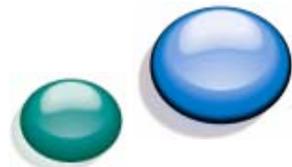




Transformer Rationalization and Removal on an Industrial Site

PMP Plan Element 7.3 TRANSFORMER REDUCTION

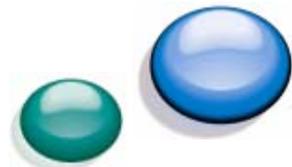
The Facility conducted a study and is developing a plan to reduce the number of transformers on site by the consolidation of electrical substations. Transformers that are lightly loaded or at the end of their expected lifecycles will be taken out of service and removed. This will eliminate a significant number of older transformers that have historically contained PCB oils.





Basis for Transformer Rationalization

- Older Oil Filled Transformers are more likely to have higher PCB concentrations and require more maintenance/inspection activities
- Each Transformer powered in the plant grid, consumes about 2% of its rated capacity in the generation of heat, even if it has no load.
- Eliminating a 1,000 KW transformer, by shifting its load to another transformer will save about 20KW.
- A 20 KW Load costs about:
 - \$8,000 per year at 5 cents per KWH or
 - \$16,000 per year at 10 cents per KWH
- Reducing the number of Transformers on Site increases reliability and decreases maintenance cost



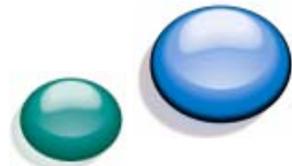


Results of Transformer Rationalization

	Jan 2005	Jan 2007	% Reduction
Number of Oil Filled Transformers in Service	46	24	48%
KVA of Power Capacity	52,500	40,925	22%
% of Power Capacity Using Dry (Not Oil Filled) Transformers	29%	38%	
Gallons of Oil in Transformers	13,981	7,590	46%

Benefits of Transformer Rationalization

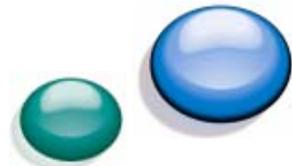
- Reduced the number of oil filled transformers on the site
- Reduced the number of retro-filled PCB transformers on the site and the volume of oil in those transformers
- Eliminated the oldest transformers from the grid.
- Reduced site energy consumption and costs
- Reduced site energy consumption has a incremental impact on power plant emissions, including greenhouse gases and heavy metals.





Financial Impact of Transformer Rationalization

- **This work was possible due to over 2 decades of foundational work related to the control/elimination of PCBs from the Site**
- **Cost of work described was \$250,000 dollars of capital and \$50,000 of expense**
- **The financial benefit is \$100,000 per year in electricity and maintenance costs**
- **Financial Payback is approximately 3 years**



Impact to PCBs on site due to Transformer Rationalization

	Jan-05	Jan-07	PCBs Removed
Estimated mass (in grams) of PCBs in Site Transformers – Assuming 10 ppm concentration in all oil filled transformers	530	<288	>242

