Category: Student Work

Project: Blackout 2003 – A Disaster in Six Phases

What was the challenge?
On August 14, 2003, hundreds of cities across the midwest and northeast went dark as the United States experienced the worst blackout in its history. Over the course of months, the story grew more complex as more nuanced aspects of the blackout emerged. We all became armchair experts on the fragmentation of the power grid, real versus reactive power, and the interconnectedness of US/Canadian electric. And what better way to learn about these macro-concepts, than to analyze one material moment, one traceable chain of human and machine events that reveals the totality of the state of electricity in North America.

What was the solution?
We focused on the following objectives:
• Sift through a large amount of complex and sometimes conflicting reportage and pull from these texts the most relevant data
• Connect this data into a cohesive, compact, engaging, accurate narrative
• Choose appropriate strategies of display for each part of the narrative and combine these display strategies into a cohesive, flowing whole
• Design a narrative that works on both a macro-level and micro-level

What was the effect?
Our completed project takes the form of a 20 x 32 inch composite. Created in collaboration with Monica Zhang.

Accompanying website:
blackout-2003.webflow.io/

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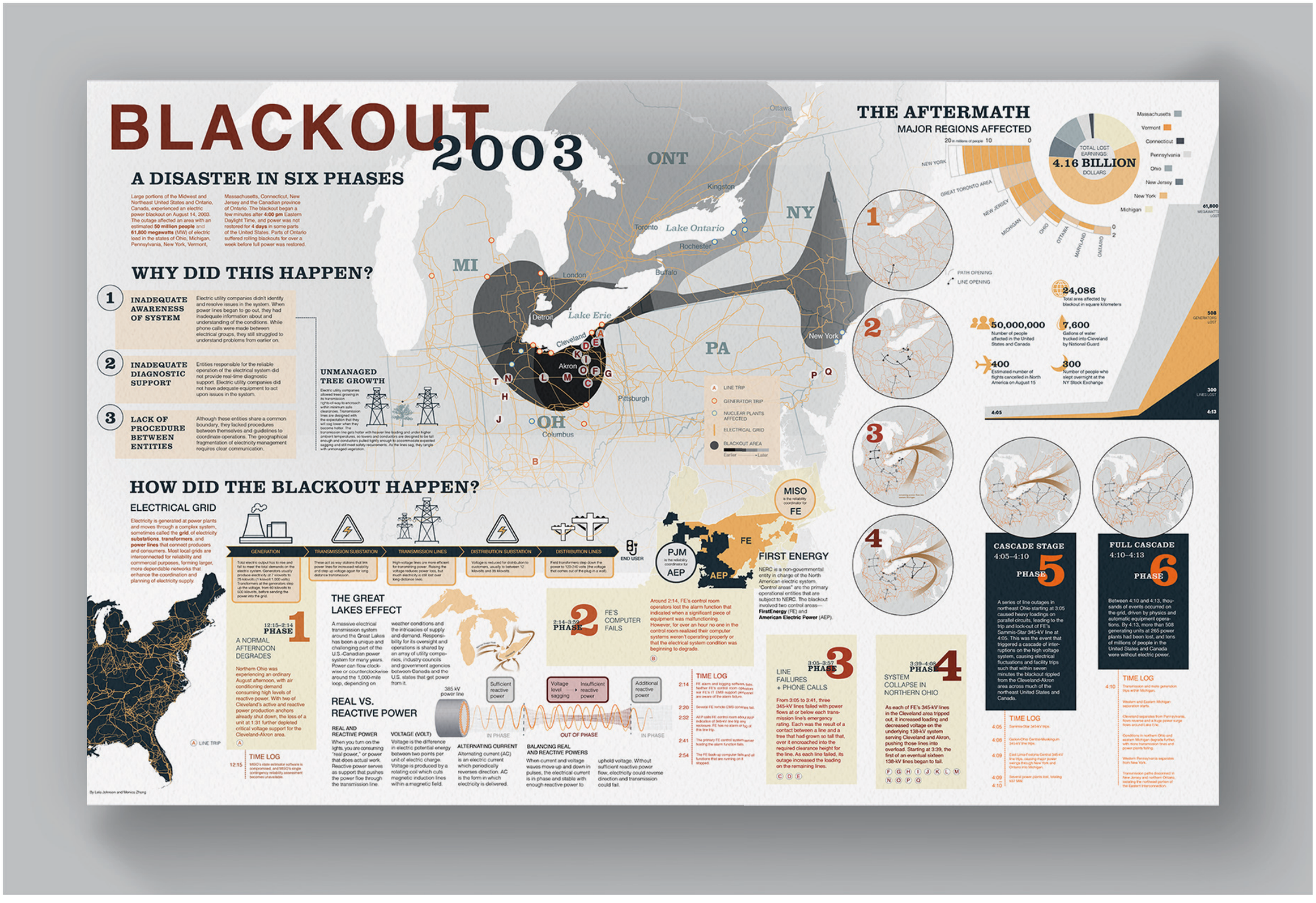
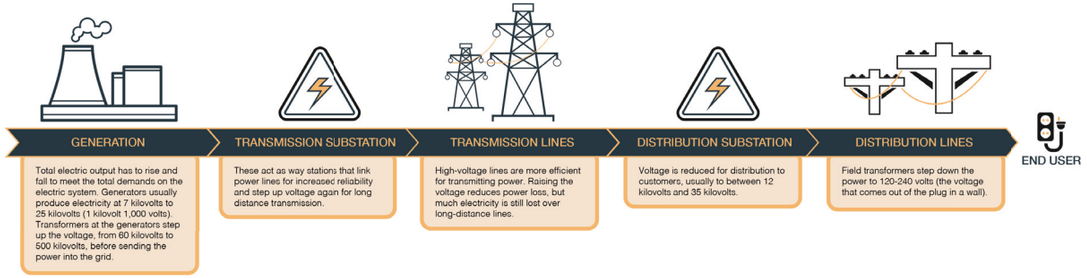
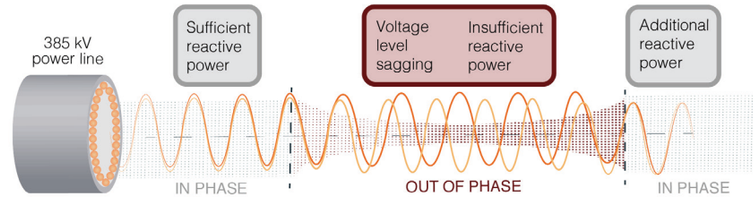
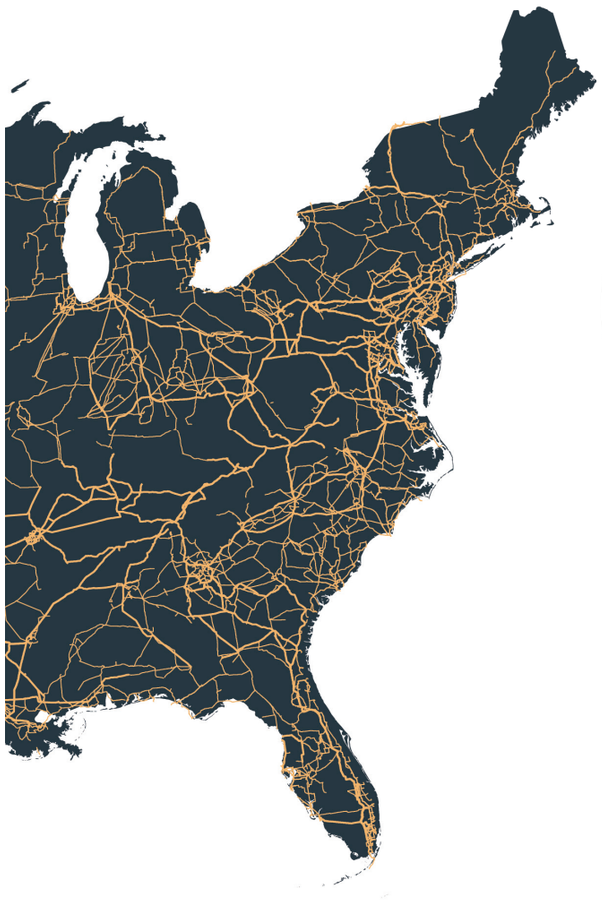
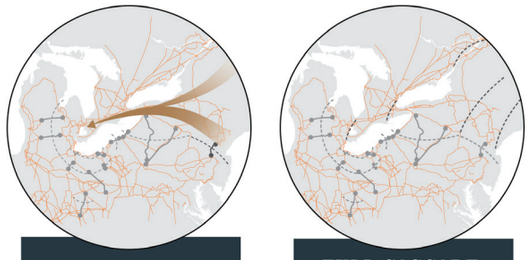










CASCADE STAGE 5

4:05–4:10

PHASE 5

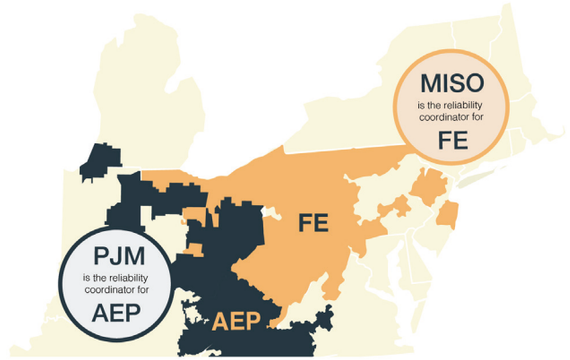
A series of line outages in northeast Ohio starting at 3:05 caused heavy loadings on parallel circuits, leading to the trip and lock-out of FE's Sammis-Star 345-kV line at 4:05. This was the event that triggered a cascade of interruptions on the high voltage system, causing electrical fluctuations and facility trips such that within seven minutes the blackout rippled from the Cleveland-Akron area across much of the northeast United States and Canada.

FULL CASCADE

4:10–4:13

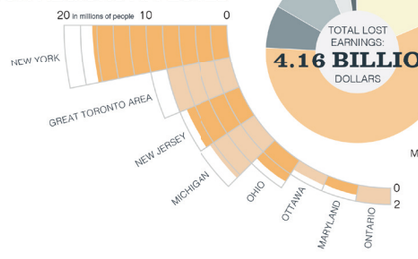
PHASE 6

Between 4:10 and 4:13, thousands of events occurred on the grid, driven by physics and automatic equipment operations. By 4:13, more than 508 generating units at 265 power plants had been lost, and tens of millions of people in the United States and Canada were without electric power.



THE AFTERMATH

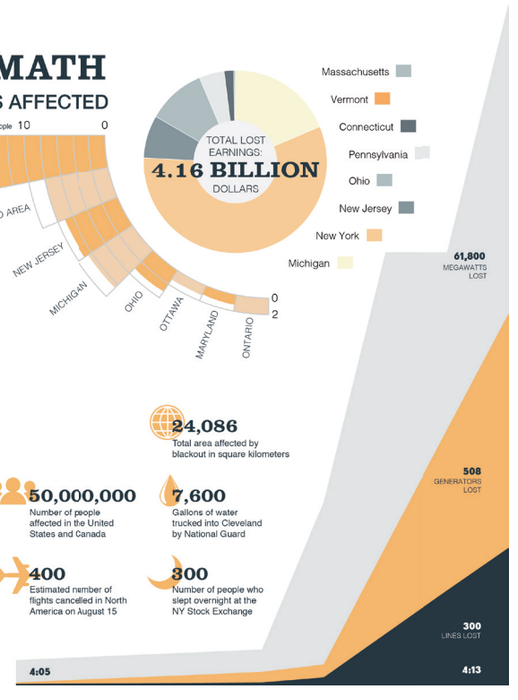
MAJOR REGIONS AFFECTED



24,086
Total area affected by blackout in square kilometers

50,000,000
Number of people affected in the United States and Canada

7,600
Gallons of water trucked into Cleveland by National Guard

400
Estimated number of flights cancelled in North America on August 15

300
Number of people who slept overnight at the NY Stock Exchange