

# Alternative Power Source To Draw Underground Water

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Team 01

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# Overview

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# Problem Statement

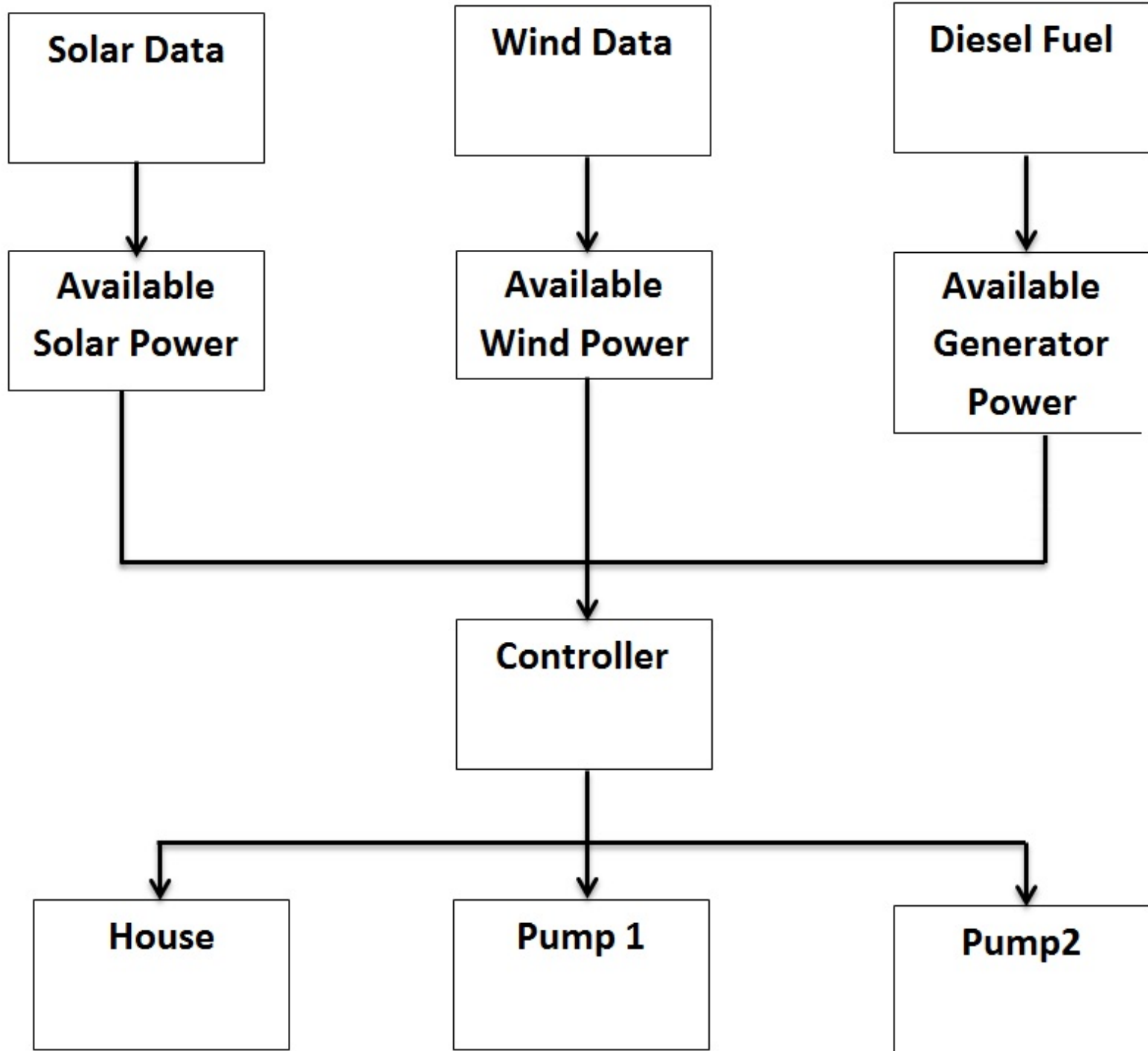
- The Client requests an alternative energy solution that will draw water from the Cedar Ranch well. The system must meet water demands while reducing the average annual cost of operation over a five to seven year span.

# Constraints

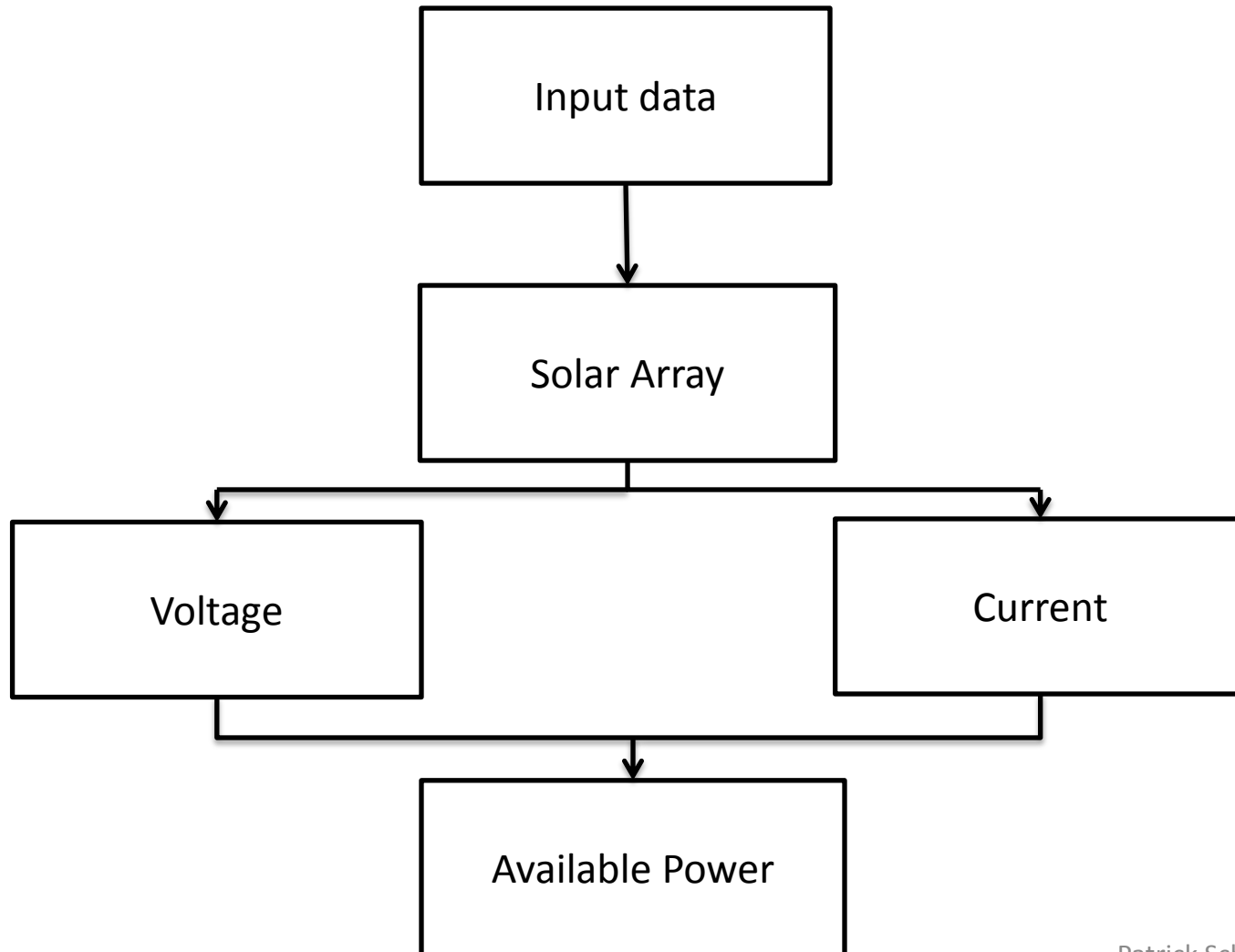
- Well depths from 200-600 feet
- Flow rate varies 2-12 gallons per minute
- Alternative energy must be 80%-100% of total energy used

# Simulink Simulation

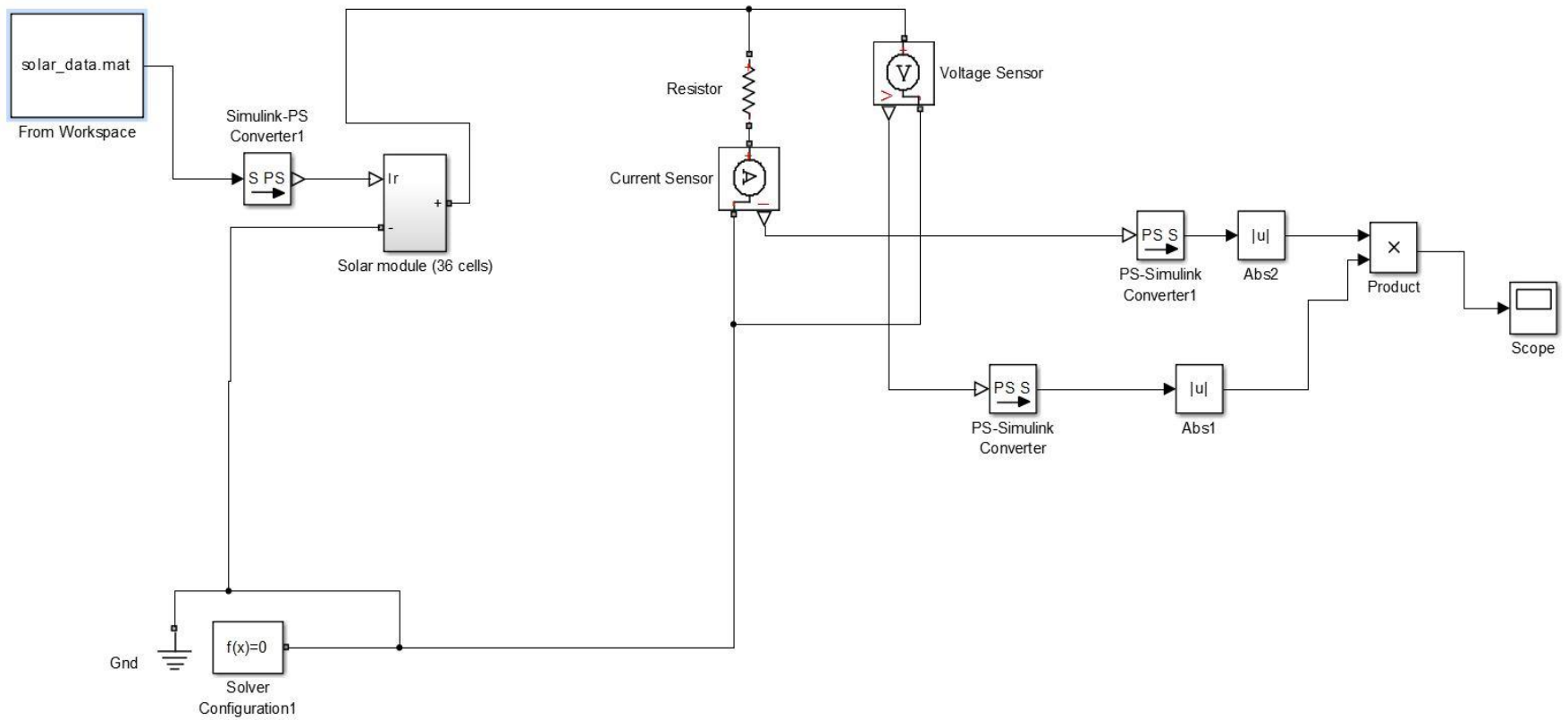
- Input wind and solar data
- Simulate real time operation of system
  - Solar Model
  - Wind Model
  - Generator/Gearbox Model
  - Controller Model



# Solar Model

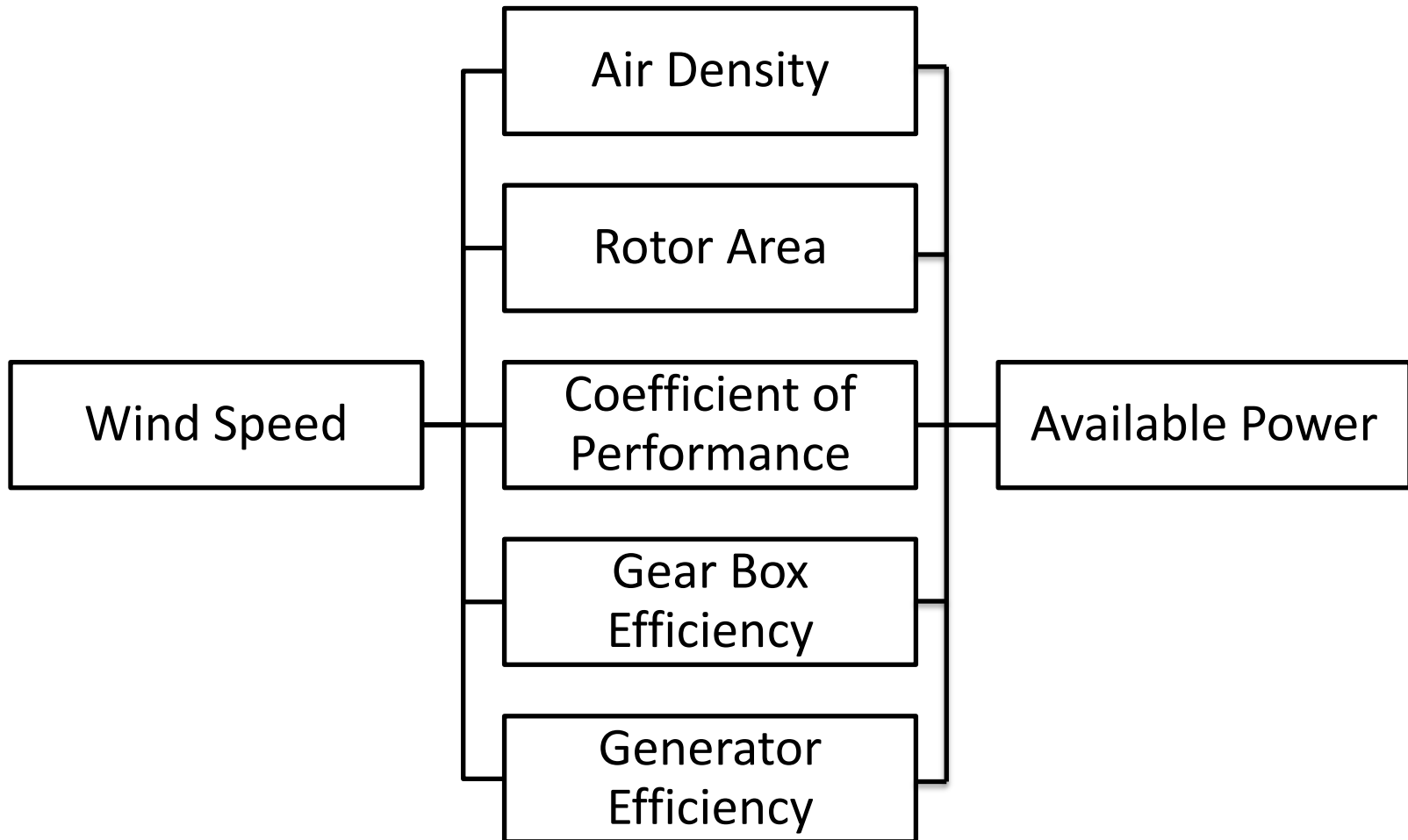


# Solar Model

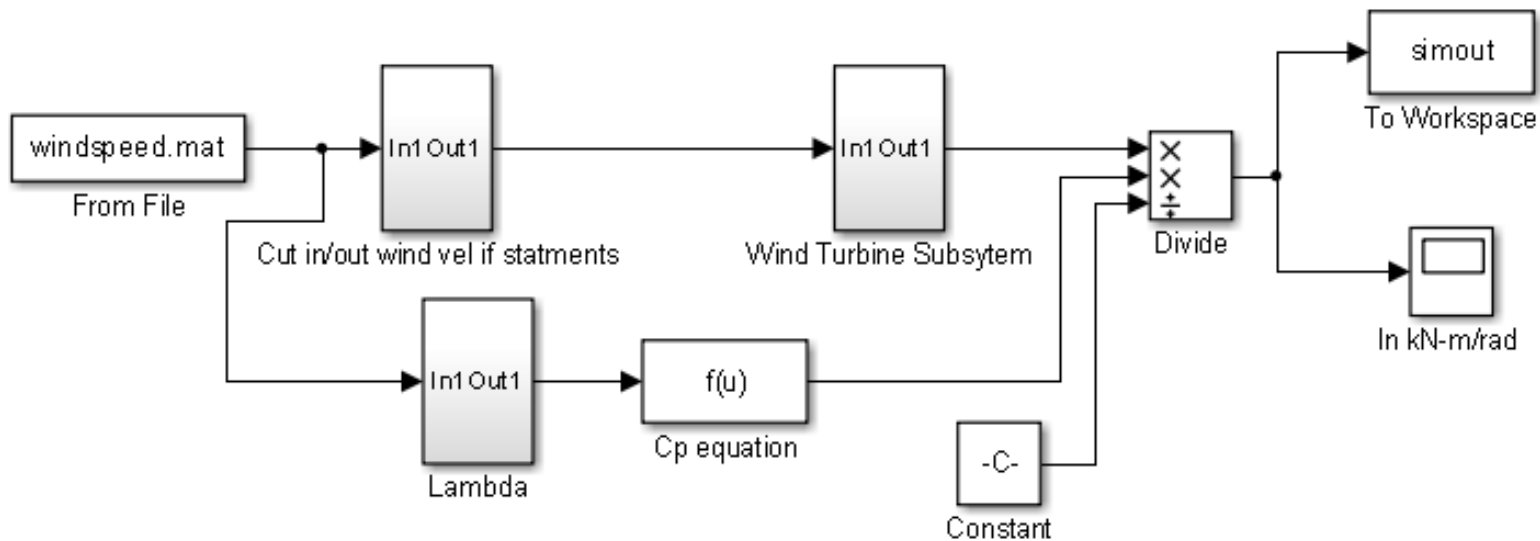




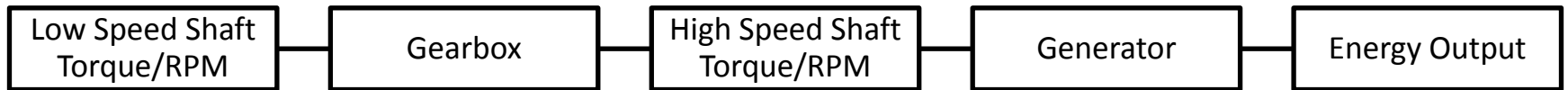
# Wind Turbine Model



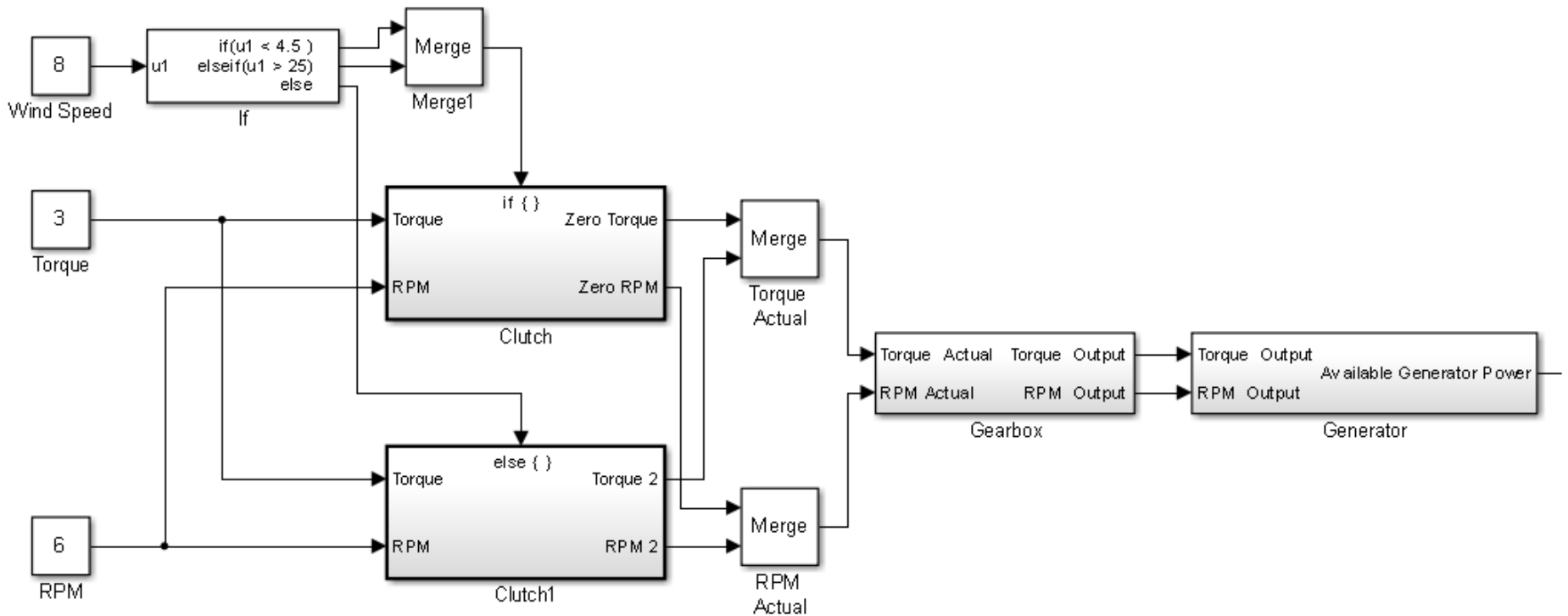
# Wind Turbine Model



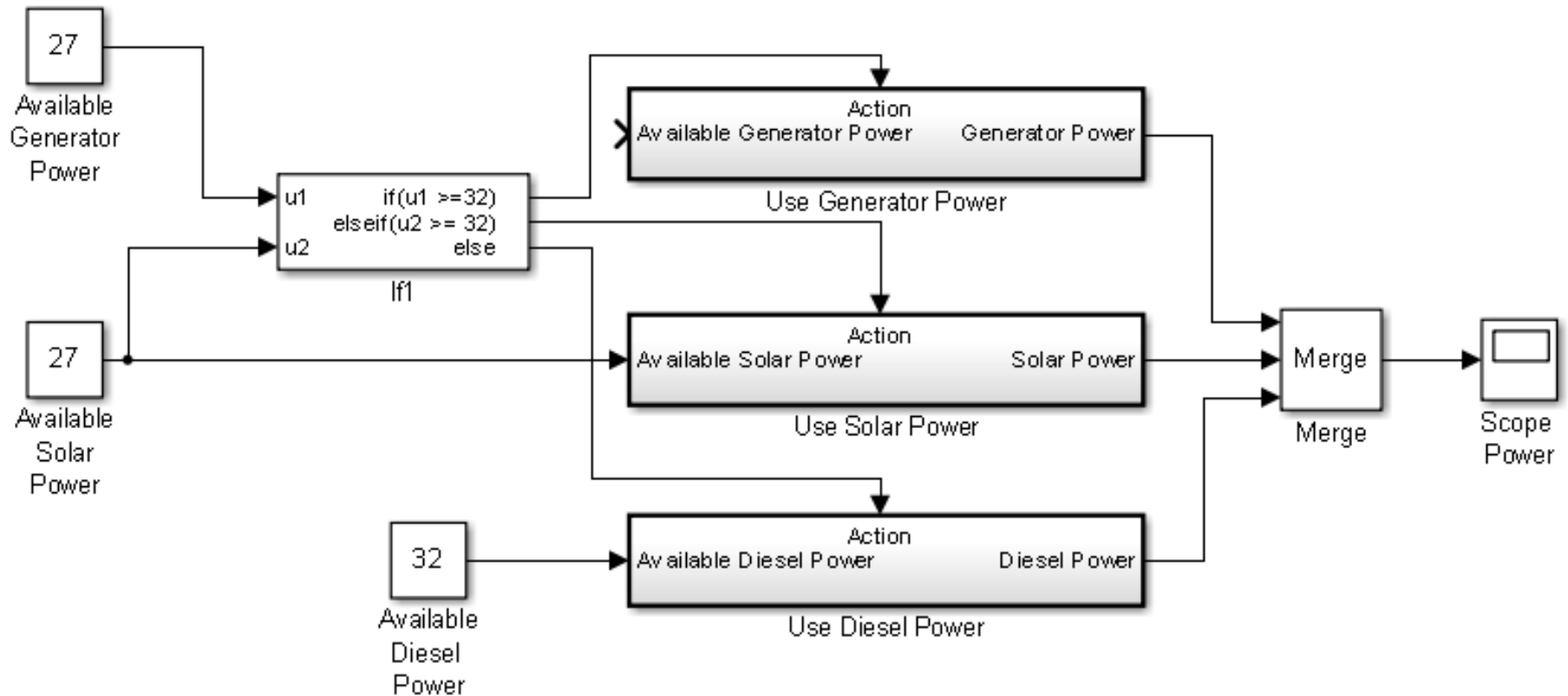
# Generator/Gearbox Model



# Generator/Gearbox Model



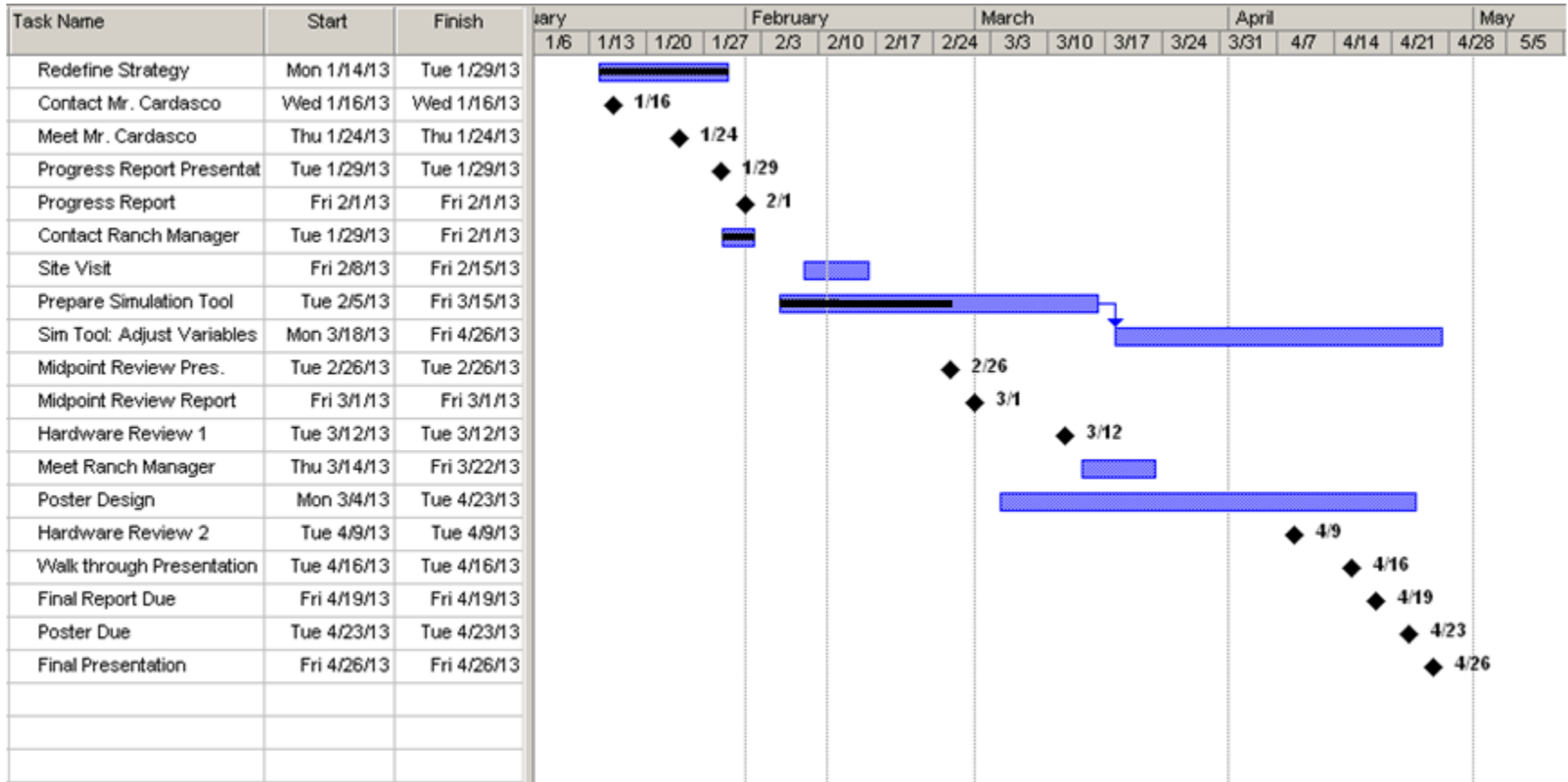
# Controller Model



# Next steps

- Site visit
- Meet with pump specialist
- Finalize real time simulations using location specific solar and wind data

# Gantt Chart



# References

Bill Cardasco – Babbitt Ranches

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Questions?