Revisions to this document shall be communicated in accordance with program document AM-EU-P034 to ensure alignment between PCM Templates and field work procedures.

Padmount Transformers						
Component Classification Category						
Criticality	I	X				Critical Locations (airports)
	II		X			Locations close to schools, playgrounds
	III			X		All other locations
Duty Cycle	Heavy Load	N/A	N/A	N/A		
	Normal Load	N/A	N/A	N/A		
Service Condition	In Service	N/A	N/A	N/A		
	Spare	N/A	N/A	N/A		
Condition Monitoring Tasks		**Task Frequencies**			**Failure Codes**	**Comments**
Visual Inspection (external)		**5Y**	**1Y**	**10Y**	**2a-c, 3f**	
Failure Finding Tasks		**Task Frequencies**			**Failure Codes**	**Comments**
None		**N/A**	**N/A**	**N/A**		
Time Directed Tasks		**Task Frequencies**			**Failure Codes**	**Comments**
Security Check		**5Y**	**1Y**	**10Y**	**2f**	
Condition Directed Tasks		**Task Frequencies**			**Failure Codes**	**Comments**
None		**N/A**	**N/A**	**N/A**		

FAILURE MODES	FAILURE CAUSES	MAINTENANCE TASKS
1. Fails to Provide Adequate Cooling	1a. Overload	Ammeter Reading
1. Fails to Provide Adequate Cooling	1b. Debris in Manhole	Visual Inspection
2. Fails to Maintain Boundary/Structural Integrity	2a. Gasket Failure	Visual Inspection
2. Fails to Maintain Boundary/Structural Integrity	2b. Weld Failure	Visual Inspection
2. Fails to Maintain Boundary/Structural Integrity	2c. Tank Corrosion	Visual Inspection
2. Fails to Maintain Boundary/Structural Integrity	2d. Loose Connections	Visual Inspection
2. Fails to Maintain Boundary/Structural Integrity	2e. Tank Over Pressurization	Visual Inspection
2. Fails to Maintain Boundary/Structural Integrity	2f. Locking Mechanism Failure	Security Check
3. Fails to Provide Adequate Insulation Level	3a. Insulation Oil Breakdown	Thermography
3. Fails to Provide Adequate Insulation Level	3a. Insulation Oil Breakdown	Dielectric Test
3. Fails to Provide Adequate Insulation Level	3b. Loss of Oil	Visual Inspection
3. Fails to Provide Adequate Insulation Level	3c. Solid Insulation Failure	Thermography
3. Fails to Provide Adequate Insulation Level	3d. Winding Insulation Failure	Thermography
3. Fails to Provide Adequate Insulation Level	3e. Bushing Failure	Thermography
3. Fails to Provide Adequate Insulation Level	3f. Vegetation/Animal Intrusion	Visual Inspection

TASK	DEFINITION
Ammeter Reading	Obtain peak amperage readings at Spot Network transformer to monitor load.
Dielectric Test	Analyze dielectric strength of oil via sample to ensure oil quality of 3 phase Network Transformer main tank and HV compartment.
Security Check	Ensure locking mechanism integrity.
Thermography	Infrared inspection of electrical equipment and power path components to identify any hot spots that may exist.
Visual Inspection	External visual inspection of equipment and miscellaneous hardware that identifies broken / degraded components. Items inspected are documented via procedures posted to the Management Model under control element Conduct of Maintenance.

Distribution Transformer Template Summary

The Preventive Maintenance program is documented via maintenance templates. Templates have been developed that address transmission, substation, and distribution equipment that is owned, and maintained by Exelon Utilities. Each template documents the program tasks, frequencies, failure modes, and maintenance basis for the associated equipment. Tasks and associated frequencies are designed to address known failure modes of the equipment covered by the template. In general, the tasks included in the maintenance templates are the result of good industry practices, industry experience, and manufacturer recommendations.

References:
Internal reports and operating experience

Boundary Definition
The boundary is defined as the transformer.

Failure Experiences
Failures are subject to ACE/RCI investigation. Findings/recommended corrective actions are incorporated into the template as required.

Vendor Recommendations
N/A

Disposition of Vendor Recommendations
N/A

Basis For Template Tasks

Ammeter Reading: This task determines the loads associated with Spot Network Transformers.

Dielectric Test: This task determines the dielectric strength of the 3 phase Network Transformer main tank and HV compartment oil to ensure the oil insulation quality is adequate.

Security Check: Ensure locking mechanism integrity.

Thermography: A primary tool for detection of hot spots and connection issues.

Visual Inspection: This inspection approximates real-time condition monitoring that can detect developing problems and degradation, and provides condition data used to initiate corrective actions.

	Revision 0	Date 12/29/2000
Writer	Larry Griess (Strategic Programs)	
Reviewer(s)		
Approver(s)	Kathy McHugh (FAM Maintenance Planning)	
Reason Written	To document the maintenance program tasks, frequencies, failure modes, and maintenance basis	

	Revision 1	Date 11/30/2010
Writer	Chris Stefanski	
Reviewer(s)	Ken Wendt (Mgr. Material Condition)	
Approver(s)	Bill Fluhler , Bill Gannon, Nitin Patel, Jim Crane, Bill Sullivan	
Reason Written	Added note to ensure template changes are communicated to affected work groups.	

	Revision 2	Date 06/10/2011
Writer	Rodolfo Patriarca	
Reviewer(s)	Pete Yan, Keith Frost, Ken Wendt	
Approver(s)	Bill Fluhler	
Reason Written	To document the maintenance program frequencies.	