. However, modifications to Maintenance Tasks and Maintenance Units are allowed by the ISO to accommodate the PTO in adapting their specific reporting formats.

EQUIPMENT TYPE	NO. OF FACILITIES	MAINTENANCE TASK	MAINTENANCE UNIT	PLANNED	ACTUAL	EXCEPTION FROM PLANNED	NOTES
<b>Line Patrol/Inspection</b>			Circuit				
		<b>Inspection</b>					
		Ground Patrols	Circuit				
		Patrols	Circuit				
		IR/Aerial Patrols	Circuit				
<b>Vegetation Management/Right-of-way Maintenance</b>		Climbing/Special	Circuit				
			Trees				
		<b>Inspection</b>					
		Trees Trimmed	Trees				
		Trees Removed	Trees				
<b>Structures: Wood pole, lattice steel, tubular steel, concrete pole</b>			Structure				
		<b>Inspection</b>					
		Testing	Pole				
		<b>Maintenance</b>					
		Wood Pole Treatment	Pole				
	Repair	Pole					
	Replace	Pole					

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EQUIPMENT TYPE	NO. OF FACILITIES	MAINTENANCE TASK	MAINTENANCE UNIT	PLANNED	ACTUAL	EXCEPTION FROM PLANNED	NOTES
<b>Insulators (contamination control)</b>			Structure				
		Wash Insulators	Structure				
<b>Underground Line Patrol/Inspection</b>			Circuit				
		<b>Inspection</b>					
		Routine	Circuit				
		Detailed	Circuit				
<b>Circuit Breakers</b>			Breaker				
		<b>Inspection</b>					
		Visual	Breaker				
		Infrared	Breaker				
		<b>Diagnostics</b>					
		Air/SF6 Gas Moisture Tests	Breaker				
		Doble Tests	Breaker				
		<b>Maintenance</b>					
		Overhauls	Breaker				
		Non-Routine Response	Breaker				
<b>Transformers</b>			Transformer				
		<b>Inspection</b>					
		Visual	Transformer				
		Infrared	Transformer				
		<b>Diagnostics</b>					
		TCG Oil Test	Transformer				
		DGA Oil Test	Transformer				
		Doble Test	Transformer				
		<b>Maintenance</b>					
		LTC Overhaul	Transformer				
	Non-Routine Response	Transformer					

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EQUIPMENT TYPE	NO. OF FACILITIES	MAINTENANCE TASK	MAINTENANCE UNIT	PLANNED	ACTUAL	EXCEPTION FROM PLANNED	NOTES
<b>Insulators /Bushings /Arrestors (contamination control)</b>		Wash Insulators	Switchyards				
		Grease Bushings	Apparatus				
<b>Regulators</b>		<b>Inspection</b>					
		Visual	Regulators				
		Infrared	Regulators				
		<b>Diagnostics</b>					
		TCG Oil Test	Regulators				
		DGA Oil Test	Regulators				
		Doble Test	Regulators				
		<b>Maintenance</b>					
		Overhaul	Regulators				
		Non-Routine Response	Regulators				
<b>Relaying</b>			Relays				
		<b>Maintenance</b>					
		Relay Calibration	Relays				
		Relay Trip Test	Relays				
		Non-Routine Response	Circuit				
<b>Reactive Devices: Shunt Capacitors</b>			Capacitor				
		<b>Inspection</b>					
		Visual	Capacitor				
		Infrared	Capacitor				
		<b>Maintenance</b>					
	Non-Routine Response	Capacitor					

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EQUIPMENT TYPE	NO. OF FACILITIES	MAINTENANCE TASK	MAINTENANCE UNIT	PLANNED	ACTUAL	EXCEPTION FROM PLANNED	NOTES	
<b>Series Capacitors</b>			Capacitor					
		<b>Inspection</b>						
		Visual	Capacitor					
		Infrared	Capacitor					
		<b>Maintenance</b>						
		Non-Routine Response	Capacitor					
	<b>Shunt Reactors</b>			Reactor				
			<b>Inspection</b>					
		Visual	Reactor					
		Infrared	Reactor					
		<b>Diagnostics</b>						
		TCG Oil Test	Reactor					
		DGA Oil Test	Reactor					
		Doble Test	Reactor					
		<b>Maintenance</b>						
		Non-Routine Response	Reactor					
	<b>Tertiary Reactors</b>			Reactor				
			<b>Inspection</b>					
		Visual	Reactor					
		Infrared	Reactor					
		<b>Maintenance</b>						
		Non-Routine Response	Reactor					
<b>Other</b>								