

Planning for an Uncertain Future

Case Study: Replacing Coal Units with Gas

Presented by
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At

National Association Of Regulatory and Utility Commissioners Annual Meeting
November 17, 2010



Timeline of Major Environmental Issues - Where we were in 2009
Carolinas

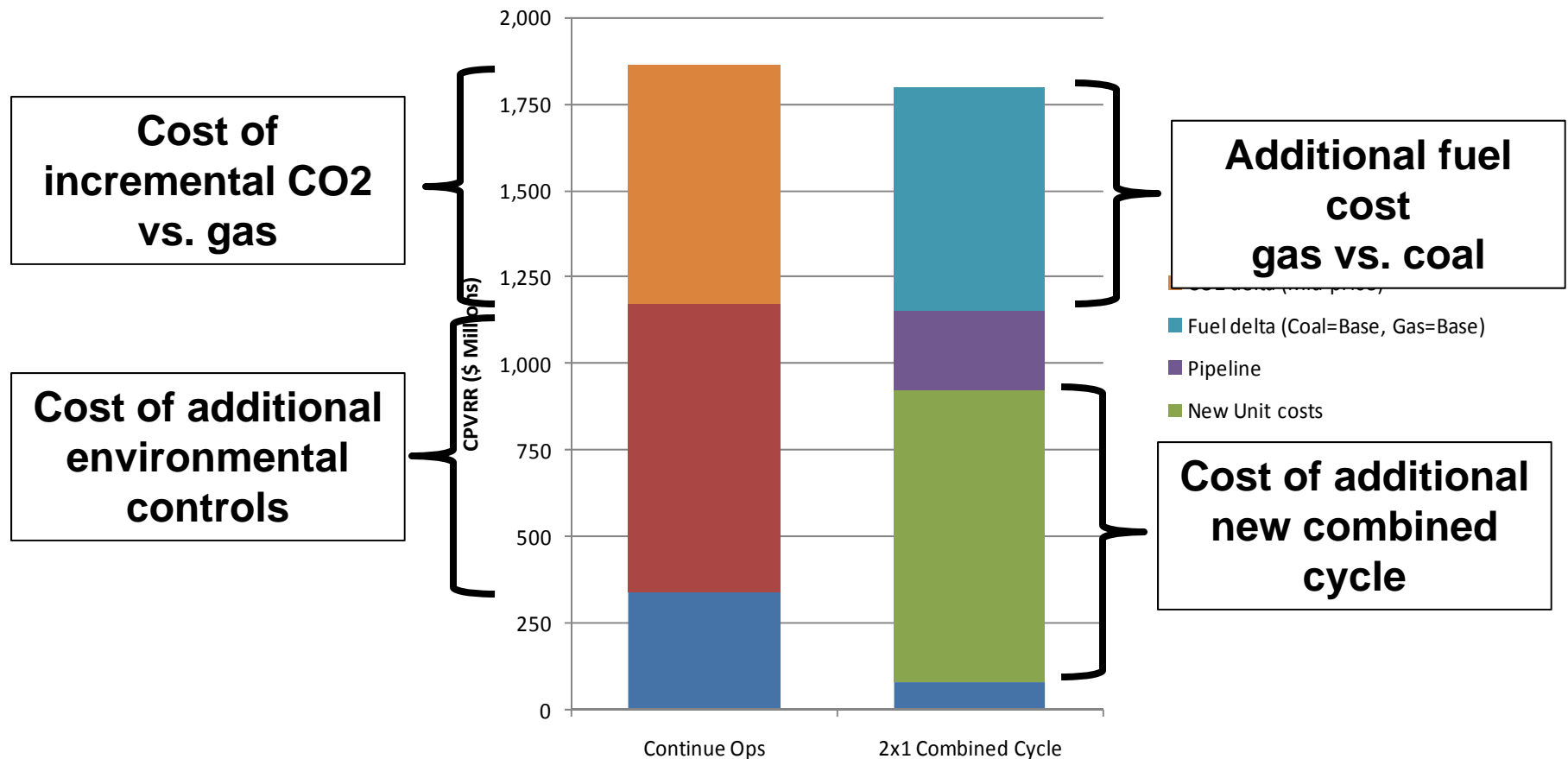
Unit	Driver	Control	1 2009	2 2010	3 2011	4 2012	5 2013	6 2014	7 2015	8 2016	9 2017	10 2018	11 2019	12 2020	13 2021	14 2022	15 2023
Cape Fear 5&6	SO ₂	DFGD or FSI							CAIR			NC CSA		CAIR			
	Hg/HAPs	ACI & ESP or ACI & BH						MACT				NC Hg Rule					
	NO _x	SCR							CAIR	NAAQS				CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW				GW								
Water	fine mesh screens and fish return (316b) dry flyash, chemical or physical treatment (Eff)						316(b)		Effluent			Effluent					
Lee 1&2	SO ₂	DFGD or FSI							CAIR					CAIR			
	Hg/HAPs	ACI & ESP or ACI & BH						MACT				NC Hg Rule					
	NO _x	SNCR or SCR							CAIR					CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW				GW								
Water	dry flyash, chemical or physical treatment (Eff)								Effluent			Effluent					
Lee 3	SO ₂	DFGD							CAIR					CAIR			
	Hg/HAPs	ACI & ESP or ACI & BH						MACT				NC Hg Rule					
	NO _x	SCR							CAIR					CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW				GW								
Water	dry flyash, chemical or physical treatment (Eff)								Effluent			Effluent					
Robinson	SO ₂	DFGD or FSI							CAIR					CAIR			
	Hg/HAPs	ACI & ESP or ACI & BH						MACT									
	NO _x	SNCR or SCR							CAIR					CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW				GW								
Water	fine mesh screens and fish return (316b) dry flyash, chemical or physical treatment (Eff)						316(b)		Effluent			Effluent					
Sutton 1&2	SO ₂	DFGD or FSI							CAIR					CAIR			CAVR/BART
	Hg/HAPs	ACI & ESP or ACI & BH						MACT				NC Hg Rule					
	NO _x	SNCR or SCR							CAIR					CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW												
Water	fine mesh screens and fish return (316b) dry flyash, chemical or physical treatment (Eff)						316(b)		Effluent			Effluent					
Sutton 3	SO ₂	DFGD					NC CSA CAVR/BART		CAIR			CAVR/BART		CAIR			
	Hg/HAPs	ACI & ESP or ACI & BH						MACT				NC Hg Rule					
	NO _x	SCR							CAIR			CAVR/BART		CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW												
Water	fine mesh screens and fish return (316b) dry flyash, chemical or physical treatment (Eff)						316(b)		Effluent			Effluent					
WSP 1,2,3	SO ₂	DFGD							CAIR					CAIR			
	Hg/HAPs	ACI & ESP or ACI & BH						MACT				NC Hg Rule					
	NO _x	SNCR or SCR							CAIR					CAIR			
	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW				GW								
Water	dry flyash, chemical or physical treatment (Eff)								Effluent			Effluent					
Controlled Units	Solid Waste	dewater, cap & monitor; or dry flyash handling, lined landfills, or dig out & dispose			GW				GW								
	Water	fine mesh screens and fish return (316b) dry flyash, chemical or physical treatment (Eff)						316(b)	Effluent			316(b)	Effluent				

The PEC view of impending environmental regulations

Planning for an Uncertain Future

The business case for transitioning the generation fleet

Comparison of Plan Costs



Note: This included a natural gas price forecast that was 40% higher than the current gas forecast

Planning for a New Energy Reality

Uncertainties Regarding Environmental Regulation

Key points regarding planning with environmental uncertainty:

- **Sufficient lead time is required to take action**
 - ✓ **Replacement capacity may take years to put in place**
 - ✓ **Adequate resources must be maintained**
 - ✓ **Regulations must provide sufficient mitigation time**
- **Decisions must be made without final definition of regulations or risk non-compliance/threat to reliability**
- **Costs associated with potential regulations can be large and imminent**