Phase 1: Discovery & Plan

**Tacoma Power**
- Founded in 1893
- Supplies 181,630 customers
- 80% of energy produced is through hydroelectricity

**Problem:**
- Difficult for leaders to utilize data to make decisions regarding asset management & work orders.

**Goal/Scope:**
- Our target is to build a framework for developing Tableau dashboards that provides understanding future spending & resource requirements using historical work order & asset data.

Phase 2: Plan, Analysis & Design

- Data set consolidation & cleaning/transformation
- Functional location changes advised by our project POC — reduced dataset
- Forecasts date to work in context for each work order type
- Significant reduction of null values from 85% to 10%
- Removal of outliers
  - Comparison of data using different scales (Accounting differences)
  - Removal of all total costs with a sum of zero due to inability to differentiate data recording errors vs actual amounts.

- Forecasting model created for maintenance costs & labor hours for related work using data from 2013 - 2022.
- Created model using Boosted Decision Tree Regression which proved to be the best for predicting total actual costs for Tacoma Power's assets.

Phase 3: Develop

- Conducted combined descriptive, diagnostic, predictive, & prescriptive analysis for dashboard visualization.
- First dashboard serves as a proxy for Tacoma Power to implement.
- Successfully forecasted existing hours & total maintenance cost over the next 5 years for each work type.
- Assisted Tacoma Power in budget/resource management.

Phase 4: Deploy

- Top charts: KPIs for cost, labor, order quantity, & equipment contribution
- Below charts: Map to identify work distribution
- 5-year forecasting for cost/budget

**Software Utilized**
- Power BI
- Microsoft SQL Server
- Python
- Tableau
- R Studio

**F.A.S.T Team**

Brandon Bainbridge  
Khalidasiata Berete  
Evan Doyle  
Changming Tan  
Wongasorn Siriphanporn