

## **Data Analytics**

#### How data is changing decision making.

Jesse Stripe – Data Scientist East River 2024 Energize Forum

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## What are Data Analytics?

Data analytics can be defined as...

"...a comprehensive, data driven, strategy for problem solving."

- Gregory Nelson, The Analytics Lifecycle Toolkit, 2018



# **Analyzing Data**

- Identify business questions
- •Collect and store data
- •Clean and prepare data
- •Analyze data
- •Visualize and communicate data



## Challenges

Vision

## What do you want?

### Trust



## Challenges

Silos

## Education/Retooling/Augment

## Machine Learning/Al





Search Engines

**Streaming Providers** 

Online Shopping

Social Media

Data Brokers



## **Search Engines**

- Crawl through the internet indexing sites
- Volume of searches and clicks help determine ranking of search results
- Track user searches



## **Streaming Providers**

- Track the content you watch
- Use the data about your watching habits to recommend other content
- Determine what content to add to their service



# **Online Shopping**

- Look for complementary items to sell you based on current shopping cart contents
- Track user interactions to create profiles and target advertising



## **Social Media**

- Tracks user habits and interactions
- Target advertising based on those interactions



### **Data Brokers**

- Aggregate data on people from multiple sources
- Develop profiles based on data
- Sell profile data to other companies for marketing and targeted advertising



## **Data Analytics**

- Data Analytics are not a new concept
- Companies have been using data analytics for almost two decades for marketing and product research
- Recent advances in computational power have made these tools available to a wider audience
- How can we benefit from this technology?



## Data in a Utility World

Processes

Automation

Historical

Predictive



## Data in a Utility World

Maintenance

Forecasting

Load Control

**Business Functions** 



### Maintenance

Maintenance schedules

Repair records

Vegetation and wildlife Management





### Forecasting

Demand forecasts

Understand the interaction with weather

Data about peaks and usage



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### Load Control

Opt-in to non-critical load shed

Grouping of controlled loads

The amount of power shed per group/user



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#### Business Functions

Customer data

Billing and rate data

Employee data

Budgets





### How does Data Analytics benefit us?

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### Benefits.

#### *"If you can't measure it, you can't manage it."*

- Peter Drucker





### Data Governance

## More Informed Decisions

### Improved Asset Reliability



## **Data Governance**



#### What is it:

**Define Models** 

Security

Access



### Why it's important:

Clean/Accurate Data Repeatable Processes Informed Decisions



### **Improved Decision Making**



#### What is it:

**Cleaner Data** 

Relevant Data

Timely



### Why it's important:

Better Asset Utilization Quicker Response to Outages Targeted Rates

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### **Improved Reliability**



#### What is it:

Optimization

Identification

Prevention



### Why it's important:

Lower Costs

Robust Grid

**Higher Member Satisfaction** 



#### **Benefits**

Better data

Better decisions

Better service

Happier members





## Data Analytics Examples

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#### "Data is like garbage. You'd better know what you are going to do with it before you collect it."

-Mark Twain



## Examples

- Solutions do not need to be expensive
- Leverage the data we already have
- Empower employees to make better decisions
- Simplify workflows and improve job satisfaction



### Forecasting

#### Short term forecast

Probability of load control

Prediction of daily/weekly/monthly peak



- Image credit: David Pinney (dpinney on GitHub) from https://github.com/dpinney/coopforecast



#### **Member Services**

Market segmentation and specialized rate development

Identifying consumer-members that may benefit from special rates

Chatbots could be used to help member services



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### **Operations**

Utilize machine learning to analyze photos of utility poles to determine if they need to be replaced

Predictive storm response

Quicker outage resolution

Identification of faulty transformers before they fail







### Engineering

Easy access to records in a single place

Modeling of the grid in near real time

Easier identification of line losses

Identification of most efficient line routing





### **Human Resources**

Identify employee churn and retain current employees

Find quality candidates

Optimize benefits

Improve employee retention





## Wrap up

- We already have a lot of the data we need
- Solutions do not need to be expensive
- Off the shelf solutions are available
- Solutions could also be internally built



## **The Future**

- Advanced metering infrastructure will offer more data about our consumer members than ever before
- Analytics will help us understand and integrate distributed generation and micro grids into the macro grid
- The wider availability of data regarding demand will give us more opportunities to increase the value returned to our members
- As the volume of data increases so do the risks associated with cyber crime



## **Any Questions?**

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