Proposed U.S. EPA Coal Combustion Residuals Regulations: 
How Will It Impact Your Plant and Your Bottom Line?
Coal Ash Ponds and Wastewater Treatment Issues
Hot Topic Hour on Thursday May 3, 2012 at 10:00am CDT
CCR Disposal:
Is This Your Ash Fill of the Past, Present, or Yet to Come?
Presentation Content, Conversions and Costs
What’s in your Future?

Introduction

1. Ash Ponds (treatment/dewatering)

2. Dry Ash Disposal

3. Wet to Dry Equipment Conversion

Summary
Introduction

(Cont.)

What’s Unique? Your:

A. Plant’s Equipment
B. CCR Processing
C. Disposal Site
D. Local Economics
E. Beneficial Reuse
F. State Regulations
Introduction (cont.)

How Do We Estimate Your Costs for Changes?

• Similarities
• Comparisons
• Multiple Resources
• Detailed Cost Estimates
### ASH LANDFILL

#### COST ESTIMATE

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<th>DESCRIPTION B</th>
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Page 1 of 2
Introduction (cont.)

Apply to Your Operation

• Estimated Per Ton/Yard Costs for Disposal (construction, operation, closure)

• Typical Costs for Equipment Modifications
1. Existing Ash Ponds (& Disposal?)
1. (Cont.) and 2. Clay Liner Installation
1. (Cont.) and 2. Membrane Liner Placement and Seaming
1. (Cont.) and 2. Leachate Collection Layer & Piping Installation
1. (Cont.) and 2. Clay Cover Installation
1. (cont.) and 2. Membrane Cover and Soils
1. (Cont.) and 2 Costs - Subtitle D

DISPOSAL

• Liner System Average
  – Per Ton or Cubic Yard $6
  – Per Acre $175,000

• Operation
  – Per Ton or Cubic Yard $10
  – Per Acre $250,000

• Closure
  – Per Ton or Cubic Yard $4
  – Per Acre $150,000
1. (Cont.) and 2 Costs - Subtitle C

- Hazardous Waste Landfills
- Solid to Hazardous Waste Transition Studies
  – $80 to $130 per yard/ton
- Insurance/Risk, **Taxes**, Licensing, Training
- Containment, Administration
3. Wet to Dry Equipment Conversion

TREATMENT/HANDLING

- Dewatering Ponds/Bins
- Trucking
- Pumping Wet/Dry
- Submerged Conveyors
- Dewater Existing Fill
- Water Treatment/Reuse
3. (Cont.)  Wet to Dry Equipment Conversion

• Convert Bottom Ash, Fly Ash, FGD Systems Wet to Dry?

• Storage Containment
  – Enclosures
  – Liners
  – Secondary Containment – Subtitle C
3. (Cont.) Wet to Dry Equipment Conversion

EQUIPMENT (400 to 600 Megawatt Plant) PROCESSING/CONVERSION

– Dewatering Bins/Settling Tanks $16 – 22 Million

– Truck Loading Bay/Hopper Enclosure $850,000 - $1.5 Million

– Wash Down $300 - $500 Thousand

– Ancillary Costs (site work) $1 - $2 Million
3. (Cont.) Wet to Dry Equipment Conversion

Fly Ash/FGD Conversion
• $8 - $10 Million

Bottom Ash Conveyor System
• $10 - $14 Million
Summary

1. Ash Ponds (treatment/dewatering)
2. Dry Ash Disposal
3. Wet to Dry Equipment Conversion

How Do I Comply at My Plant?
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