Reducing Predictive Risk in Repowering Energy Assessments through Standardized Operational Data Inputs

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Introduction

Factors affecting wind farm performance can be oversimplified in operational datasets. Clarifying and filtering individual losses is expected to result in increased accuracy and reduce risk in energy predictions.

Approach

1. Diversify select loss buckets using IEC 61400-15-2 draft format
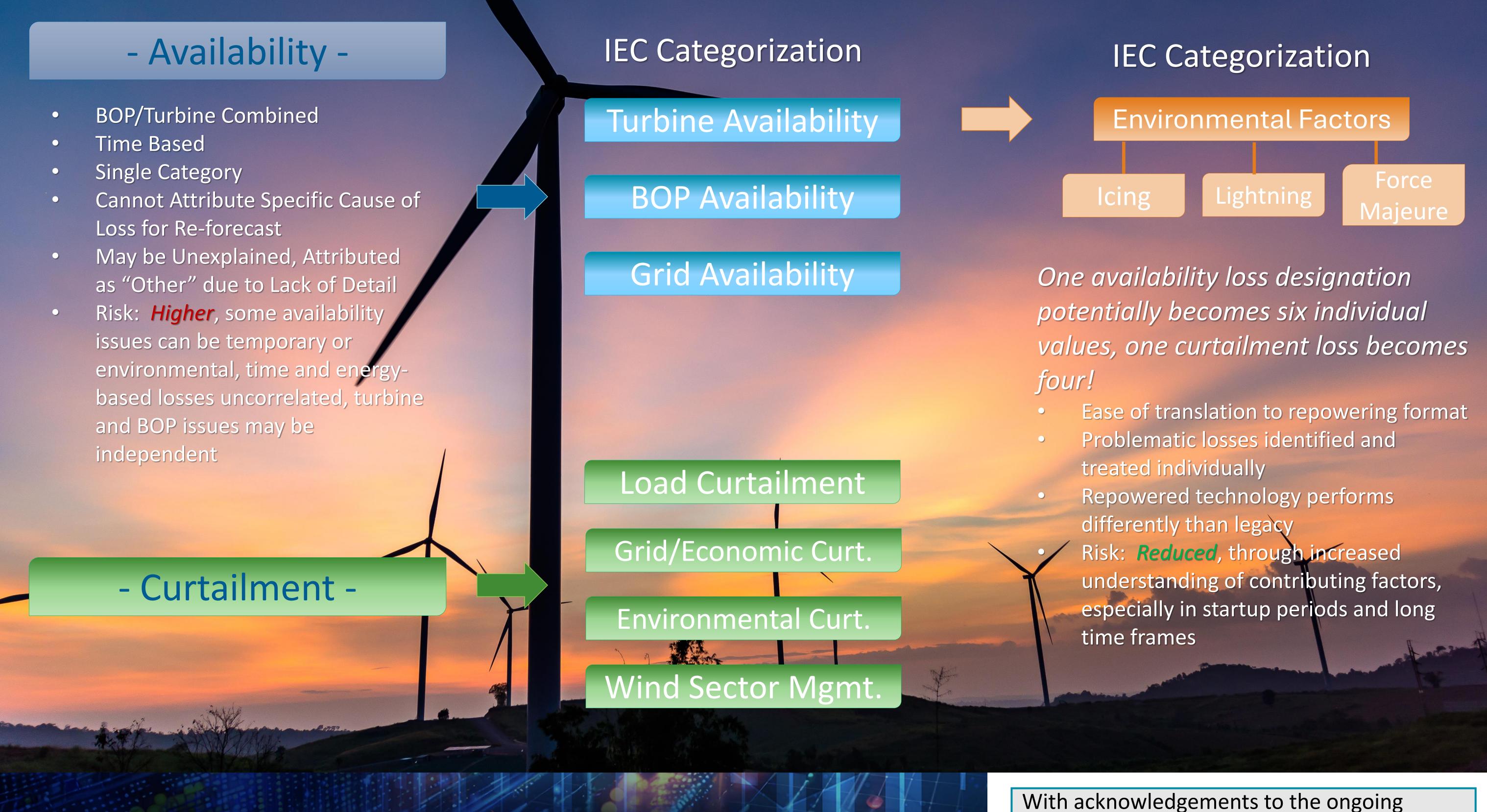2. Reduce "other" assignments
3. Characterize risk

Discussion

- Miscategorized losses may result in conservative base production estimates
- Unattributed losses increase predictive risk
- Work closely with operators to understand nature of losses

Accurate performance loss designations improve accuracy and lower risk of re-forecasted and repowering energy assessment predictions

- Availability -

- BOP/Turbine Combined
- Time Based
- Single Category
- Cannot Attribute Specific Cause of Loss for Re-forecast
- May be Unexplained, Attributed as "Other" due to Lack of Detail
- Risk: *Higher*, some availability issues can be temporary or environmental, time and energy-based losses uncorrelated, turbine and BOP issues may be independent

- Curtailment -

IEC Categorization

- Turbine Availability
- BOP Availability
- Grid Availability

- Load Curtailment
- Grid/Economic Curt.
- Environmental Curt.
- Wind Sector Mgmt.

IEC Categorization

Environmental Factors

- Icing
- Lightning
- Force Majeure

One availability loss designation potentially becomes six individual values, one curtailment loss becomes four!

- Ease of translation to repowering format
- Problematic losses identified and treated individually
- Repowered technology performs differently than legacy
- Risk: *Reduced*, through increased understanding of contributing factors, especially in startup periods and long time frames

RESOURCE &TECH

AMERICAN CLEAN POWER

With acknowledgements to the ongoing efforts of the IEC 61400-15-2 Standards Committee.

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