



National Research Council
Canada

Conseil national de recherches
Canada

WIND ENERGY RESOURCE CHARACTERISTICS

- DIFFUSE:**
- MODERATELY WINDY SITE (7 M/S AVG.) HAS ENERGY DENSITY OF 400 W/M²
 - YET THREE TIMES ENERGY DENSITY OF SOLAR RADIATION
 - LARGE, CAPITAL INTENSIVE, MACHINERY NEEDED FOR USEFUL POWER OUTPUT
- VARIABLE:**
- WITH TIME ● RAYLEIGH & WEIBULL DISTRIBUTIONS
 - WITH HEIGHT ● POWER LAW RELATION TO LOCAL HEIGHT
 - WITH TERRAIN ● HILLS AND VALLEYS, LAND AND WATER, TREES AND DESERT
 - EFFECTS ABOVE ARE INTER-RELATED
 - VARIATIONS ARE OF SIGNIFICANT MAGNITUDE
- UNSTABLE:**
- SMALL AND LARGE SCALE TURBULENCE EFFECTS (GUSTS)
 - WIND SHEAR VARIATIONS
 - TEMPERATURE DEPENDENCE
 - OCCASIONAL EXTRAORDINARY CONDITIONS

HOWEVER

- RENEWABLE:** EVERLASTING SUPPLY
- FUEL-FREE:** KNOWN LONG-TERM ECONOMIC COMMITMENT
- DISTRIBUTED:** STRATEGICALLY NOT VULNERABLE
- ENVIRONMENTALLY BENIGN:** NO RECOVERY OR DISPOSAL PROBLEMS