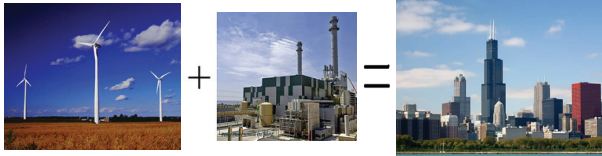


CONCLUSION

- Solar energy is too expensive
- Chicago's 20% energy needs (3,140 GWhr/yr) could be provided by five wind farms with one hundred 2.5 MW wind turbines each
- Two natural gas turbines for backup
- With an IRR of 8%, the producer cost of generating electricity with wind turbines is \$0.075/KWhr before tax incentives
- Capital investment of proposed wind farm costs \$2.3 billion



500, 2.5 MW Wind Turbines + Two Combustion Turbines = 20% Renewable Energy for Chicago

FUTURE WORK

- Investigate alternative back-up sources
- Compare wind farm option to coal fired plant with mandated CO₂ sequestration
- Explore offshore wind farm options

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IPRO 302

Spring, 2010

Replace 20% of Chicago Electrical Demand with Renewable Energy



 **AMPS**
Alternative Metropolitan
Power Strategy

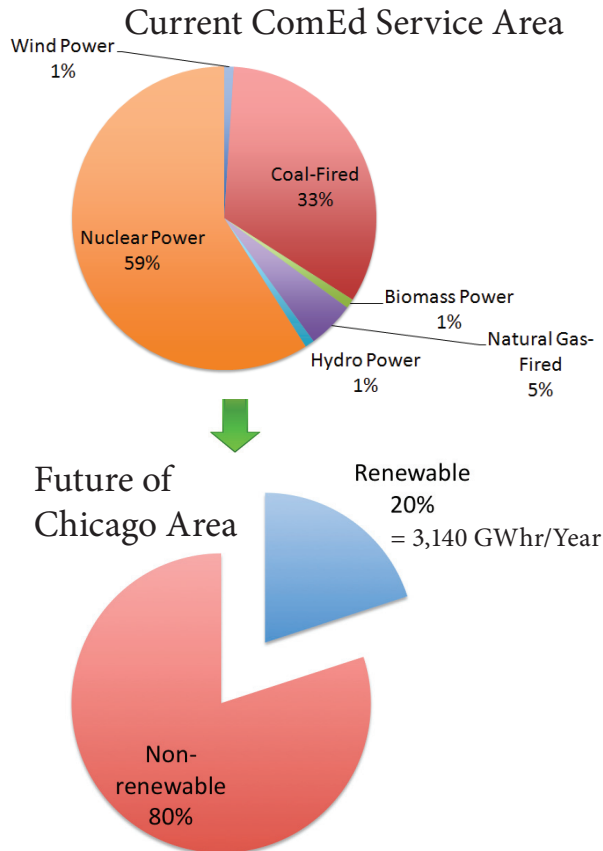


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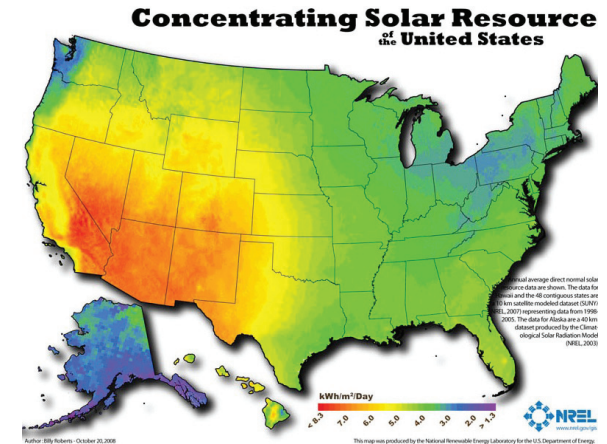
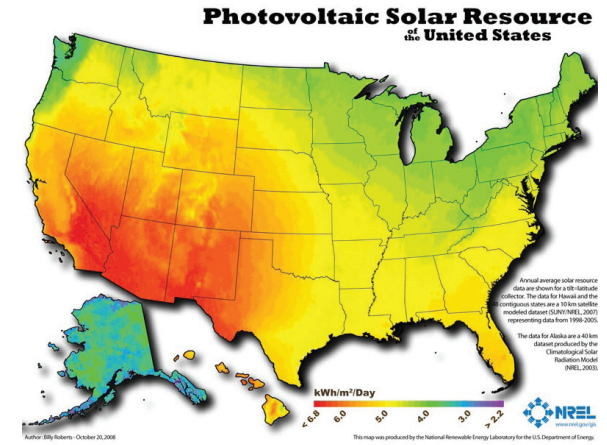
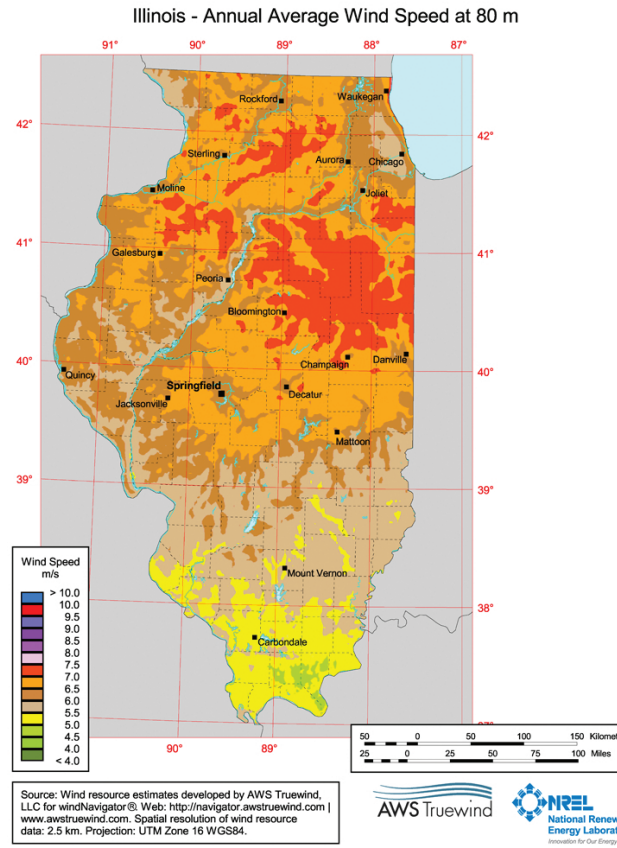
PROBLEM STATEMENT

The federal government is considering mandating a 20% renewable portfolio standard (RPS). Currently, the City of Chicago uses less than 3% of electricity from renewable energy. Our goal is to produce a hypothetical design for renewable energy to account for 20% of the City of Chicago's electricity needs.

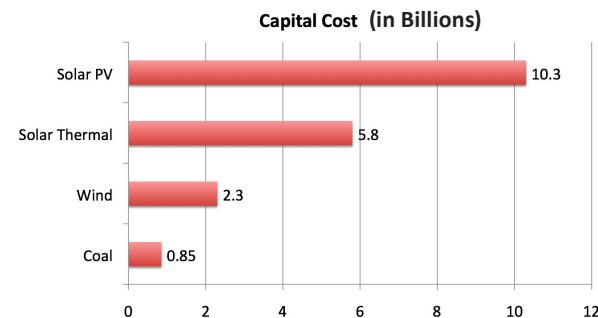
OBJECTIVE



RENEWABLE ENERGY RESOURCE



CAPITAL COST ANALYSIS



ENERGY COST ANALYSIS

