



**Economic Benefits of Scheduled
Rotor Maintenance**
presented by Gary Kanaby
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COMMON TYPES OF DAMAGE

- **LEADING EDGE EROSION**
- **SPLIT LEADING EDGE OR TIP**
- **SPLIT TRAILING EDGE**
- **ROOT FRACTURES**
- **SURFACE CRACKS**
- **LIGHTNING SYSTEM**
- **PAINT / GELCOAT**
- **BLADE FAILURE**

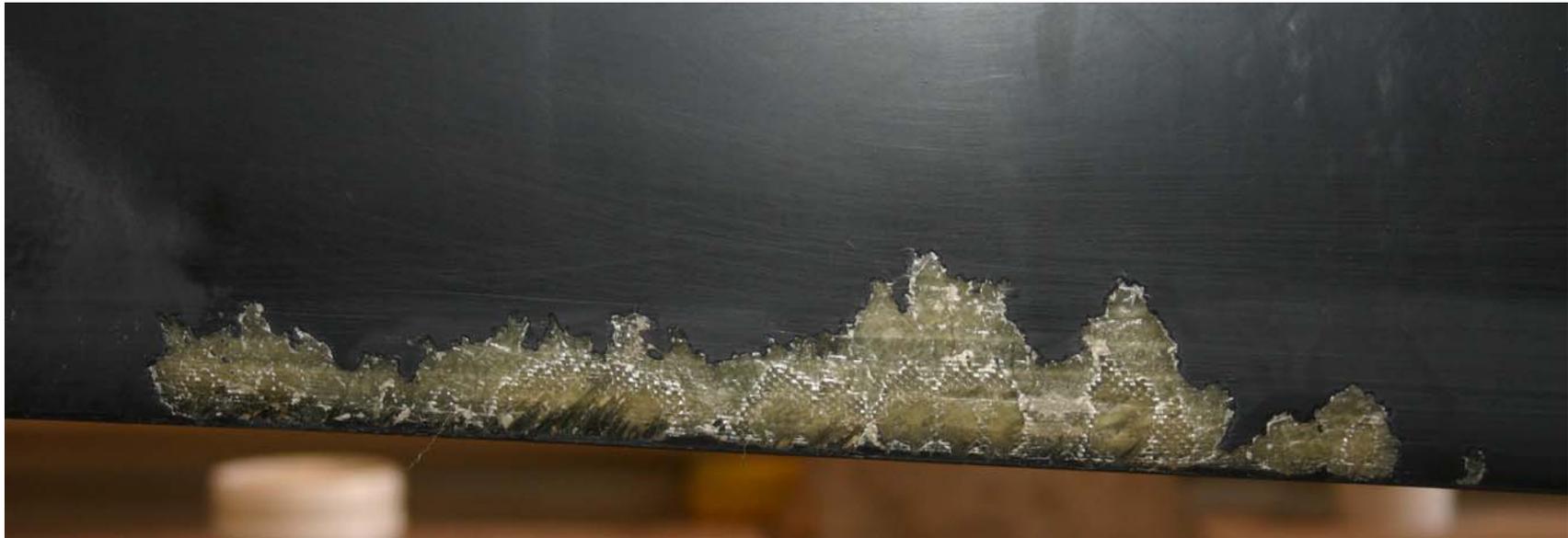


LEADING EDGE EROSION

- CAN REDUCE ENERGY CAPTURE BY 5%
- CAN BE REPAIRED WHILE INSPECTING OR PERFORMING REPAIRS



Severe Leading Edge Erosion



Minor Lightning Damage (with lightning protection)



Minor Lightning Damage (with lightning protection)



Lightning Choosing Location to Strike



Lightning Entry Near Tip (no lightning protection)



Lightning Exit Point (no lightning protection)



Shear Web Damage (no lightning protection)



MINOR LEADING EDGE DAMAGE



TIP FAILURE



Do it Yourself Repair



BLADE/ROTOR REPLACEMENT LARGE CRANE IS REQUIRED



SCHEDULED MAINTENANCE REQUIRES A SMALLER CRANE



DOING NOTHING

- **WAIT FOR SOMETHING TO HAPPEN**
- **UNSCHEDULED REPAIRS**
- **REPAIR COSTS**

LOSS OF REVENUE IN WINDY SEASON

REMOVAL OF BLADE MAY BE NECESSARY

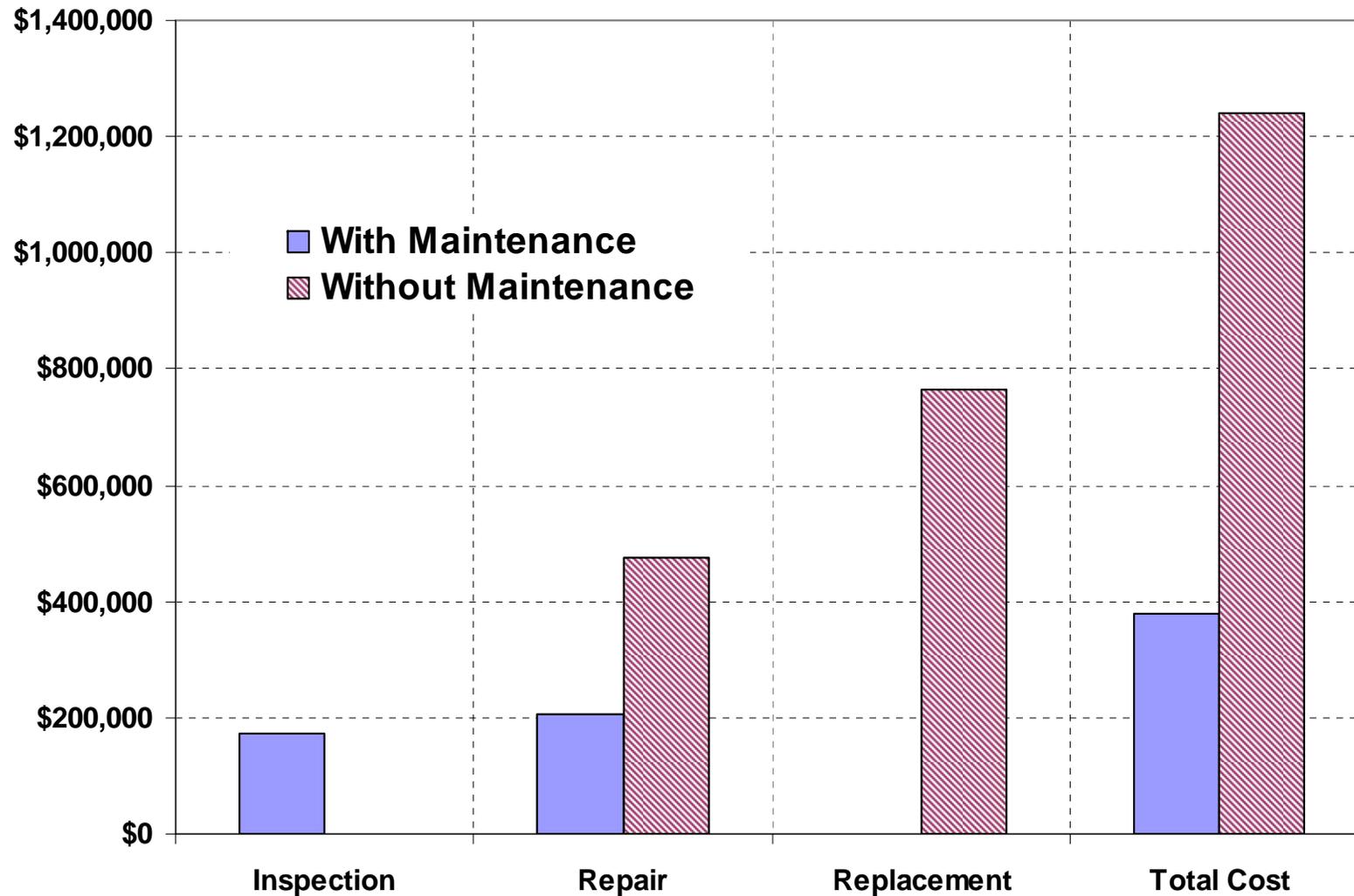
MAY NEED TO BE REPAIRED IN THE SHOP

REPAIRS COSTLY

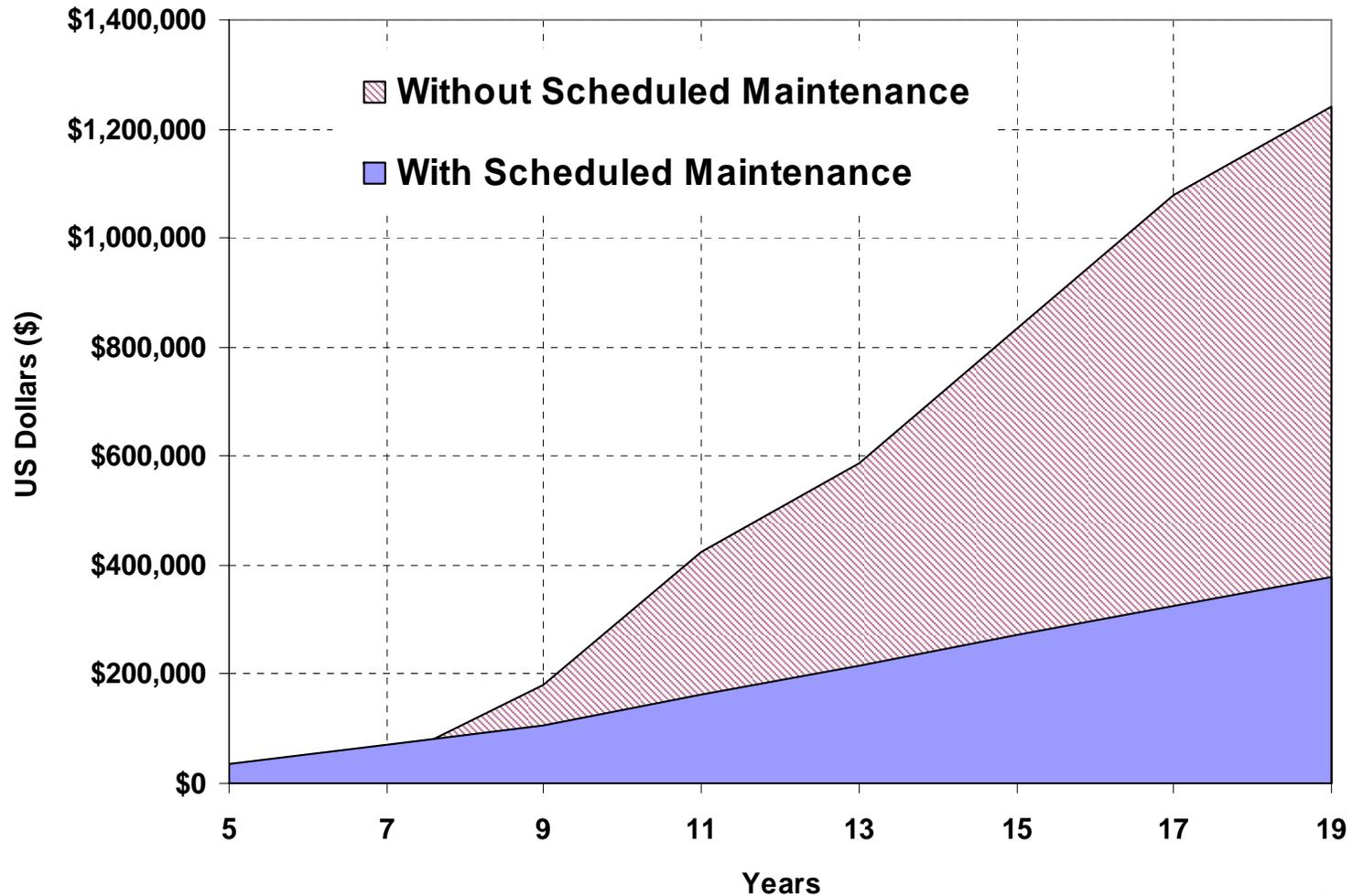
SCHEDULED MAINTENANCE

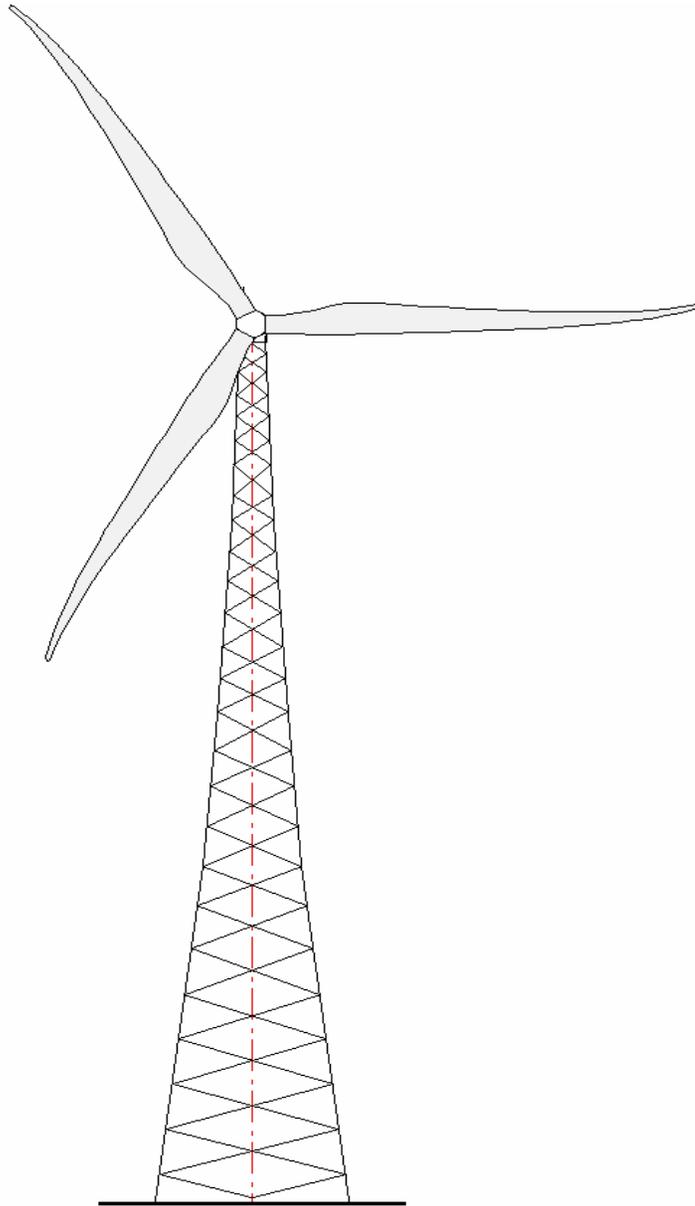
- **INSPECTIONS SCHEDULED**
- **REPAIRS UP TOWER SCHEDULED**
- **REPAIRS ARE MINOR**
- **SMALLER CRANES ARE NEEDED**
- **NO LOSS OF REVENUE:
THE INSPECTIONS AND REPAIRS
ARE SCHEDULED DURING THE
CALM SEASON**
- **LEADING EDGES CAN BE REPAIRED**

COST IMPLICATIONS: WITH & WITHOUT MAINTENANCE



19 YEAR CASH OUT FLOW: WITH & WITHOUT MAINTENANCE





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