

Reciprocating Engines in CHP

Opportunities and Barriers

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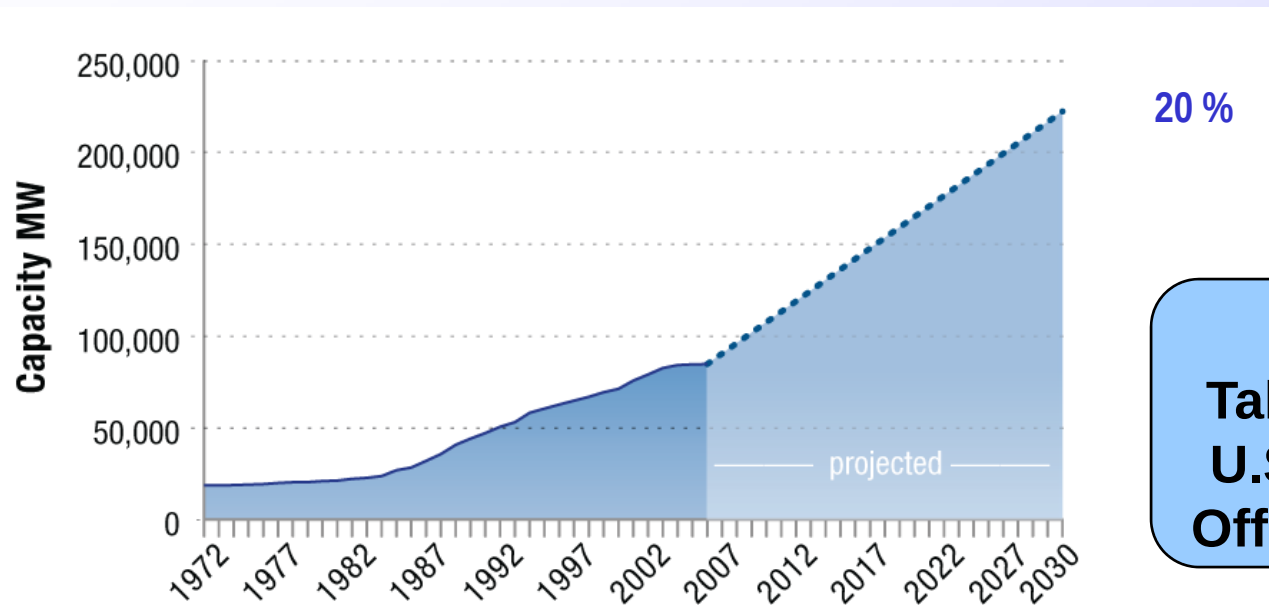
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With input from members of EMA

July 23, 2009

What If CHP Represented 20% of US Generating Capacity in 2030?

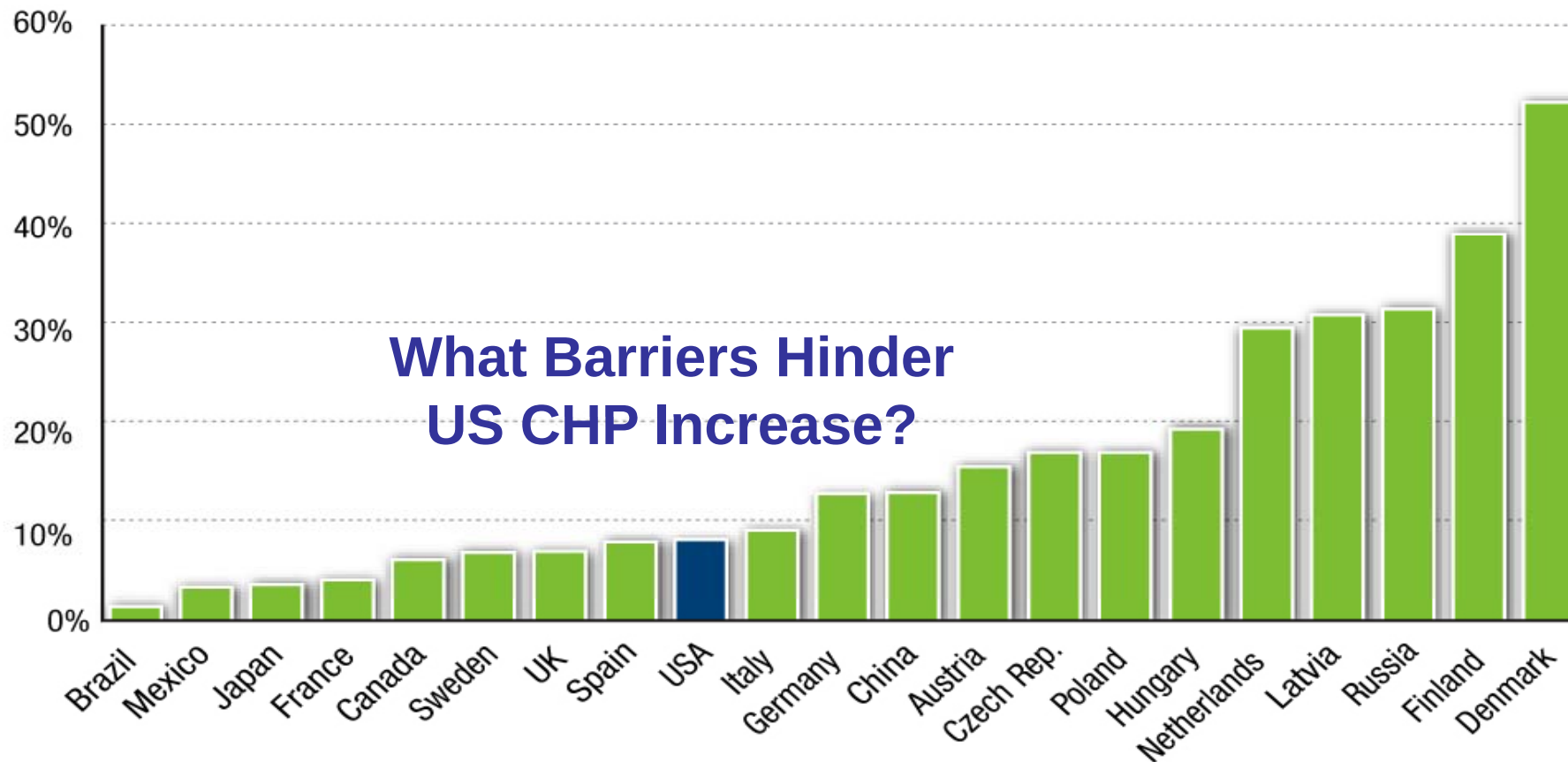


**Same as
Taking 61% of
U.S. Car Fleet
Off of the Road**

20 % of U.S. Electricity Generating Capacity	240,900 MW
Annual Energy Savings	5.3 Quads
Annual CO₂ Reduction	848 MMT
Annual Carbon Reduction	231 MMT
Number of Car Equivalents Taken Off Road	154 million

Source: EERC

CHP's Actual Share of National Power Production



Source: IEA 2007

Challenges & Opportunities

**Market
Environment**

Energy Policy. "Over the fence."
Federal/State CHP incentives – tax,
SGIP, manufacturing

**Gas Price
Volatility**

Need to stabilize variations through
collective/coop purchasing

**Connectivity
New standards**

Interconnect challenges still exist.
Net metering for CHP -- via AB
1613?

**Emissions
Recognition - Incentives**

NOx limit is world class.
Demands aggressive after-
treatment

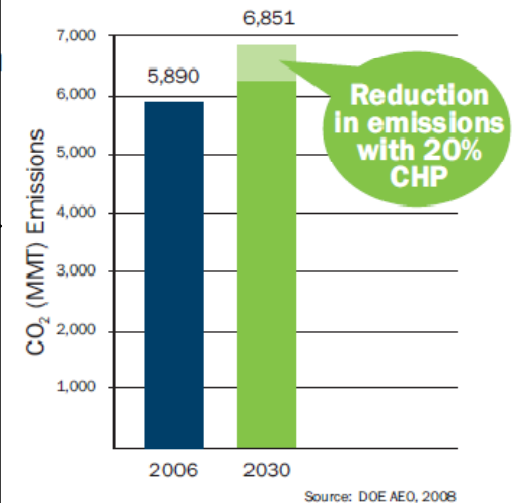
**Efficiency
& Reliability**

High efficiency, lower cost,
durability and reliability

**Tax treatment,
Grants, Incentives**

Stimulate "Green" Capital Investment,
Smart Grids

**CHP Can Avoid 60% of the
Potential Growth in GHG
Emissions Between 2006 and 2030**



**20% CHP capacity avoids
60% CO₂ Growth in 2030**