



## Capital Power improves asset performance through data analytics.

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**Uptake Fusion enables Capital Power to store wind turbine data in a cloud-based environment for analysis, resulting in insights on improving wind turbine performance.**

### BACKGROUND

Capital Power is a growth-oriented North American power producer, publicly traded (TSX: CPX), and headquartered in Edmonton, Alberta. The company creates dependable, cost-effective, and innovative electricity solutions to power a sustainable future for generations to come. Capital Power owns approximately 6,500 megawatts (MW) of power generation capacity at 28 facilities across North America. The company has approximately 425 MW of owned generation capacity in advanced development in Alberta and North Carolina.

### CHALLENGES

As the number of Capital Power's wind turbines grows, the data produced by these assets also increases exponentially. Capital Power now owns approximately 23,000 wind turbines from multiple manufacturers. The company needed a solution that would help alleviate data storage limits without incurring high overhead costs. On average, one of Capital Power's wind turbines produces approximately 3,000 data points every 10 minutes, which works out to over 50 billion data points per year. In order to make data-driven decisions, it was imperative that historical data is stored properly and efficiently in addition to being accessible. The solution must also seamlessly integrate with Microsoft Power BI and Capital Power's existing footprint of Operations Management and Analytics applications.

### SOLUTIONS

By using Uptake Fusion with Uptake's Industrial Cloud Data Platform based on Microsoft Azure, Capital Power was able to store and access all operational data produced by their wind turbines. Uptake proved to be advantageous over other platforms, including historians in the market in terms of cost-effectiveness, vendor-neutrality, and ease of integration. Microsoft Azure is Capital Power's preferred cloud provider. This allows Capital Power to procure Fusion and other Uptake components through Microsoft marketplace



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*One of the key differentiators that sold us on Uptake was that the platform was built with Microsoft Azure cloud technology which allowed us to leverage our existing Azure infrastructure without increasing costs or compromising performance quality. The solution allowed us to store large amounts of data and integrated easily with our current technology footprint. Our employees are able to access data easily which has helped improve its utilization for decision making.*

#### **Manish Neupane**

*Director, Applications &  
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and leverage their Microsoft agreements and credits. The solution also integrates with Azure's Time Series Insights (TSI) for operational diagnosis and Power BI analytics for enhanced monthly reporting. With the implementation of Uptake, Capital Power has improved the quality, management, and access to the data for other systems and end-users. This helps improve and optimize asset performance and utilization.

Uptake's components that were implemented include:

<b>Connectors</b>	Provides data connectivity to different endpoints for historical, instantaneous, and metadata
<b>Elevate™</b>	Extracts data from on-premise operational systems and moves it to the cloud
<b>Fusion™</b>	Manages real-time and historical operational data in the cloud - first-native cloud data historian
<b>Lenses™</b>	Organizes data for use by different stakeholders. Provide access in an open format for visualization, analytics, orchestration, and reporting data consumers

## **APPLICATIONS**

Uptake became a foundational enabler for Capital Power's Remote Monitoring and Operations Management Centre. Having all the wind turbine data stored and accessible in the cloud enhances their ability for automated asset reporting and provides additional opportunities to streamline Capital Power's operations. Having the complete wind turbine dataset in the Uptake solution enabled Capital Power to tackle complex machine learning problems like predicting downtime and maximizing wind facility output.

## **BENEFITS**

Capital Power's success criteria and goals were met with the implementation of Uptake, including:

- **Enhanced decision making and support to Capital Power's employees**
- **Reduction of total cost of ownership for operational data management**
- **Improvements of accessibility and scalability to support future growth**
- **Enhanced data quality and granularity feeds to critical systems**
- **Unlocked further opportunities with the use of advanced analytics**