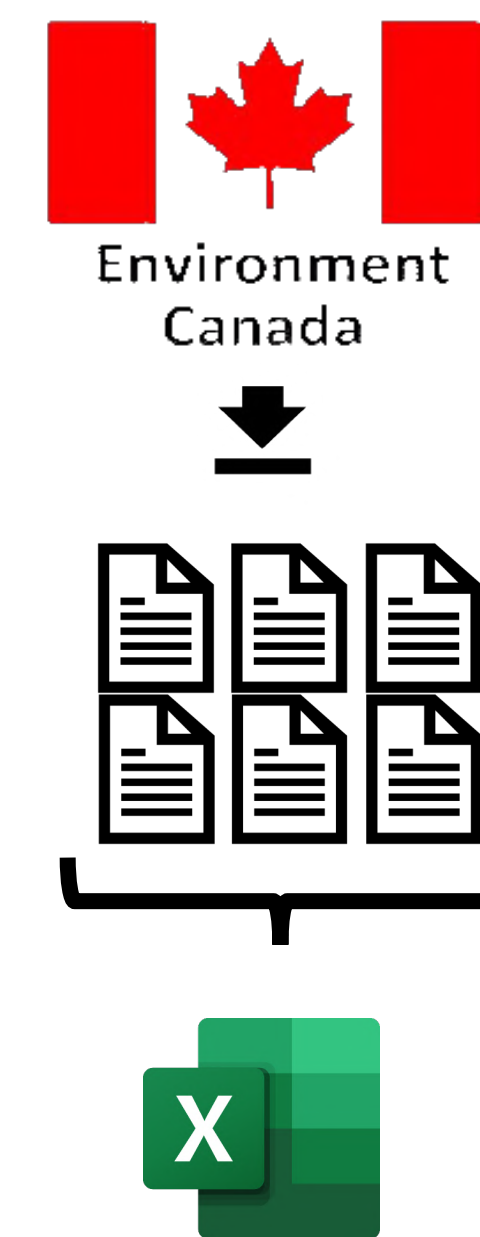


PROBLEM DEFINITION

- Nova Scotia Power needs to prepare a storm response for each incoming storm.
- Different storms require different preparation strategies due to varied damage levels.
- Effective storm preparation is informed by insights from historical storm data.
- Nova Scotia Power aims to develop a searchable database of historical storms to improve pre-storm planning.

DATA GIVEN

- Location and size of every single power outage over the past 20 years.
- Historical list of severe storms.



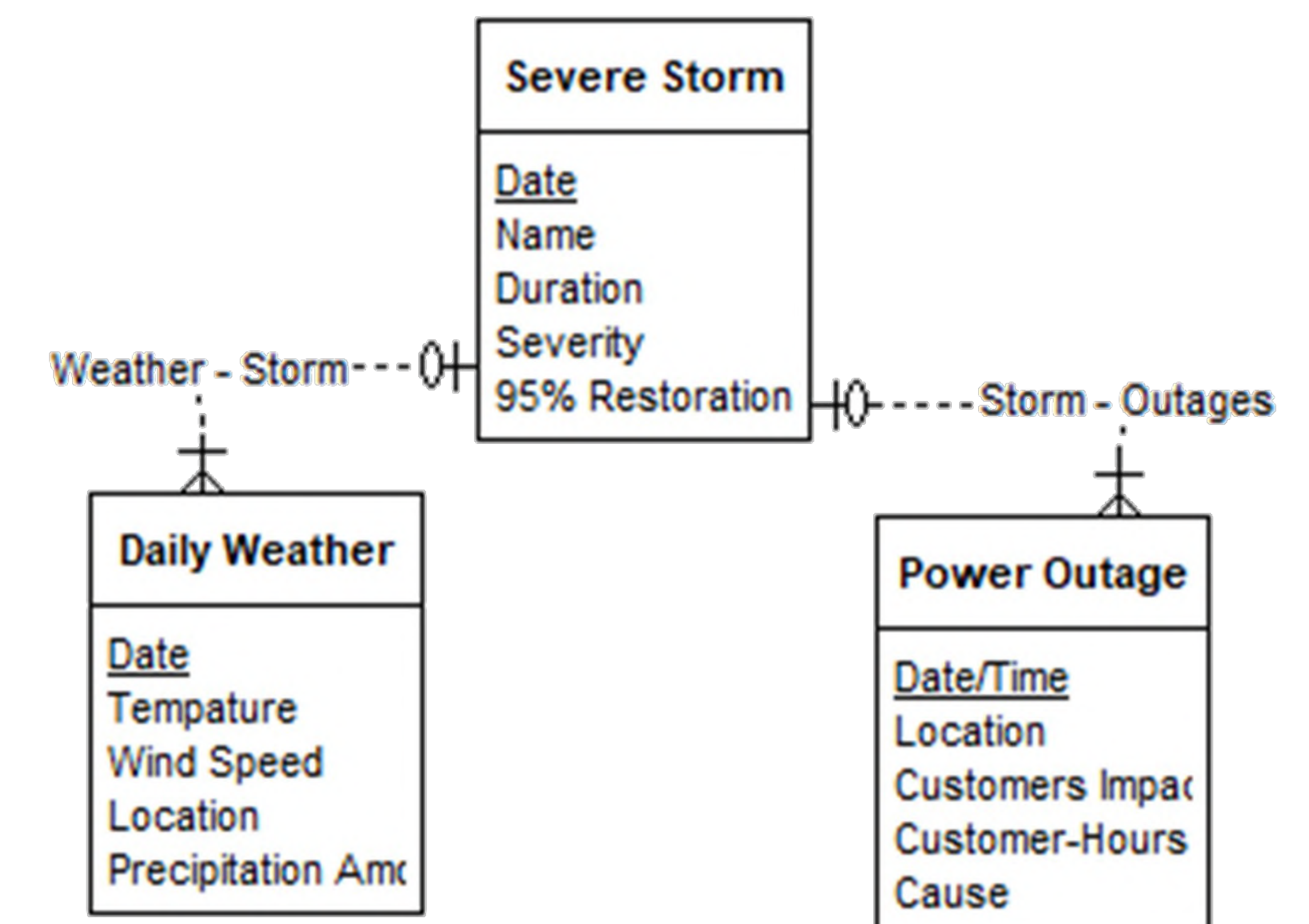
DATA COLLECTION METHODS

- Gathered weather data for each severe storm occurrence.
- Utilized 8 representative weather stations employed by NSPI for damage forecasting.
- Downloaded 20 years of daily weather data for each weather station.
- Created an automated script that efficiently downloaded 270MB of data distributed across 1920 CSV files.
- Consolidated all files into a single Excel sheet for analysis.

DATABASE DESIGN

- The Severe Storm database establishes the link between Daily Weather and Power Outage data.
- Dates serve as the connecting factor between Severe Storm, Daily Weather, and Power Outage data.
- Power Outage information is aggregated and reported in sums.

Entity Relationship Diagram (ERD)



OBJECTIVE 1

Historical Weather Event Database

- Develop a database using existing software that can connect weather parameters with impact outcomes.
- If qualitative data can not be found, derive estimates from quantitative factors.

OBJECTIVE 2

Historical Storm Performance Dashboard

- Develop a dashboard to display impacts of storms.
- Enable dashboard filtering based on storm characteristics.
- Provide both summary and detailed storm impact analysis.
- Present impact results regionally or for the entire province.

OBJECTIVE 3

Dashboard Documentation & Replication

- Provide Standard Operating Procedures (SOPs) for tool usage.
- Guidelines for updating datasets.
- Record of the build process to enable internal replication by NSPI IT.

TABLEAU DASHBOARD DESIGN

- Utilized Tableau products for seamless integration with existing NSPI tools.
- Employed Tableau Prep for data cleaning and database construction.
- Utilized Tableau Desktop to present data effectively within the dashboard.
- Tableau Server for automated database updates.



Weather Forecast Regions



Selection of Forecast Region

Dashboard Data Filters

Station Name	Mth	Ground Condition
<input checked="" type="checkbox"/> Halifax	<input type="checkbox"/> 6	<input checked="" type="checkbox"/> (All)
<input type="checkbox"/> HALIFAX STANFIELD INT	<input type="checkbox"/> 7	<input checked="" type="checkbox"/> Null
<input type="checkbox"/> NAPPAN AUTO	<input type="checkbox"/> 8	<input checked="" type="checkbox"/> FROZEN
<input type="checkbox"/> Northeast	<input checked="" type="checkbox"/> 9	<input checked="" type="checkbox"/> HARD
<input type="checkbox"/> Northern	<input type="checkbox"/> 10	<input checked="" type="checkbox"/> SOFT
<input type="checkbox"/> South Shore	<input type="checkbox"/> 11	

Total Precip (mm)	0.0	Spd of Max Gust (km/h)	218.6	19.0	182.0
Total Rain (mm)	0.0	Max Temp (°C)	218.6	-20.00	35.50
Total Snow (cm)	0	Min Temp (°C)	71	-29.70	23.30

Selection of Data Filters

Example Output of Storm Impact

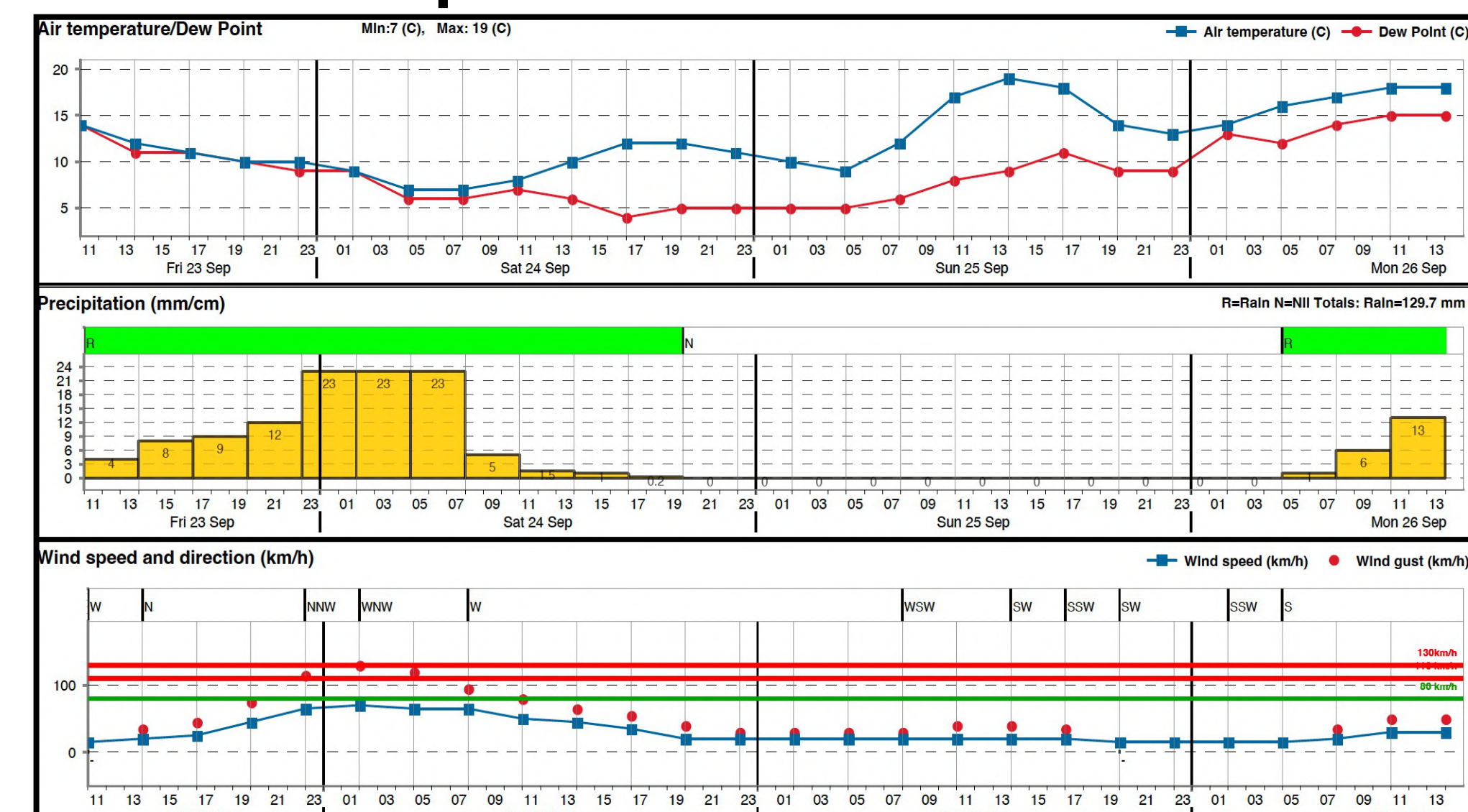
Sep 2022
Hurricane Fiona
2022 / 9 / 23
Total Customers' Hour Impacted: 30,527,214
Total Number of Customer Impacted: 727,301
Total Number of Days: 8

SCAN QR CODE



- Video Tutorial
- How to Use the Tableau Dashboard

Forecast Report



User inputted parameters from Forecast Report

PROJECT SUSTAINMENT

- Developed detailed work instructions for user training.
- Provided documentation on the development process.
- Researched Tableau Server and provided implementation instruction for automation.
- Tableau Server was recommended as a future enhancement to automatically update data.
- Created documentation to allow NSPI IT to be able to replicate tool internally for security reasons.
- Developed SOPs detailing the process to the various update data sources.