Purpose

The purpose of the project is to provide reporting and planning activities for the electrical power grid damaged due to Fiona Hurricane. The electrical grids should be fixed in an optimized manner so that the electric power in most of the province is restored as soon as possible.

Analysis of the problem

- We need to know the unique postal code for each region as well as the population count taken from the government consensus to determine the optimized rate at which electrical grids are fixed.
- Power distribution hubs provide electricity to one or more hubs. There may be one postal code that is served by multiple hubs. So, to know, which postal codes are linked with specific hubs we require the hub name as well as the set of postal codes that are dependent on it. The Hub name should be alphanumeric and the location of the hub should be in the UTM coordinates.
- Besides that, we need to find the estimated time taken by employees to repair the hub in hours. But the thing is hub can be fully repaired or partially repaired. If it is partially repaired then we need to allocate another employee to complete the remaining work. We also need to keep track of the name of the employee.
- After gathering the basic information as discussed above, we need to find the order in which hubs are repaired in the decreasing order of impact. Employees should follow a certain path to repair the hubs. The employee can start the restoration process from any hub and should cover all the hubs which fall under the starting point and largest impact hub at the max distance. To reach the max distance hub, he should repair all the hubs which fall on the way in an x-monotone or y-monotone manner.

Support Classes

The project requirement tells us to build separate support classes for the coordinates, hub name as well its impact value damage, and lastly the support class for the damaged postal codes which need to be repaired.