WIND TURBINE DATA ANALYSIS USING A STANDARD REPORT FORMAT (GADS)

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Background

Canada has over 11,000 MW of wind power installed and, as wind parks transition from construction to operation and maintenance, the need for comparative statistics increases. CanWEA, along with wind owners and operators throughout Canada, recognizes the need for standardized reporting to support wind industry internal benchmarking, preventative maintenance, and research. Under a CanWEA pilot benchmarking data project, several wind farms across Canada are implementing Generating Availability Data System (GADS) reporting, which allows comparison across the wind industry and with traditional electricity generators. The Wind Energy Institute of Canada (WEICan) is processing the initial data and providing statistics to data contributors of the project.

Objectives

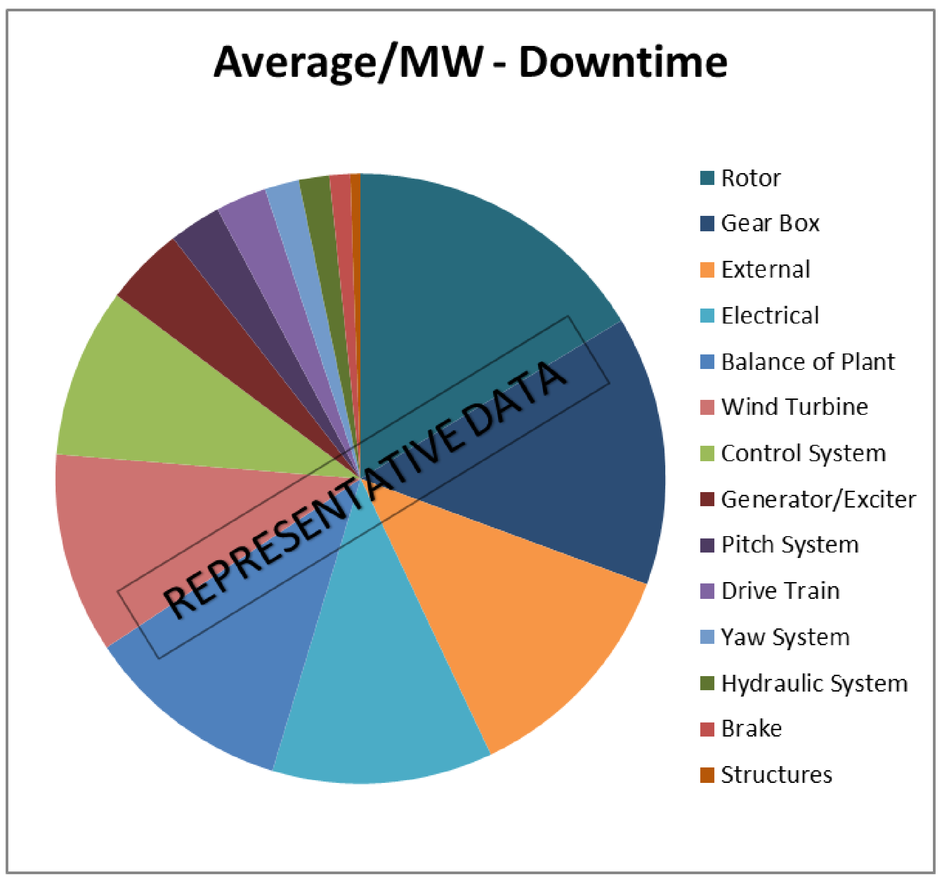
This data will:

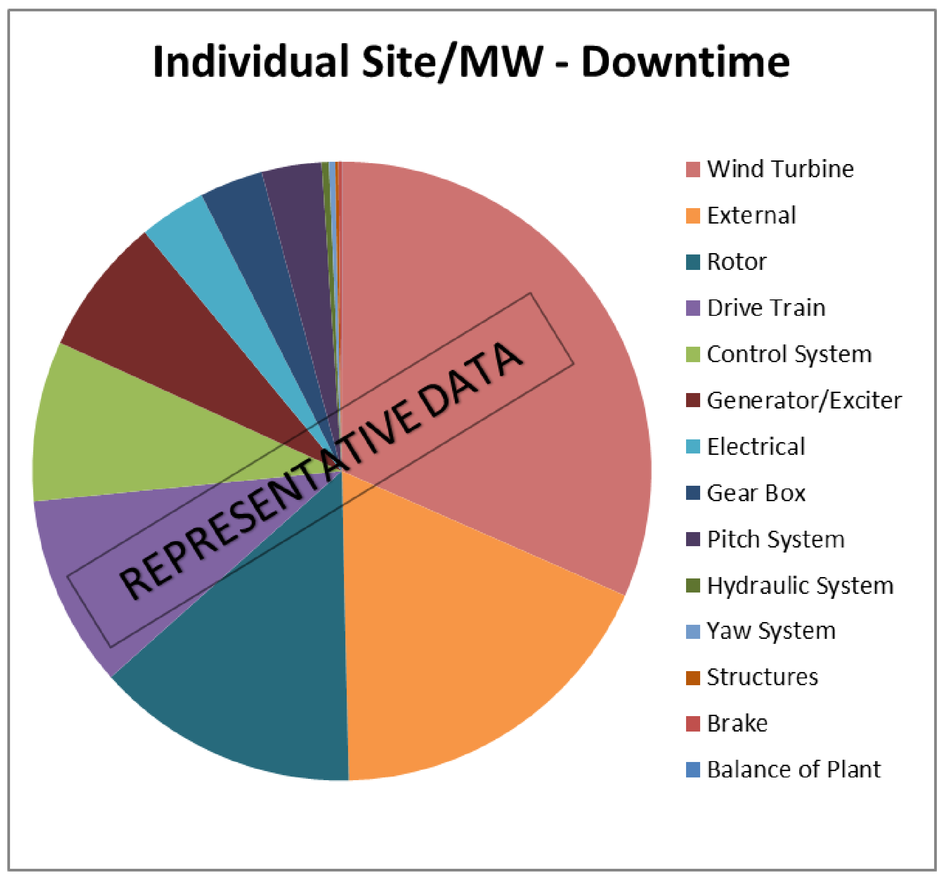
- Allow wind turbine owners to benchmark their performance and perform preventative maintenance
- Provide baseline renewable energy data for climate change discussions and the broader wind energy industry
- Support future wind energy research

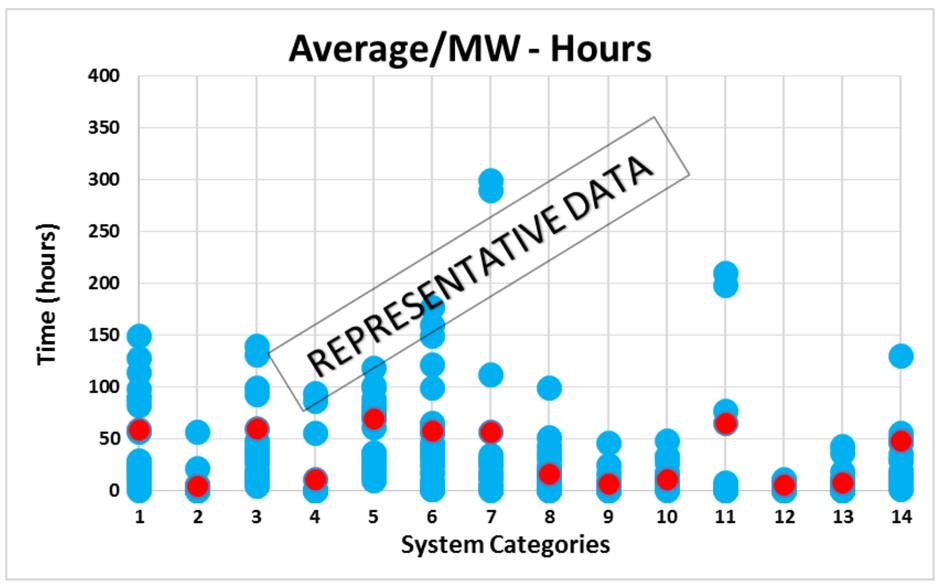
To Date

As of February 2016, CanWEA has 28 wind farms, representing 1.67 GW of nameplate capacity, reporting GADS data for 2014. The figures below demonstrate the opportunity for the industry.

Individual site data comparison to the average 2014 data can be made. The percentage of downtime caused by each system component averaged per MW of installed capacity is shown:







ID	Category
1	Balance of Plant
2	Brake
3	Control System
4	Drive Train
5	Electrical
6	External
7	Gear Box
8	Generator/Exciter
9	Hydraulic System
10	Pitch System
11	Rotor
12	Structures
13	Yaw System
14	Wind Turbine

Confidentiality

All data shared remains strictly confidential and Non-Disclosure Agreements (NDA) are in place between participating parties. Average results shown are representative only.

Data Reporting and Consistency

Data validation and quality control of the dataset is ongoing. As the number of participating parties increases and multiple years of data are accumulated, the value of trends, performance benchmarking, and overall accuracy of the dataset will improve.

Conclusion

Owners, operators and the wind industry can benefit from compiling baseline availability data through an established format (GADS). Individual site and industry benchmarking is the basis for short and long term O&M planning. CanWEA plans to build on the pilot with a larger scale project in 2016. If your company is interested in participating, please contact roberthornung@canwea.ca to signal your interest.

Wind Energy Institute of Canada | Institut de l'énergie éolienne du Canada

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CANADIAN WIND ENERGY ASSOCIATION | ASSOCIATION CANADIENNE DE L'ÉNERGIE ÉOLIENNE

WEICan Wind R&D Park Characteristics

Wind R&D Park Capacity	10 MW
Number of Wind Turbines	5
Model	DeWind D9.2
Storage Capacity	2 MWh
Storage Rating	1 MW
Inverter Model	S&C Purewave
Battery Model	GE Durathon
Temperature Range	-30°C to +27°C
Topography	10 m cliffs and 300° ocean exposure

Wind R&D Park Performance Statistics (2015):

- 43.5 GWh energy produced
- 49.5% + Capacity Factor
- 97% + OEM Availability

Wind R&D Park Performance Statistics (2014):

- 42.05 GWh energy produced
- 48% Capacity Factor
- 94% OEM Availability
- 85.6% GADS Availability

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