

Energy Research at Wichita State University

Ward Jewell

Dept. of Electrical Engineering and Computer Science

Center for Energy Studies

Power Systems Engineering Research Center

Kansas Energy Council

November 12, 2008



PSERC



Electricity

Wind

Variability
Monitoring
Control
Life Cycle Analysis
Reliability
Maintainability
Manufacturability
Durability

Grid

Optimal Resources
Climate Change
Smart Grid
Distributed Resources
Energy Storage
Line Routing

Oil & Gas

Exploration and
Development of
Kansas Resources

Microbial reefs

Fuels

Biofuels

Prairie and grassland
Management
Algal sources
Biojet
Catalysts, stimulants
Biomass heat

Feasibility Analysis

Break-even
Policy issues
Competing interests
Sociotechnical

Photosynthesis:

Converting sunlight into chemical energy



Electricity

Wind

Jan Twomey
Ward Jewell
Bob Minaie
Coskun Cetinkaya
Walter Horn
Jim Steck
Bayram Yildirim
Ramazan Asmatulu
Scott Miller
T. S. Ravi

Grid

Ward Jewell
Asrat Teshome

Oil & Gas

William Parcell
Sal Mazzullo
Wan Yang

Fuels

Biofuels

Greg Houseman
Mark A. Schneegurt

Feasibility Analysis

Eva Yao



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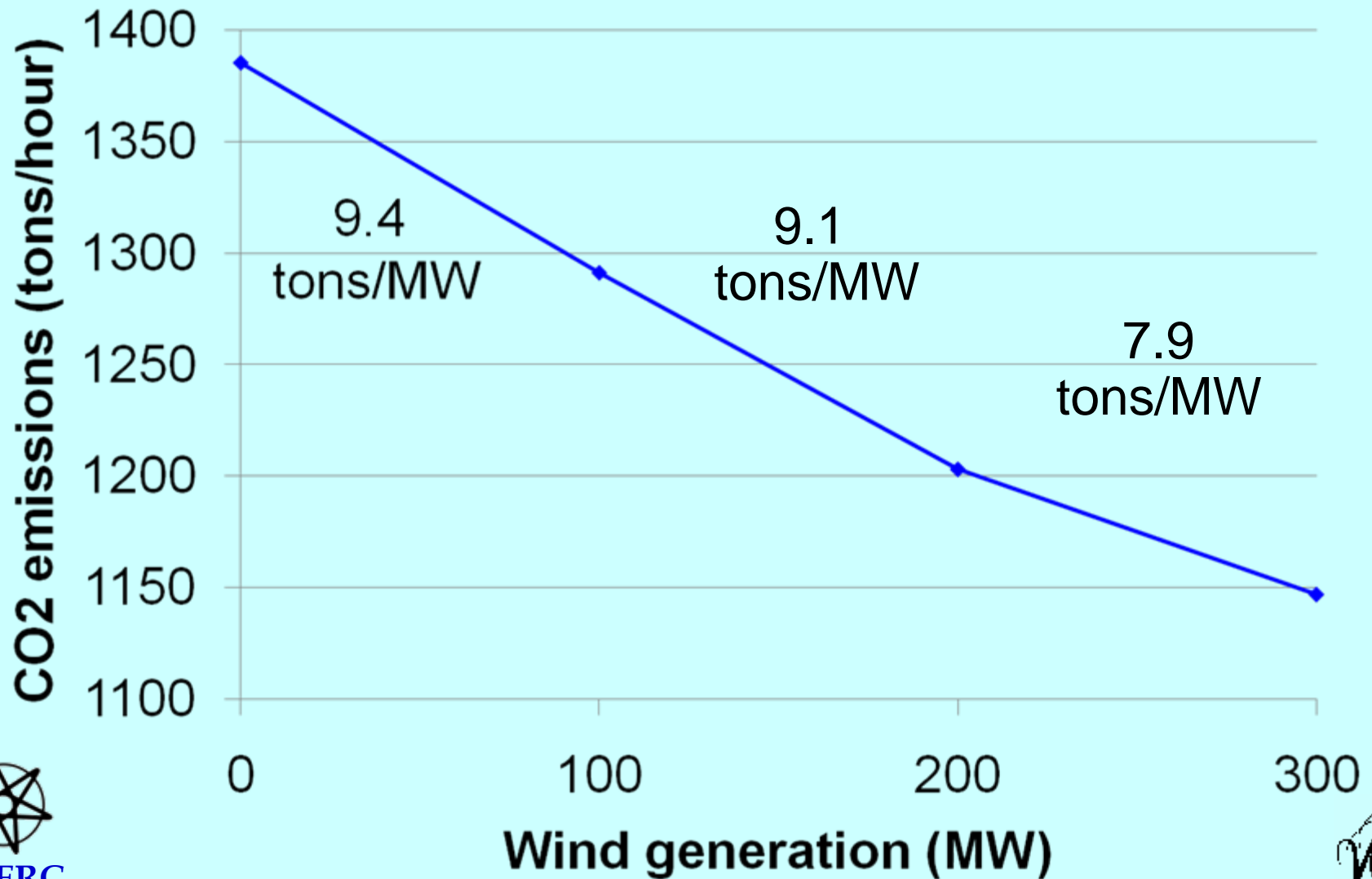
Photosynthesis:

Francis D'Souza

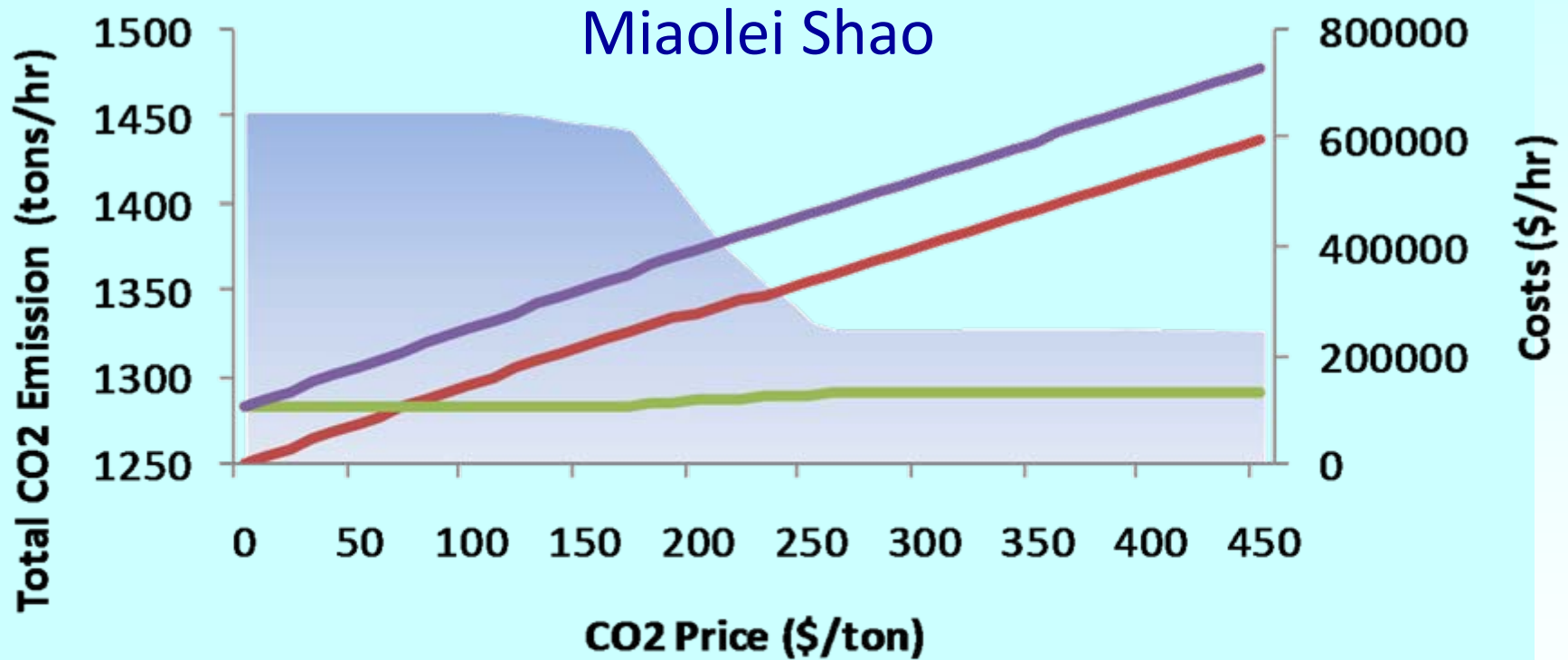


Grid research: Wind vs. CO₂

Piyasak Poonpun



Grid research: CO₂ price effects on grid operation



■ Total CO₂ Emissions (tons/hr) ■ CO₂ Emission Costs (\$/hr)
— Fuel Costs (\$/hr) — Fuel-Emission Costs (\$/hr)



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