

# Wood Energy Summit

17 February 2010

MICHIGAN STATE  
UNIVERSITY  
EXTENSION





“The best way to predict  
the future is to invent it”

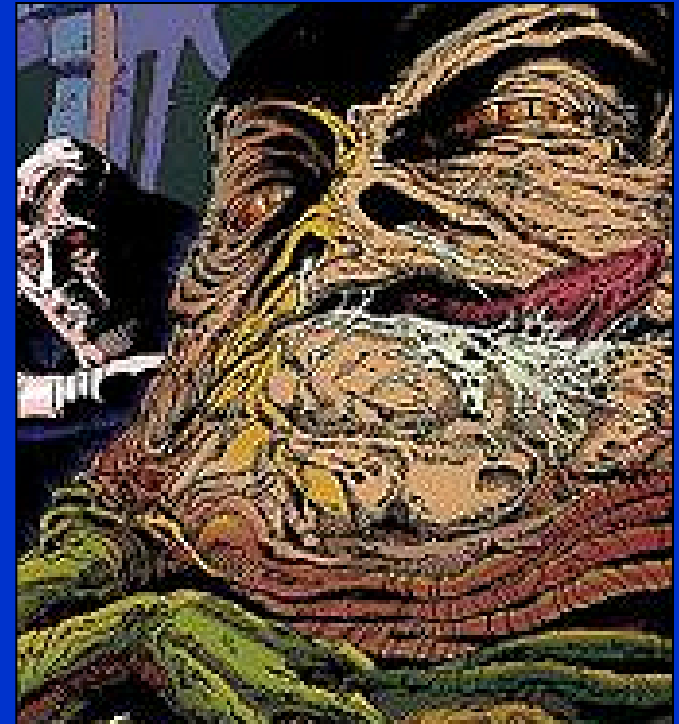
-Alan Kay

Michigan uses the equivalent of  
3.1 quadrillion BTUs of energy

87% comes from FFs

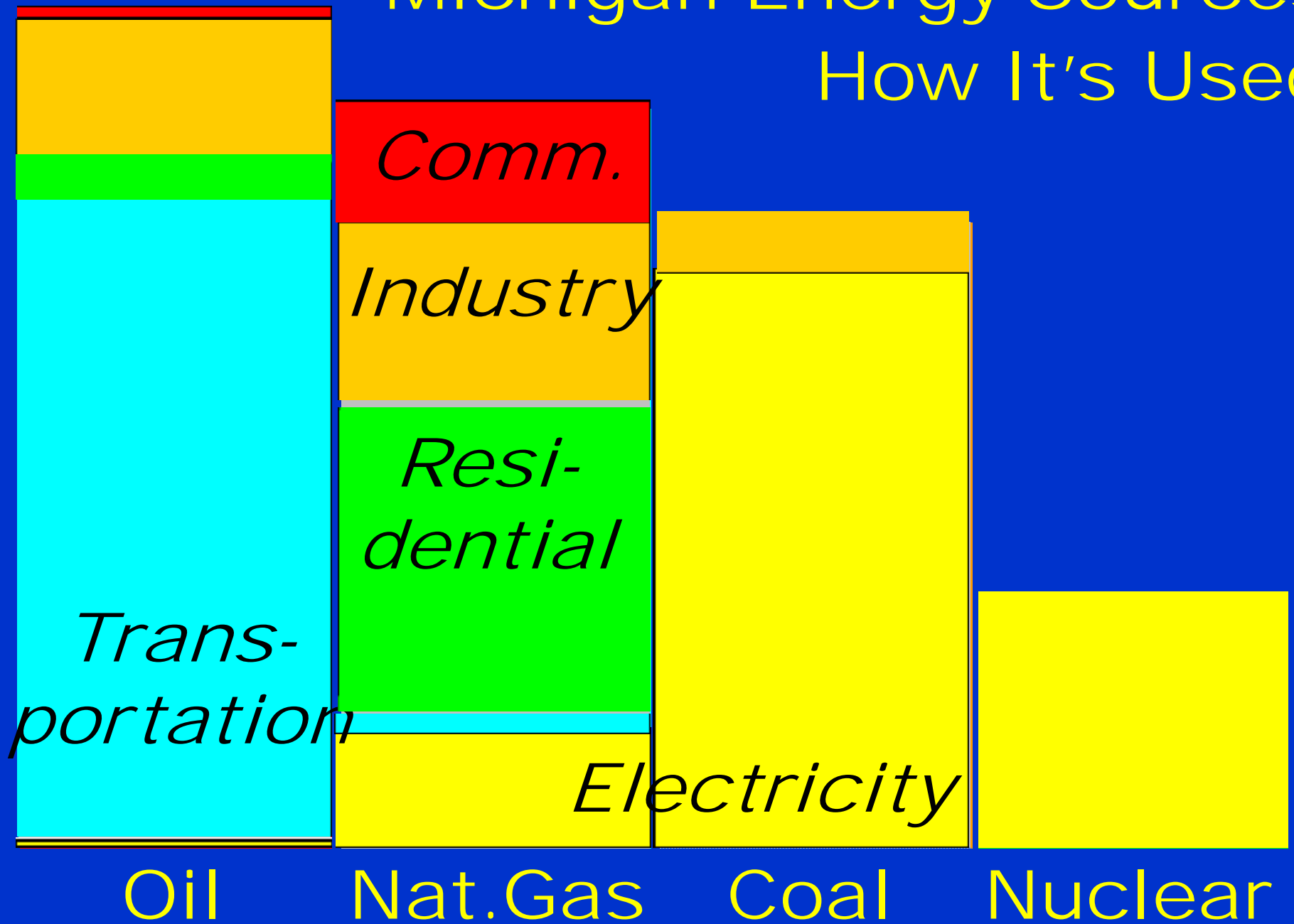
3 solutions . . . .

- *use less energy*
- *use fewer FFs*
- *use more wood  
(and other renewables)*



# Michigan Energy Sources

## How It's Used



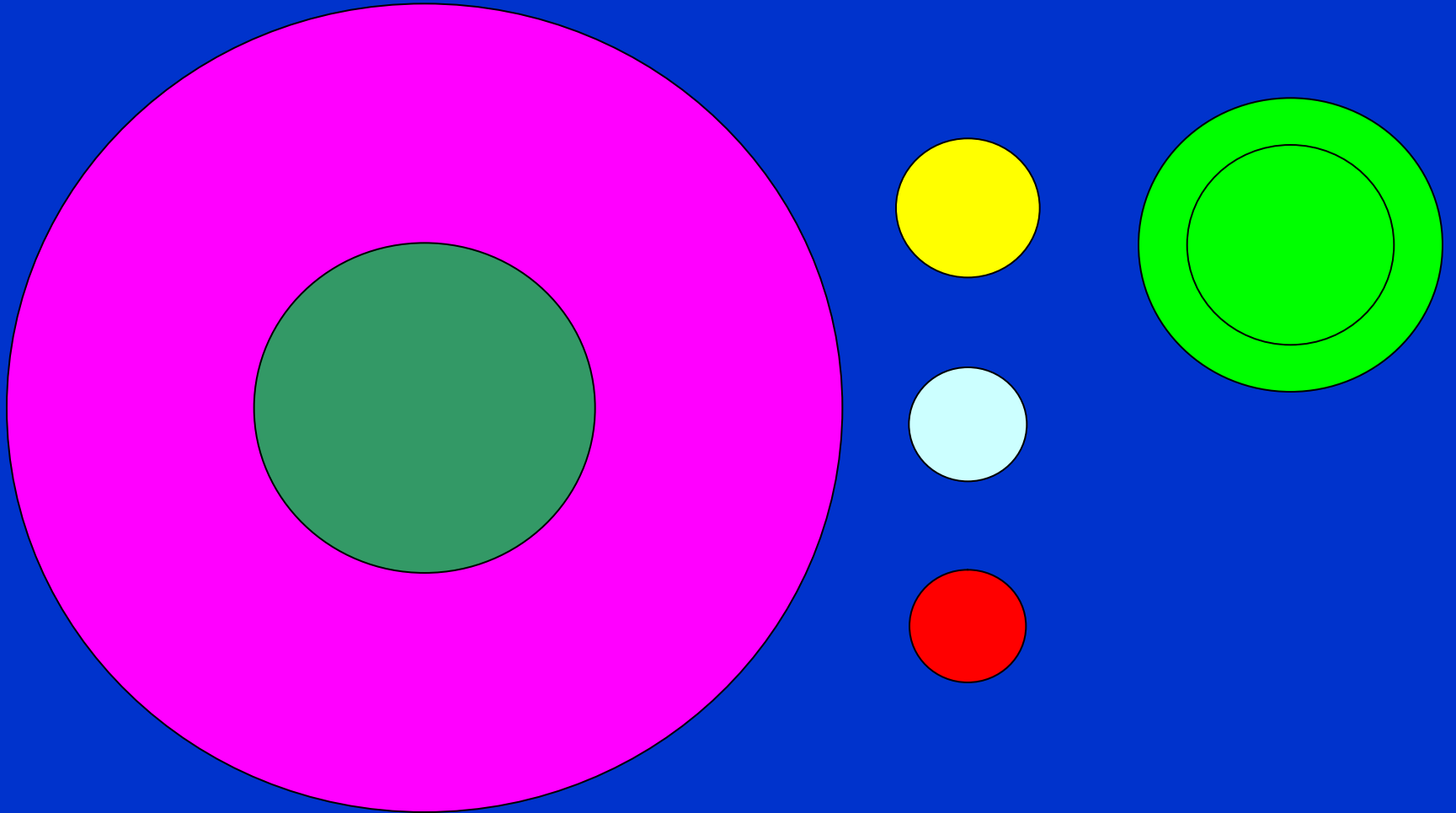
# How Does Woody Biomass Fit Into This Picture?

Reduce Fossil Fuel Use  
Vigorous Forests Draw  
More Carbon

Help Rural Economies  
Use Local Resources

Keep More Money Local  
It's What We Have!!

# Biomass < 3% of State Total



# How to Get the Energy?

**The biochemical process:**

**Hydrolyze & ferment → Fuels & chemicals**

**The thermo chemical process:**

**Pyrolize & reform → Fuels & chemicals**

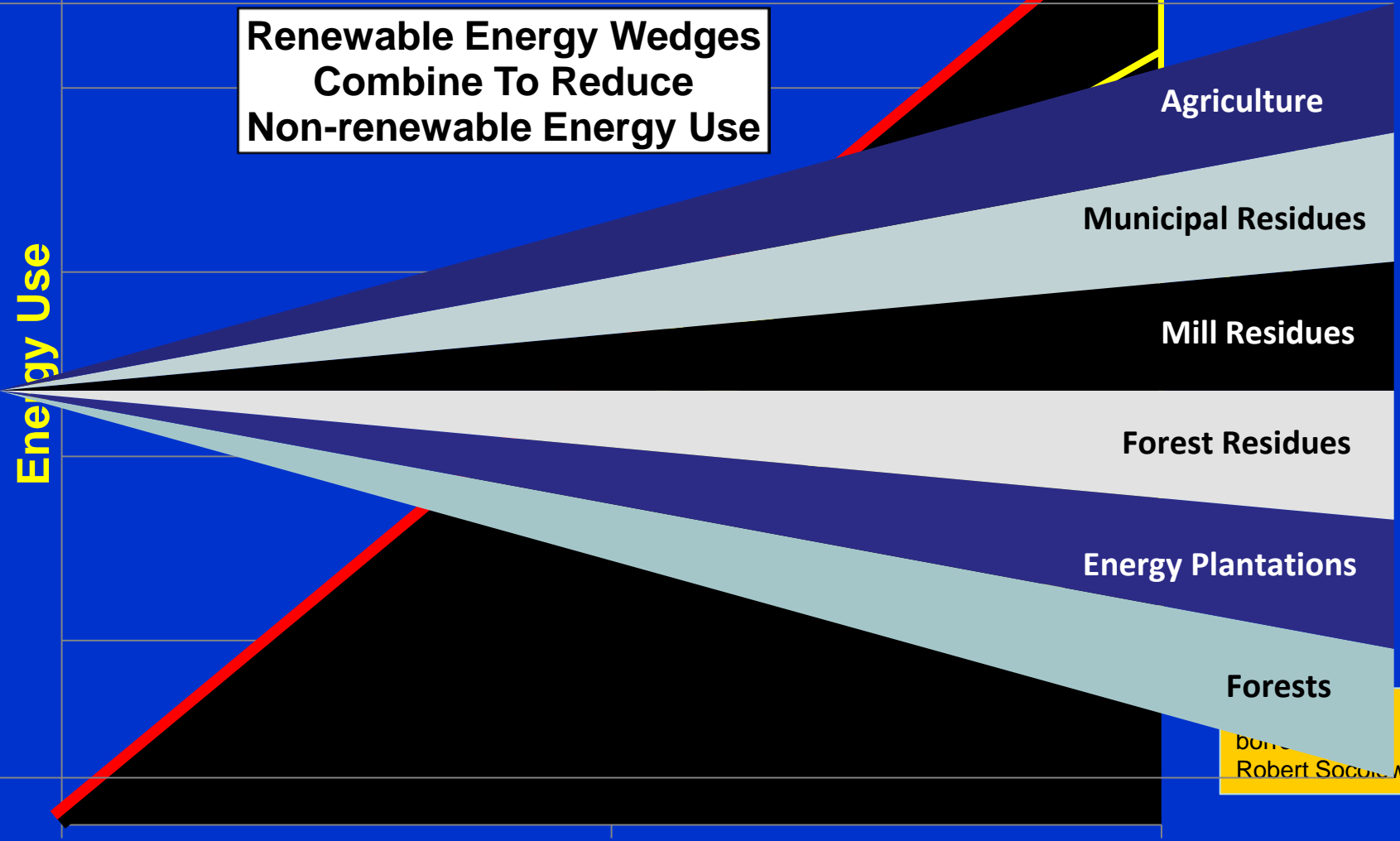
**Burn wood more efficiently:**

**CHP & District Heating Systems**

# The Biomass Wedge

Renewable Energy Wedges  
Combine To Reduce  
Non-renewable Energy Use

Conservation



Energy Use

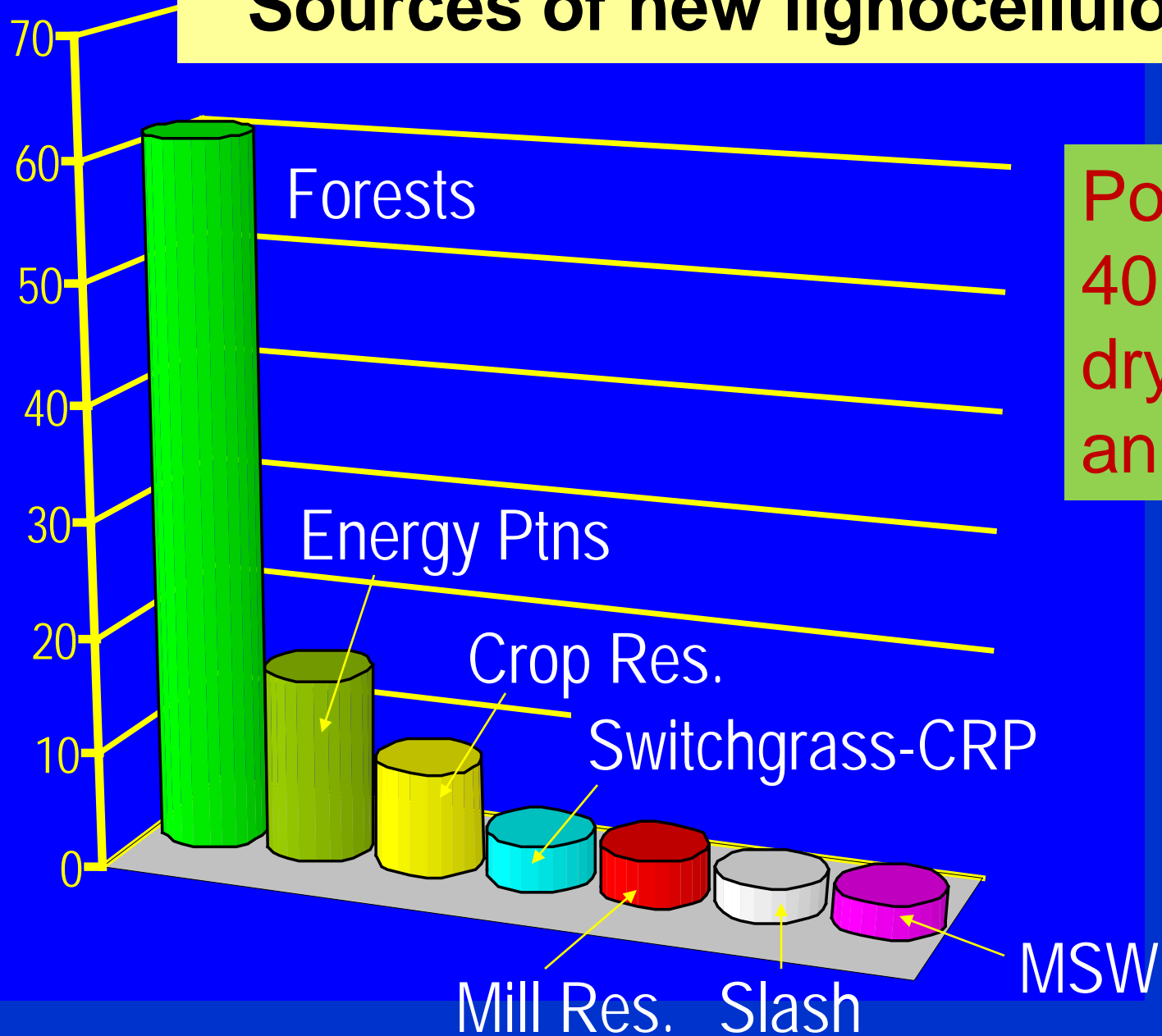
Yesterday

Today

Tomorrow

Robert Socolow

# Sources of new lignocellulose



Possibly  
40 million  
dry tons  
annually



# A MILLION CUBIC METERS OF WOOD

(~440,000 cords, ~500,000 dry tons)

Michigan grows ~26 times this much wood each year

~50 million gallons ethanol

Electricity for ~half million homes

1/2 wood supply for Mascoma

80% of Weyerhaeuser mill

2 Grayling power plants



# Some Challenges with Wood

- High transportation costs
- Competition with traditional industry
- Habitat impacts (+ & -)
- Nutrient limitations on some soils
- Harvest technology
- Supply chains poorly understood
- Inconsistent logging infrastructure
- Public attitude about harvesting
- Perception of smoke, truck traffic
- Liquid fuel conversion technology

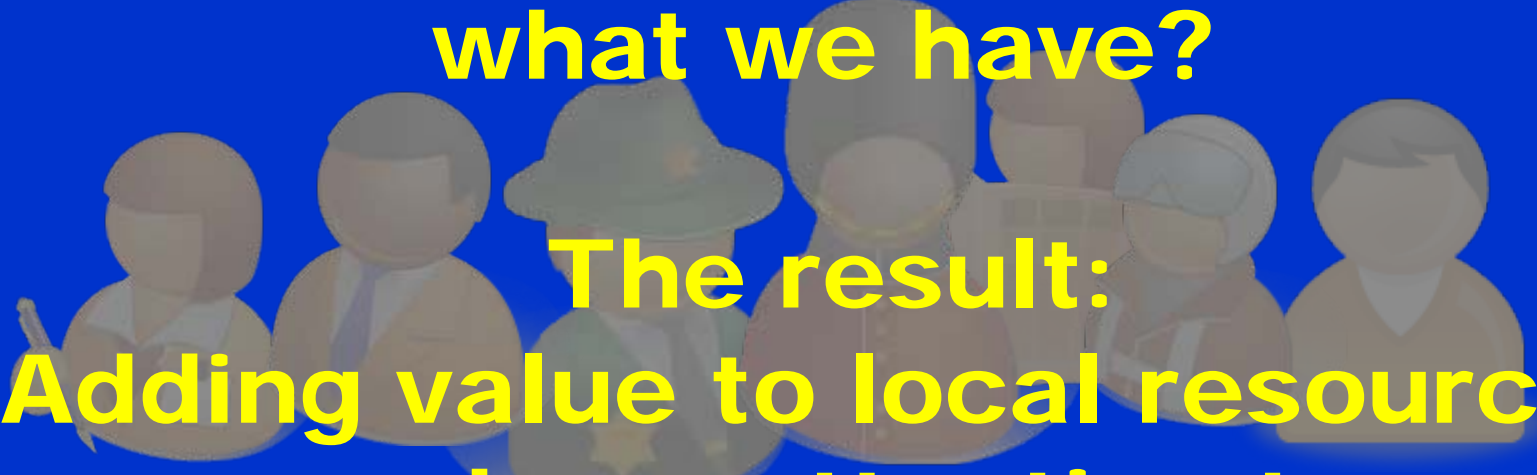
# Partial List of Current Projects

Pulp & paper mills  
Major sawmills & board mills  
Mascoma-Frontier Renew. Res.  
Renewafuel-Cliffs Res.  
~6 Pellet Manufacturers  
7-8 Wood Using Utilities  
Fuels for Schools & BURN-UP  
Paradise Briquettes  
Project in Gaylord?  
LaFarge Cement?  
White Pine Power?  
NMU co-gen boiler?  
Escanaba power plant?

In the United States we ask:  
**How** can I buy the biggest,  
shiniest, cheapest thing?  
(kilowatt, TV, gasoline, T-shirt)

The result:  
We shop at Wal-Mart for goods  
made in China, and close our  
factories.

The question might be:  
How can WE get the most out of  
what we have?



The result:  
Adding value to local resources  
and pay attention to  
consequences.



# IRRESPONSIBILITY

NO SINGLE RAINDROP BELIEVES IT IS TO BLAME FOR THE FLOOD.