

getPredictedTemp(zip z, timestamp t)

returns temp in Fahrenheit of the zipcode area with timestamp set for a future JS date object

TODO: Currently this function only returns the CURRENT temperature of the given zip.

getPredictedUsage(endpoint e, timestamp t)

returns usage in kwh of a specific endpoint e (i.e. a single household home or single customer) for a given future timestamp (JS date object)

TODO: the endpoint is currently just an empty argument. for a final product there will have to be some kind of demo customer database set up where each 'e' will be some unique identifier to a specific customer.

getPredictedRate(zip z, timestamp t_init, timestamp t_final, provider p)

TODO: same endpoing issue as above. machine learning. PID system??

NOTE: for this project we are only implementing fucntionality for a specific provider type and that is if p = "ameren". Currently there is a lot of hard code to scrape rates from Ameren's website, and if another electricity provider is to be used an entirely new scraper will have to developed.

getOptDegree(zip z, timestamp t_init, timestamp t_target, timestamp t_final, provider p)

returns value [0-100] based on how optimal t_target is in relation to t_init & t_final

NOTE: this is the team's idea of how to handle whether or not to turn on an appliance.

Every hour has an associated "optimization degree" between [0,100]. 100 being the "most optimal" time to use an appliance (i.e. the cheapest time to consume electricity) and 0 being the most expensive time (i.e. the LEAST optimal).

NOTE2: based on a customer's comfort preference or how much they are willing to spend will determine the 'cutoff' that they will allow their

optimization degree to be at. i.e. somebody who doesn't care how much it costs to keep their temperature within a very tiny range of temperatures will still turn on his appliances even if `getOptDegree` returns very close to zero. Similarly, somebody who wants to pinch pennies will not want to turn on appliances unless `getOptDegree` returns a value closer to 100.