Clean Energy Technologies

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Recycled Energy Development

Congressional Distributed Energy Caucus

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Key Points

- Distributed generation can be big or small
- Industrials are leaders on clean energy technologies
- Think outside the box – enormous potential for cogeneration (CHP) and recycled energy
- Focus on efficiency – which leads to reduced costs and reduced pollution
- Take advantage of Farm Bill and energy-independence legislation

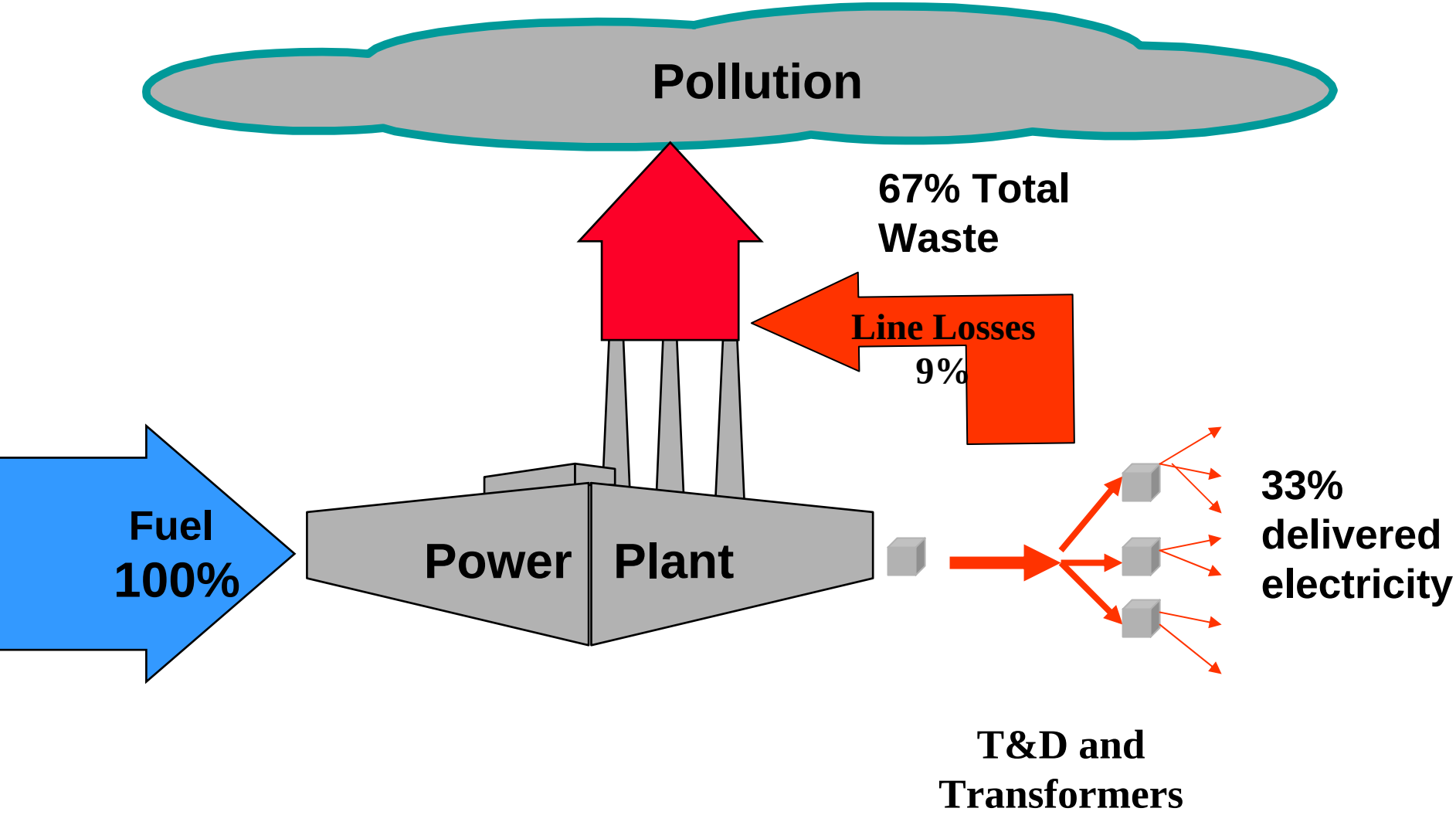
Why Consider Alternatives?

- Average plant built with 1950s technology
- Only 33% efficiency; burn three “lumps” of fuel to obtain one “lump” of electricity
- Electric generators are largest polluters
- Unreliable supplies cost $150 billion
- U.S. consumer loses power 214 min/yr; 70 min/yr in UK; 6 min/yr in Japan

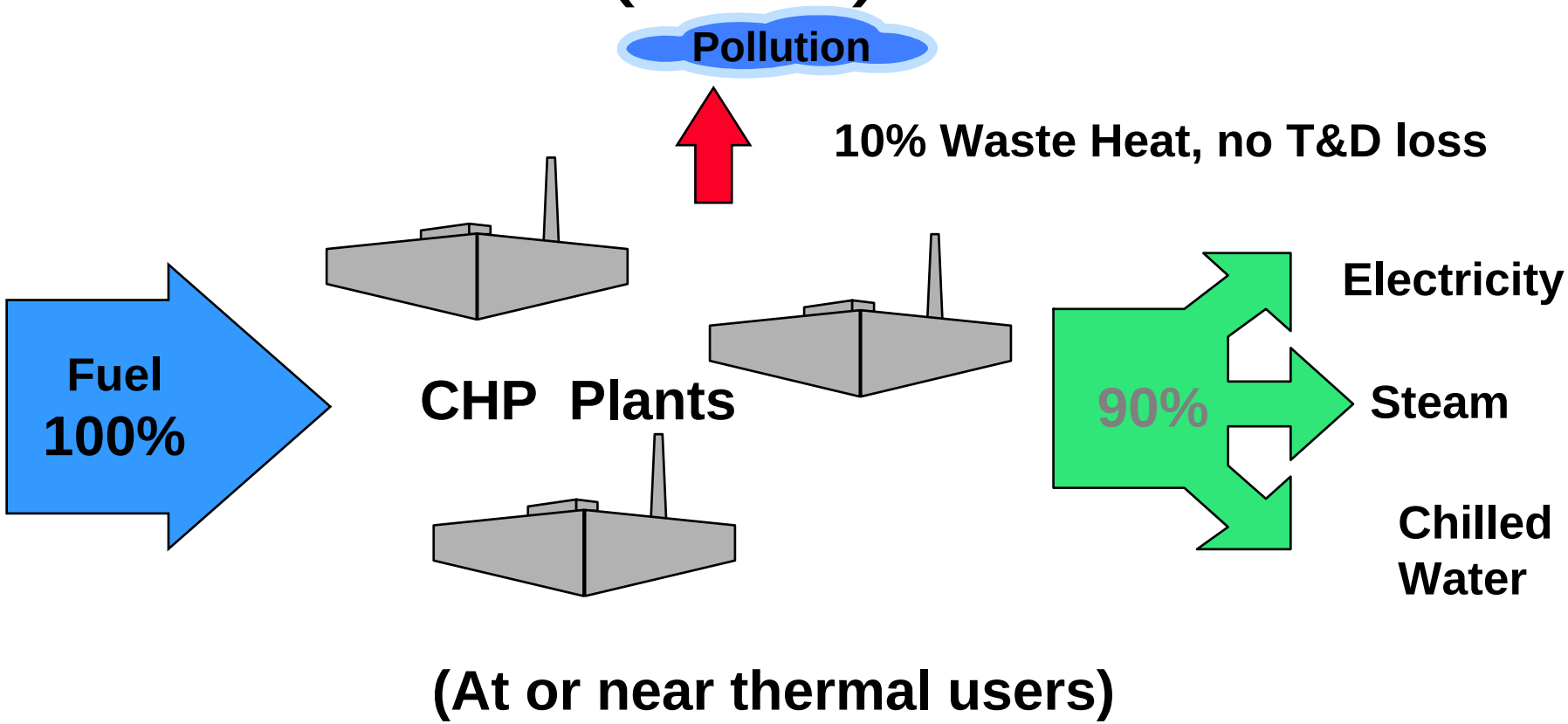
Electricity Prices to Rise

- New coal plant costs $2,500/kw, up from $800/kw in late 1990s
- Clean Air Interstate Regulations (CAIR) and Clean Air Mercury Regulations will add $550-850/kw for existing plants
- Pending costs: transmission expansion, greenhouse-gas reductions (carbon credits of $20/ton would add 2 cents/kwh), fuel-cost volatility (3-5 times above 1990 levels; long-term contracts now below spot market)
- Prices could double in 5-10 years.

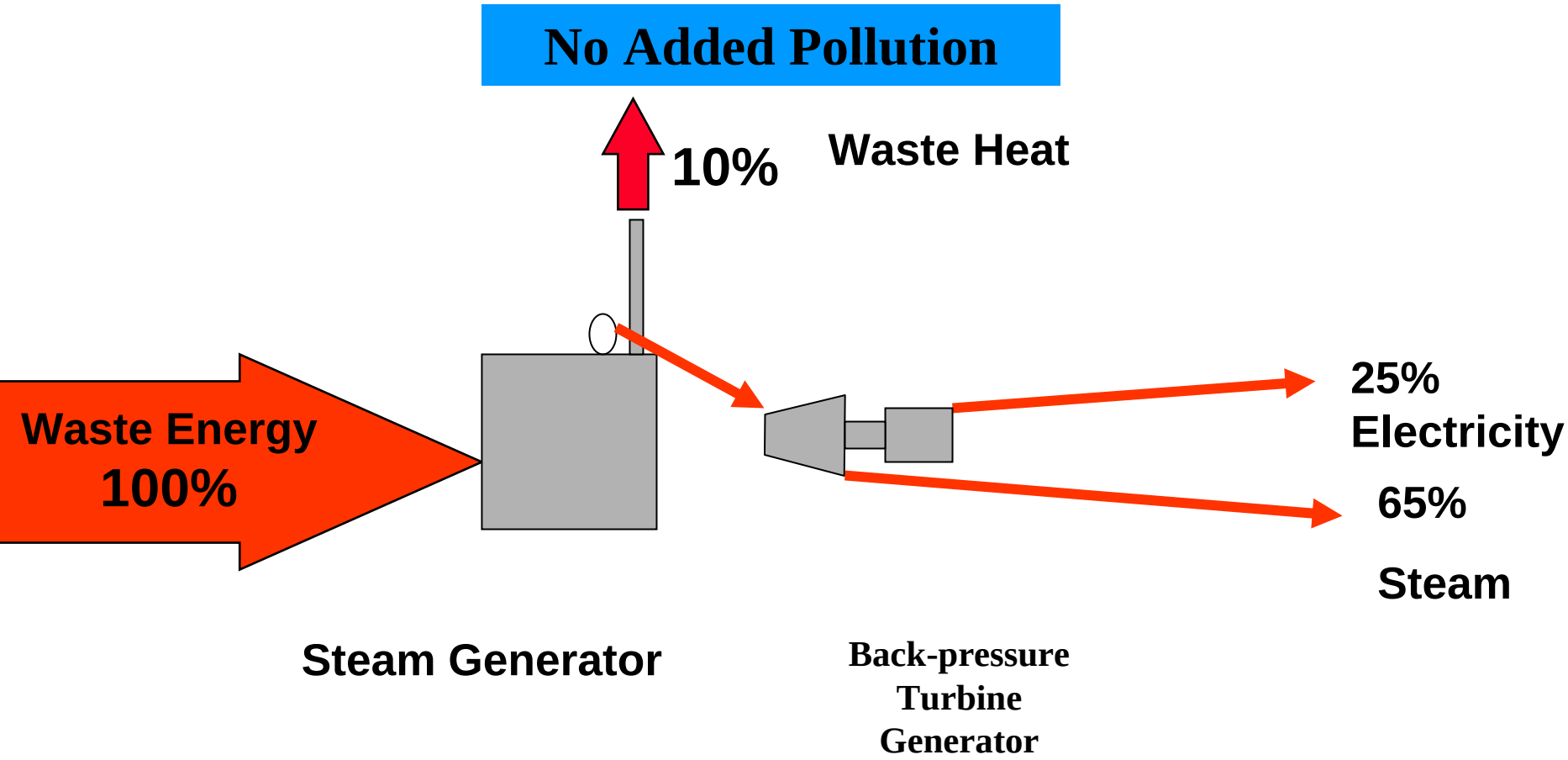
Conventional Central Generation



Combined Heat and Power (CHP)



Recycled Energy *(At user sites)*



Mittal Steel – Coke Oven Waste

93 megawatts and 1MM pounds of steam/hour

Southport, N.C.

CHP/burns coal and tires/steam to ADM and 120 megawatts

Boskovitch Farms, Oxnard, CA

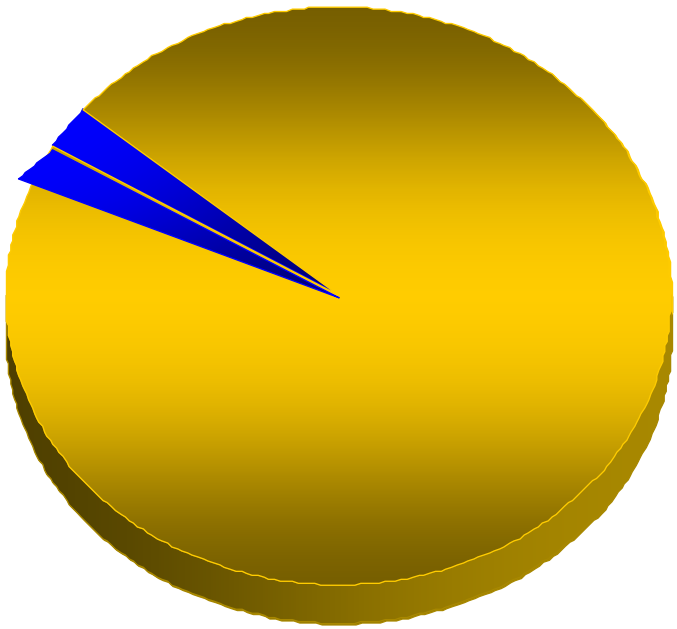
steam/refrigeration/48 MW for food processor

Industrial Clean Energy Technologies

- Waste energy streams in 19 industries could generate 19% of U.S. electricity

9,900 MW

Recycled Energy in Service



96,000 MW

Identified Opportunities

Source: USEPA/LBNL 2005 Study

Clean Energy Technologies: Think Outside the Box

- Back-pressure power recovery
- Natural gas pressure recovery turbines
- Black liquor gasification
- Anaerobic digestion
- Lawrence Berkeley Lab (LBNL-57451)

Policy Options

- Performance credits to ensure biofuel production is efficient (Farm Bill)
- Energy-Savings Insurance
- Energy Efficiency Resource Standard
- Tax Credit
- Interconnection Standards
- Net Metering
- Appropriations for DOE and EPA efforts

Thank You

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