

## Background and Policy Issues for Biomass Co-firing and Repowering

Prepared for:

Environmental and Energy Study Institute  
Biopower: Technologies, Policies, & Opportunities Briefing

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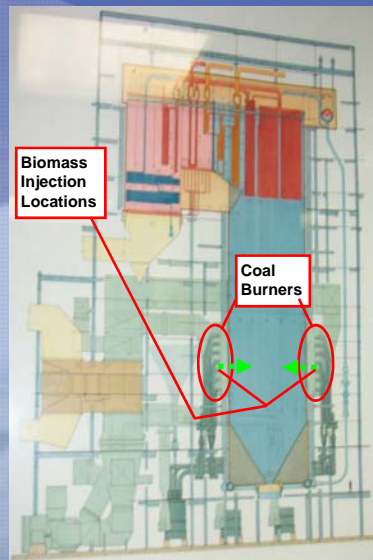
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## Background on Biomass Cofiring

- Biomass replaces *a portion* of fossil fuel (usually coal)
- Can replace up to 20%
- Renewable power generation *using existing (or new) power plants*
- Lowest investment cost option for adding new biopower
- Relatively high efficiency for biomass to electricity
- Not without risk or complication—many plants will be considered “off limits” at least initially
- Wide implementation in Europe



## Alliant Energy – Ottumwa Station Cofiring

- Fuel: Switchgrass (Closed Loop)
- Status: Demonstration Activities Complete  
Commercial Development Under Consideration at  
Several Sites (New and Existing Coal Plants)
- Details:
  - Generated up to 17 MWe renewable electricity, 3 extended tests
  - Locally grown switchgrass replaced 2.5% of coal, CRP land used (pilot test)
  - Demo. project cost-shared by DOE, USDA, Alliant Energy, local farmers
  - Carbon savings documented, certified, and sold on CCX

Ottumwa Generating  
Station, Iowa



Switchgrass



Replacing up to 5% of this . . . .



with this . . . .



## NRG Energy – Dunkirk Cofiring

- Fuels: Closed Loop and Open Loop
- Status: Demonstration Project Complete  
Commercial Development Under Consideration
- Details:
  - Demonstration generated up to 10MWe renewable electricity
  - Locally grown willow energy crop used for part of the fuel
  - Demonstration project Sponsored by DOE and NYSERDA

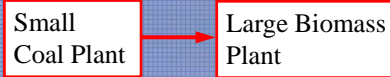
Dunkirk Station



3 Year Old Willow

## Background on Biomass Repowering

- Biomass replaces *all* of fossil fuel at existing power plant
- Can add new value to aging power plants (preserves jobs)



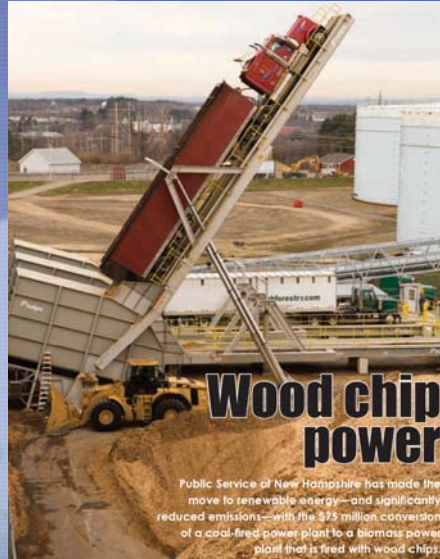
- Far more extensive and expensive modifications compared to cofiring
- Huge decreases in NO<sub>x</sub>, SO<sub>2</sub>, and net CO<sub>2</sub> emissions
- Will not occur without policy drivers/incentives

Schiller Station, NH (50 MW)



## Plant Schiller Repowering (50 MW)

- Power for 40,000 average homes
- Large reductions in SO<sub>2</sub>, NO<sub>x</sub>, net CO<sub>2</sub>
- Built in 2006 to sell RECs into MA RPS



enerG, November/December, 2007.

## Policy Issues/Challenges

- Conflict between REC and Carbon Markets raises issues for cofiring and repowering projects
  - Example: RPS vs. REGGI
  - Decoupling carbon from RECs needed to encourage projects
- Ensure that all carbon legislation treats biomass cofiring and repowering as CO<sub>2</sub> neutral
- Production Tax Credit language very restrictive for cofiring and repowering projects
  - Expanding eligibility will encourage projects
  - Eliminate or modify to avoid/clarify 20 percent clause for additions or improvements to existing facilities
  - Extend placed in service dates
- Support for closed loop feedstocks is critical
  - Energy crops needed to hedge prices
  - Help could include: CRP exemptions, tax credits and incentives for establishing crops (BCAP), assist. for building infrastructure
  - Bridge to feedstocks for cellulosic ethanol production