

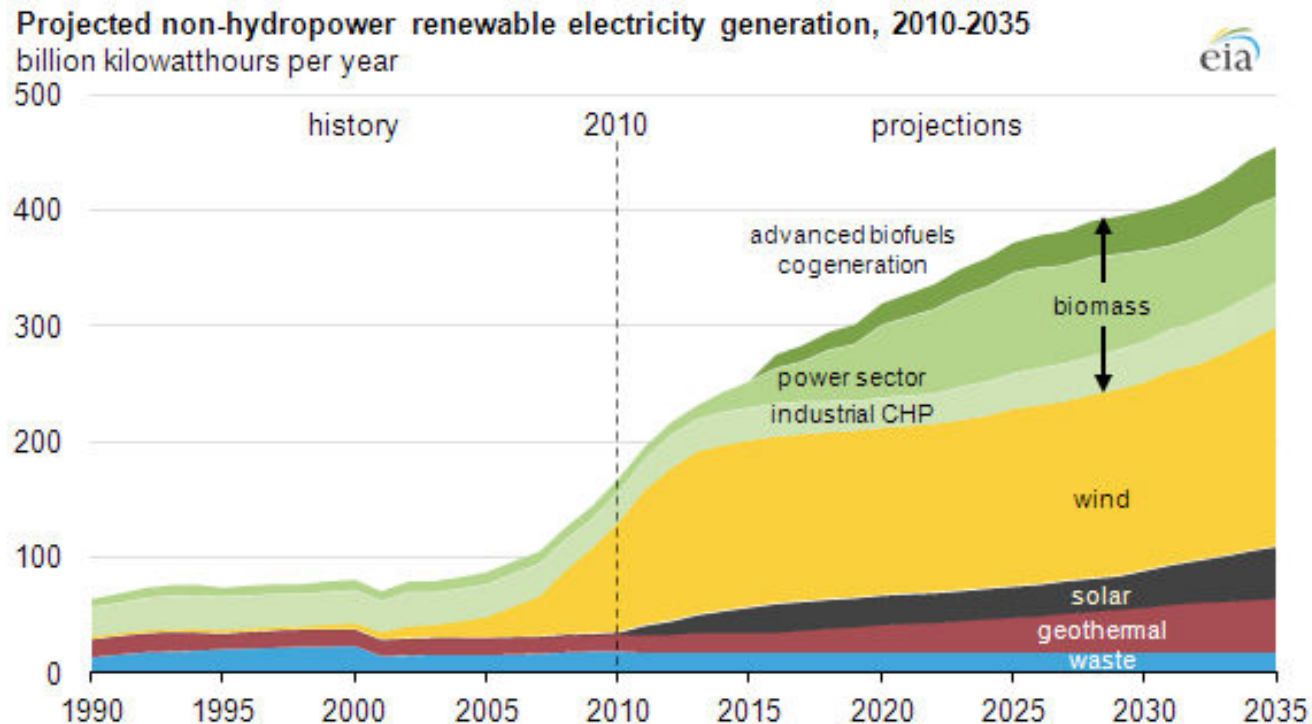
Congressional Briefing
September 25, 2012

**Health Impacts of Pollution From
Biomass Incinerators:
Dirty Energy Comes From Smoke
Stacks!**

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EIA projects U.S. non-hydro renewable power generation increases, led by wind and biomass



Source: U.S. Energy Information Administration, [Annual Energy Outlook 2012 Early Release](#) Reference case.
Note: Data from the Annual Energy Outlook 2012 (AEO2012) Early Release Reference case are subject to change with the release of the full AEO in spring 2012.
[Download CSV Data](#)

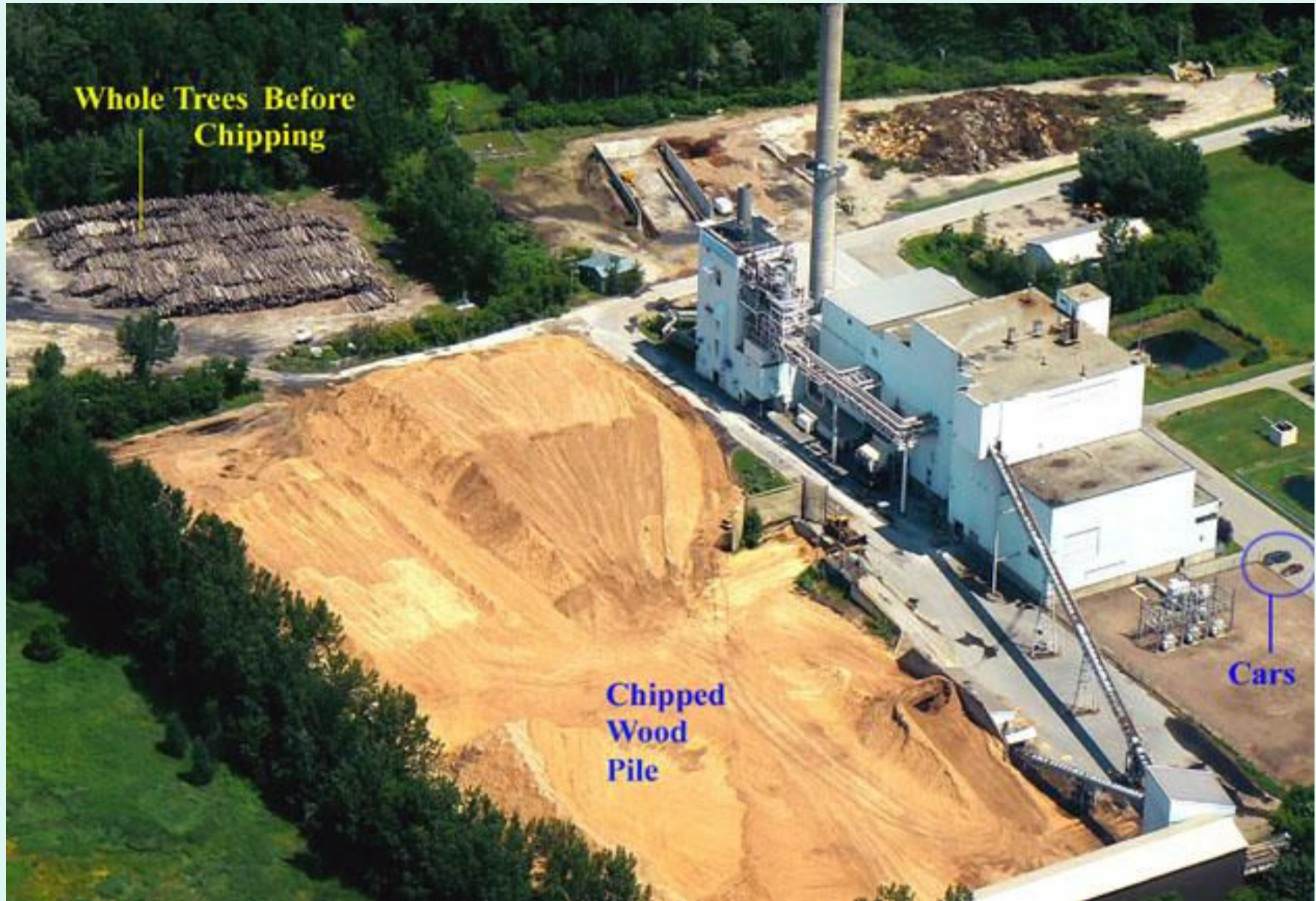
Rapidly Expanding Industry

Biomass incinerators, unlike other renewables, require ongoing fuel inputs and result in ongoing pollution outputs, that causes diseases, pain and suffering and raises health care costs.

Biomass incinerators

- Nitrogen oxides (Nox)
- Sulphur dioxide (SO₂)
- Heavy metals (mercury, lead)
- Volatile organic compounds (VOCs)
- Carbon monoxide (CO)
- Hazardous Air Pollutants (HAPs: 187 known toxins identified by EPA)
- Dioxin: one of the most toxic substances known
- Particulates (PM₁₀, PM_{2.5}, ultrafine and nanoparticulates)

McNeil Biomass facility, VT



Whole Trees Before Chipping

Chipped Wood Pile

Cars

McNeil Biomass Incinerator, Vermont

#1 Air Pollution Source in Vermont, ~ 70 Pollutants

Carbon Monoxide

Particulate Matter PM10

Hydrochloric Acid

Ammonia Formaldehyde

Benzene

Manganese

Acetaldehyde

Methylene

Naphthalene

Phenol

Carbon Tetrachloride

Chlorobenzene

Nitrogen Oxides

Particulate Matter PM 2.5

Volatile Organic Compounds

Sulfur Dioxide

Styrene

Toluene

Chlorine

Chloride

Propionaldehyde

Lead

Tetrachloroethylene

Nickel

McNeil Biomass Incinerator, Vermont

#1 Air Pollution Source in Vermont, ~ 70 Pollutants

Propylene Dichloride

Ethyl Benzene

Ethylene Dichloride

Phosphorus

Methyl Chloride

Chromium

Methyl Bromide

Phenanthrene

Methyl Ethyl Ketone

Cadmium

Chromium

Anthracene

Methyl Chloroform

Trichloroethylene

Chloroform

Xylene

Arsenic

Vinyl Chloride

Antimony

Cobalt

Acenaphthylene

Pyrene

Fluorene

Selenium

McNeil Biomass Incinerator, Vermont

#1 Air Pollution Source in Vermont, ~ 70 Pollutants

Benzo[a]Pyrene

Acenaphthene

4-Dinitrophenol

Octachlorodibenzo-p-Dioxin

Nitrophenol

Benzo[ghi]Perylene

Benz[a]Anthracene

Bis(2-Ethylhexyl)Phthalate

Benzo[k]Fluoranthene

Dibenzo[ah]Anthracene

Benzo[e]Pyrene

Beryllium

Hexachlorodibenzo-p-Dioxin

Methylnaphthalene

Fluoranthene

Benzo[b]Fluoranthene

Indeno[123-cd]Pyrene

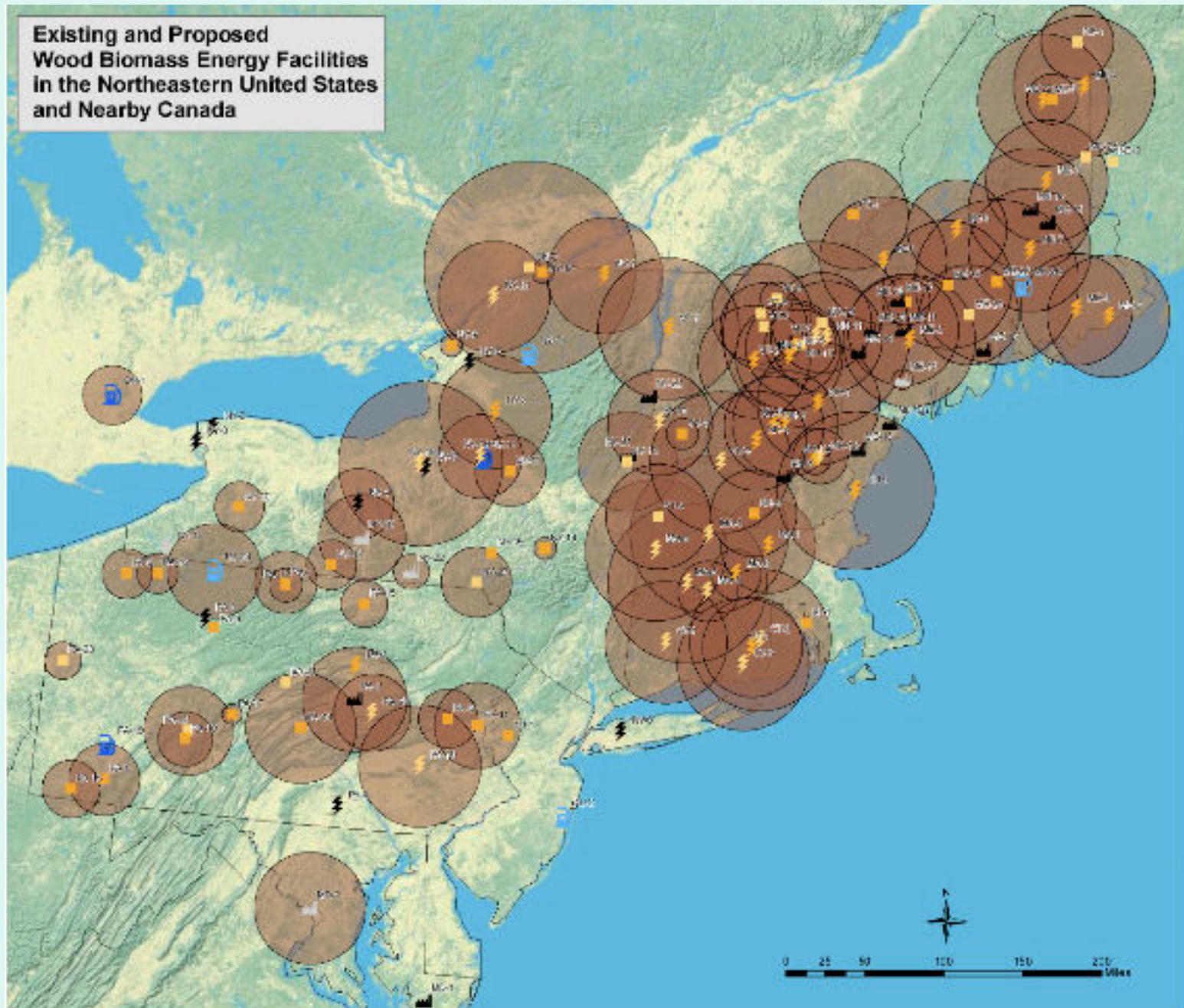
Pentachlorophenol

Chrysene

6-Trichlorophenol

Acetophenone

**Existing and Proposed
Wood Biomass Energy Facilities
in the Northeastern United States
and Nearby Canada**



COAL versus BIOMASS

SEVEN MAJOR AIR POLLUTANTS

50 Year Old Mt Tom Coal Plant vs New Fairhaven, VT Biomass
(Pounds of pollution per megawatt hour of energy produced)

Pollutant	Old COAL Facility	Proposed BIOMASS Facility	BIOMASS WORSE 4 out of 7
Carbon Dioxide (CO ₂)	1,963	2,993	+ 52%
Carbon Monoxide (CO)	1.07	1.06	~ Equivalent
Volatile Organics (VOC)	0.03	0.07	+ 158%
Particulate Matter (PM)	0.05	0.27	+ 457%
Nitrogen Oxides (NO _x)	1.08	0.43	-61%
Sulfur Dioxide (SO ₂)	2.07	0.28	-86%
Ammonia (NH ₃)	0.002	0.083	+ 3,479%

100 MW biomass incinerator emits more pollution than a 431 MW gas/diesel facility

<i>The 100 MW Gainesville Renewable Energy biomass plant will emit dramatically more pollution than a 431 MW gas/diesel plant in Massachusetts, both as total tons, and as lb per MWh</i>	GREC: 100 MW biomass: tons per year	GREC biomass lb/MWh	PVEC: 431 MW nat gas/diesel: tons per year	PVEC: nat gas/diesel lb/ MWh	GREC rate as % PVEC rate
Nitrogen oxides	416.4	0.95	91.9	0.05	1953%
Carbon monoxide	713.8	1.63	59	0.03	5214%
Particulate matter	249.8	0.57	49.1	0.03	2193%
Sulfur dioxide	243.9	0.56	16.7	0.01	6295%
Volatile organic compounds	77.3	0.18	23.8	0.01	1400%
Hazardous air pollutants	24.7	0.06	5.1	0.003	2087%
Carbon dioxide	1,232,225	2,813	1,432,825	759	371%

Source: Partnership for Policy Integrity

Different kinds of “biomass”

Not only “green plants” - woodchips, agriculture crops and residues...

“Biomass” also includes even more toxic materials: garbage, manures, sewage sludge, construction and demolition debris (CCD), sometimes even plastics and tires.

(Fuel-switching is common)

Poultry Manure

FIBROMINN: Numerous Violations of Permit
Permit allows them to be **Minnesota's:**

- largest single source of **arsenic**
- largest source of **sulfuric acid**
- 2nd largest source of **hydrochloric acid**
- a significant new source of **dioxin**

Construction and Demolition Debris (painted, treated wood)

- (CDD) – significantly increases emissions of arsenic, chromium, copper, lead, and mercury, as well as dioxins/furans and pentachlorophenol (PCPs).
- Sorting is inadequate
- Fuel-switching is common (Maine examples)

Permitting processes are regularly
“gamed” with many loopholes

Even where regulations exist they are
not adequate

Some of the most dangerous
emissions are **least** regulated and
most difficult to control

**80% of biomass facilities have
been cited for exceeding air
pollution permits**

- Air pollution coming from smoke stacks is not the only way biomass incinerators threaten our health...

More pollution from harvesting and transport



Truck unloading wood chips that will fuel the Tracy Biomass Plant, Tracy, California.

Accidents (explosions and fires) are common

The powering inferno: Fire could cause entire power station to collapse

Plumes of smoke could be seen for miles as the inferno ripped through 4,000 tonnes of crushed wood in the Tilbury B facility at 8am

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Smoky conditios: Tilbury Bio Fuel Power station

Phil Harris

Massive amounts of ash

Concentrates heavy metals (lead, zinc, cadmium) dioxin and other toxins

Found to have high levels of radioactive Cesium 137

Often sold as soil amendment for agriculture, in some cases used in construction. Toxins leach out.

Water use and contamination



- Russell Biomass: average of 885,000 gallons per day for cooling. 85% will be evaporated and the remaining will be heated, polluted, and dumped back into the river.

No fuel needed, no pollution, no illness, no health care cost



Smoke stack = Dirty energy



Biomass Incinerator, Berlin New Hampshire

Health Impacts of Pollution From Biomass Incinerators: Dirty Energy Comes From Smokestacks

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- **Copy of this PowerPoint**
- **Supporting Scientific Articles**
- **More information at:**

www.SaveAmericasForests.org