

4th Annual CEATI Thermal Generation Interest Group (TGIG) Workshop:
“Current Issues and Future Trends for Thermal Power Generation”

October 26, 2011 in Pittsburgh, PA, USA

Background

Thermal generation currently provide ~70% of U.S. electric energy (45% coal, 24% natural gas) and several Provinces in Canada also have strong reliance on thermal power. Major factors impacting future developments are the aging of the thermal fleet, the environmental issues associated with their operation and the consequences of major increases in renewable energy supplies. In addition, the uncertainty in future energy demand due to economic conditions and the emphasis on energy conservation and demand response complicates decision making for power generation utilities. Also the *U.S. Environmental Protection Agency (EPA) has declared that improving Generating Efficiency is Best Available Control Technology (BACT) for CO₂ emission control*, and thus improving energy efficiency will become of greater importance than in the past (turbine upgrades, capture of low grade waste heat from the flue gas, drying of coal, etc).

In planning for future generation, utilities require to understand the issues identified above and their likely impact on thermal generation. Aging of the fleet is a major concern as many plants have already undergone life extension upgrades. Future upgrades must address more stringent environmental regulations which demand major environmental controls upgrades. In Canada, Federal government initiatives are targeting a fixed life of 40 years for existing coal fired plants and Ontario has set a deadline of 2014 to end coal fired generation. Utilities face major decisions regarding future investment in generating capacity from further investment in coal plants, switching to other fuels (e.g. natural gas, biomass) and making best use of existing facilities. However, it is clear that repowering of existing thermal plants has to be a major contributor to the future energy mix of electric utilities. Associated with repowering are the environmental issues that must be addressed, involving solid, liquid and gaseous emissions as well as the technical issues associated with using a different fuel (like natural gas) and new technology (like Oxy-combustion, addition of Ultra-supercritical (USC) topping turbine, etc). The options around repowering and dealing with environmental concerns particularly carbon dioxide emissions are becoming clearer as technology developments proceed. Nevertheless, given the age of many coal plants, owners are also looking at a range of options including short term lay-up, long term lay-up and even complete demolition of plants to return sites to brown or green field conditions.

This workshop will focus on the issues stated above and provide current information on the technical developments and economics of options for repowering older power plants, for new generation (high temperature Oxy-combustion, USC boilers and turbines, etc), and for improving efficiency and environmental performance for existing fossil power plants. It will offer the opportunity for participants to improve their understanding of the issues facing thermal generation and the potential options to address them.

Objective

To provide information on the issues influencing thermal generation developments, and to offer understanding of the various approaches for future developments by considering specific technical options and their associated economic impacts.

Themes

- 1) **Repowering Options and New Generation Opportunities:** including the use of natural gas, biomass and other fuel sources.
- 2) **Experience and Best Practices for Plant Lay-up (short & long term) and for Plant Demolition.**
- 3) **Economic Efficiency Improvements for Existing Fossil Plants**

Who Should Attend

Thermal plant operations and engineering managers, and engineers and consultants who have responsibilities or interests in the area of thermal generation performance and future developments.

Meeting Location:
Wyndham Grand Pittsburgh Downtown (The Duquesne Room)
600 Commonwealth Place, Pittsburgh, Pennsylvania, 15222

DRAFT AGENDA

Chairperson: Dale Bradshaw, National Rural Electric Cooperative Association
Vice-chairperson: Daryl Williams, Tennessee Valley Authority

Information shared in Interest Group meetings is confidential to CEATI and the participating organizations of the specific Interest Group. Circulation of project reports, Progress, Draft or Final, is restricted to CEATI and the project sponsors. This policy is to preserve the strategies and processes of the Interest Group.

Item	Description	Time	Discussion Leader/Presenter
	CONTINENTAL BREAKFAST	8:00	
	October 26		
1.0	Welcome and Introduction by Session Chair; U.S. Policy Update Canadian Policy Update	8:30	Dale Bradshaw <i>NRECA</i> Ken Seal <i>ATCO Power</i>
2.0	Repowering Options and New Generation Opportunities		
2.1	Concept and Definition Phase Planning to Convert 240MW Coal Unit to Biomass – Atikokan	9:00	Joe Siracusa <i>Ontario Power Generation</i>
2.2	Conversion of 125MW Fluidized Bed to 85MW Biomass Unit – Shawanee #10	9:30	Daryl Williams <i>Tennessee Valley Authority</i>
	MORNING BREAK	10:00	
2.3	Overview of Oxy-Combustion Developments	10:30	Bruce Clements <i>Natural Resources Canada</i>
2.4	Impact of Emissions Caps and Introduction of Non Dispatchables on Coal Plant Investment Plans	11:00	Bill Small <i>Nova Scotia Power</i>
3.0	Economic Efficiency Improvements for Existing Fossil Plants		
3.1	Fossil Plant Efficiency Improvement Options and TGIG Study	11:30	Al Ferrer & Greg Zoll <i>Burns and Roe</i>
	LUNCH BREAK	12:00	
3.2	Overview of DOE Efficiency Improvement Projects	1:00	Sean Plasynski <i>NETL</i>

Item	Description	Time	Discussion Leader/Presenter
4.0	Experience and Best Practices for Plant Lay-Up and Plant Demolition		
4.1	Short and Long Term Lay-up Procedures for Conventional and Combined Cycle Power Plants	1:30	R.B. Dooley <i>SI Associates</i>
4.2	Framework for Existing Coal-Fired Power Plant Disposition Decisions	2:00	Dick Bratcher <i>KEMA</i>
AFTERNOON BREAK		2:30	
4.3	Utility Experience	3:00	Utility TBC
5.0	Group Discussion: Results of Workshop and Future TGIG Action Plan	3:30	Dale Bradshaw Duncan Sidey
MEETING ADJOURNMENT		4:30	

Draft Agenda – September 7, 2011