

Storm-based Outage Prediction to Aid Crew Dispatching Decisions

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NC STATE



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Key Project Members

NC State, Industrial & Systems Engineering

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- Jordan Kern (Asst. Prof.)

North Carolina Electric Cooperatives (NCEC)

- John Lemire (Vice President, Grid Operations & Planning)

Project Summary

Severe weather-based outages are challenging for utilities to staff and plan for

- Department of Energy Reports estimate 24 million utility customers experienced a severe weather-based interruption in 2020
- Cost of \$11.9 billion USD
- The challenge for utilities is **predicting severe weather-based outages** with sufficient lead time to **make staffing and supply decisions**

Project Objective

Predictive analytics decision-support tool

- Forecast storm-based outages in advance of weather phenomena
- Incorporate utility staffing and dispatching costs

Objectives

- Generate integrated outage and weather data set for AI/ML model training
- Develop, test, and validate ML-based statistical predictive models
- Design user interface for stakeholder use

Case

- North Carolina Electric Cooperatives
- Managing 2.5 million customers in North Carolina through 26 non-profit electricity co-ops

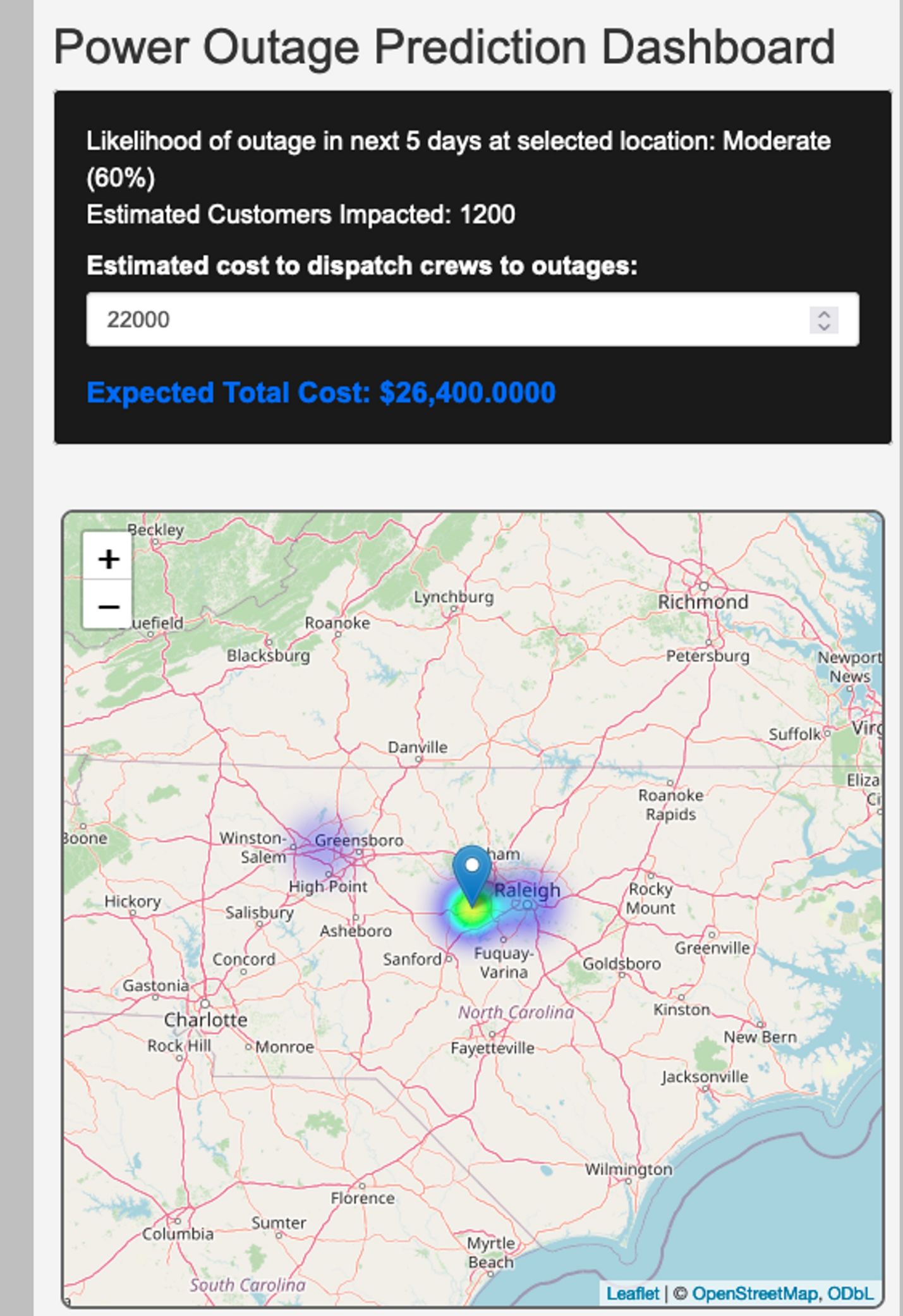
Impacts & Benefits

Short-term benefits

- Real-time estimation of the likelihood of storm-based outages with a 3-5 day leadtime
- Assessment of the cost-effectiveness of dispatching or repositioning crews to address outages

Long-term benefits

- Improved operational efficiency
- Improve resilience to weather based outages
- Increase utilization of utility data streams



User Interface Mockup

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