The algorithm aims to find optimal locations for new electric vehicle (EV) charging stations in Boulder, Colorado, based on a dataset containing information about the usage of existing charging stations. It employs a custom k-means clustering algorithm that takes into account the demand for EV charging and penalizes new charging locations that are too close to existing ones.

Here's how the algorithm works:

1. **Load and preprocess the data**: The algorithm reads the input CSV file containing information about existing charging stations, such as station name, address, energy consumption, and more. It then geocodes the address of each station to obtain its latitude and longitude coordinates.
2. **Filter stations within Boulder**: The algorithm filters the dataset to keep only the charging stations within a specified radius around Boulder's center.
3. **Estimate future demand**: The algorithm accounts for the projected increase in EVs on the road by scaling the energy consumption of each charging station by a demand increase factor.
4. **Create weighted points**: The algorithm generates a set of weighted points, where each point represents a unit of energy consumption. The more energy consumed at a charging station, the more points it has in the weighted set.
5. **Custom k-means clustering**: The algorithm employs a custom k-means clustering algorithm to find new charging locations. It starts by initializing cluster centers within the Boulder area. The custom k-means clustering algorithm calculates the distance between points and cluster centers while also adding a penalty term proportional to the inverse of the distance to the nearest existing charging station. This penalty term helps avoid recommending new charging locations too close to existing ones.
6. **Fit the clustering model**: The algorithm fits the custom k-means clustering model to the weighted points. The model determines the optimal new charging locations by minimizing the sum of squared distances between points and cluster centers while taking the penalty term into account.
7. **Visualize the results**: The algorithm creates a map centered on Boulder, showing the existing and new charging station locations. It saves this map as an HTML file and prints the coordinates of the new charging stations.

By combining the demand for EV charging and the penalty term for proximity to existing stations, the algorithm finds new charging locations that cater to the projected increase in EV usage while avoiding redundancy in the placement of new charging stations.