Microsoft

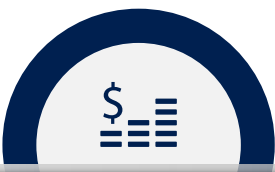# Energy Demand Forecasting

Cortana Intelligence Suite

Trends and Business Requirement

Internet of Things (IoT), alternative energy sources, and big data have merged to create vast opportunities in the utility and energy domain.

The utility and entire energy sector have seen consumption flattening out and consumers demanding better ways to control their energy usage.

Utility & Smart Grid companies need to innovate and renew themselves, and find ways to forecast future energy needs and demand

Balances
Supply and Demand

Controls
Cost

Determines
Production Volumes

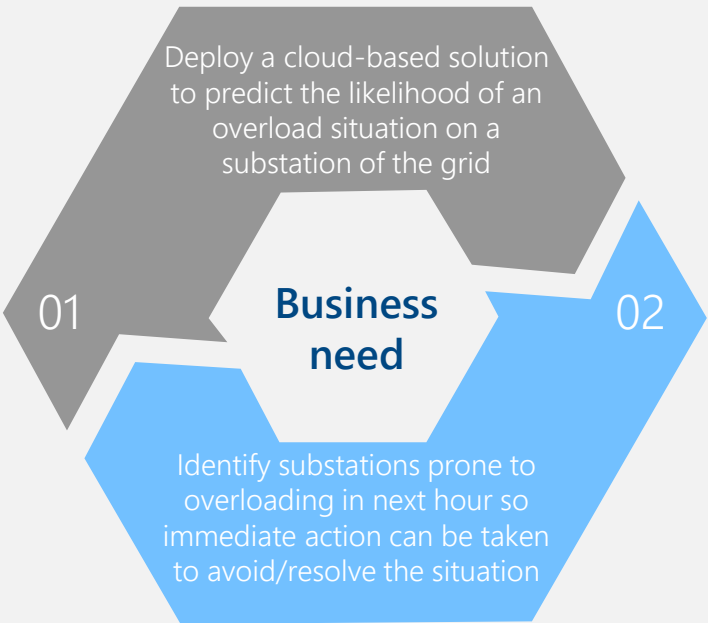## Benefits of Energy Demand Forecasting

Reduces
Greenhouse Gas Emission

**Prevents**
Energy Waste

Forecasts
Future Demand and Price

Use Case | Overload optimization

01
Deploy a cloud-based solution to predict the likelihood of an overload situation on a substation of the grid

Business need

02
Identify substations prone to overloading in next hour so immediate action can be taken to avoid/resolve the situation

Solution

To achieve the business need, an accurate and fast performing prediction is needed which requires implementation of three forecasting models:
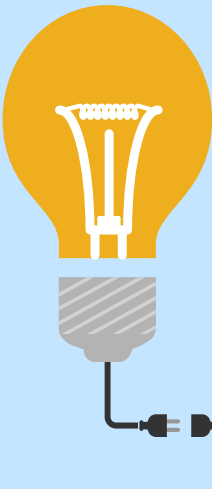
Long term model
Enables forecasting of power consumption on each substation during the next few weeks or months

Short term model
Enables forecasting of power consumption on each substation during the next hour

Temperature model
Provides forecasting of future temperature over multiple scenarios

Cortana Intelligence Suite
Solution Overview

Demand forecasting can help solve critical business problems in many ways and can be considered the foundation for many core use cases in the industry. New abilities to trade power between utilities have brought in a great need to forecast future demand and future price of electricity.

Cortana Intelligence Suite offers advanced capabilities for data ingestion, storage, and processing, and advanced analytics allowing our customers to build robust energy demand forecasting solutions.

Historical Data

Real-Time Data from Sensors and devices

Dashboard and visualizations

Automated maintenance scheduling

Data ➤ Intelligence ➤ Action

Demand Forecasting

Short Term Demand Forecasting
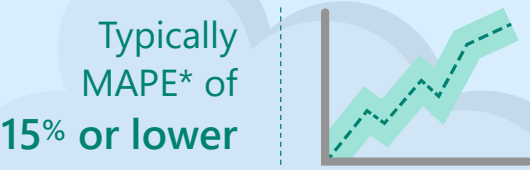
Typically MAPE* of **5% or lower**

Prediction Variance
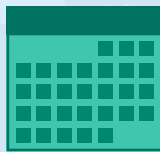
Produced every hour or every 24 hours

Forecast Frequency

Long Term Demand Forecasting

Typically MAPE* of **15% or lower**

Produced once a week, monthly or quarterly

*MAPE – Mean Absolute Percentage Error