Stage III: Database Model

Group 01-01

Estimations

Based on your research and understanding of the project requirements and scope, estimate the following:
• Initial database size (approximate number of records)
• Types and average number of searches

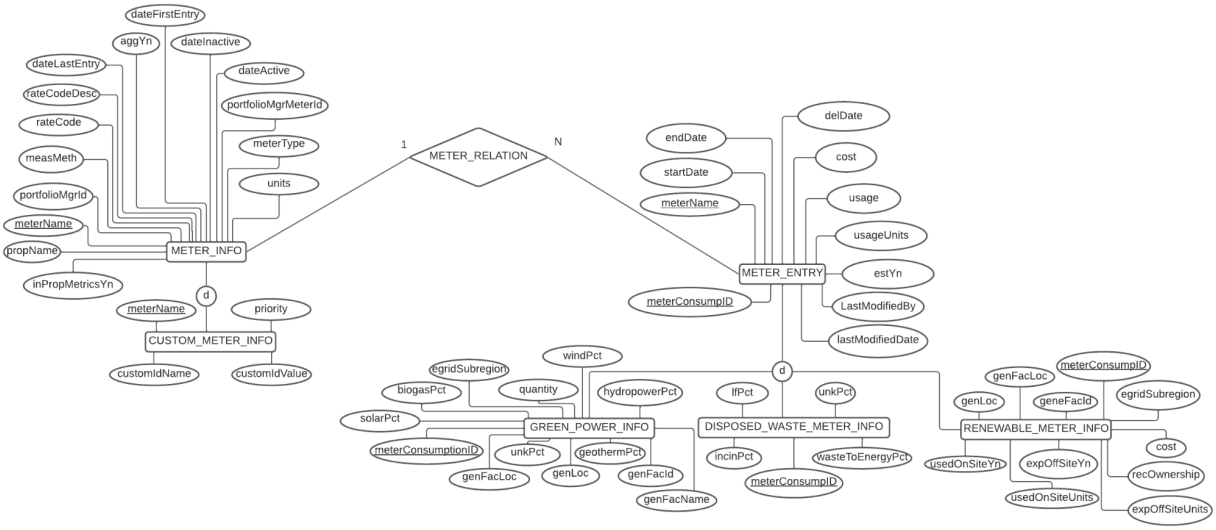
There are about 1,430 meter entries in the data given. Since this is the bulk of our data, we can assume that the rest of our records will add up to substantially less than this number. In total, we expect between 1,500 and 2,000 records,

We expect to need about 5-10 searches in our web application. The majority of these searches will access data in the METER_ENTRY table since this is where the most important data is. Many of these searches will use aggregate functions to obtain meaningful values such as average costs.

ER Diagram

Based on the discussions, the group will develop a complete entity-relationship (ER) diagram to model the database. If you are adding to an existing system, show how and where the additional data fits into the original schema. Indicate what changes must be made to the original schema to integrate the new data.
• Show all entities and the relationships between them. Be sure to clearly specify aggregation, composition, specialization / generalization, and multiplicities.
• Show attributes for each entity and relationship (where applicable).
• For each entity, indicate which attribute(s) form the primary key.

https://lucid.app/lucidchart/7aab3737-86e3-4f51-9af6-a496fb72ea27/edit?invitationId=inv_86c5883c-cf58-4dbf-964b-5c27e35a0465



Entity Types and Relationships

METER_INFO is a strong entity type with the primary key meterName.

CUSTOM_METER_INFO is a subclass of METER_INFO. It is identified by the foreign key meterName and it exists if a meter has a custom name.

METER_ENTRY is a strong entity type with the primary key meterConsumptionId.

GREEN_POWER_INFO, RENEWABLE_METER_INFO, and DISPOSED_WASTE_METER_INFO are subclasses of METER_ENTRY. They are identified by the foreign key meterConsumptionId and they exist if a meter entry has data on them.

The only relationship type is: “a meter has many meter entries”. This means the relationship METER_INFO:METER_ENTRY is a 1:N relationship. This relationship is identified using the foreign key approach. METER_ENTRY has the foreign key meterName to identify the relationship.

Relations and attributes

METER_INFO: propertyName, portfolioManagerId, portfolioManagerMeterId, meterName, meterType, units, measurementMethod, includedInPropertyMetricsYn, dateActive, dateInactive, dateFirstEntry, dateLastEntry, aggregateYn, rateCode, rateCodeDescription

CUSTOM_METER_INFO: meterName, customIdName, customIdValue, priority

METER_ENTRY: meterName, meterConsumptionId, month, deliveryDate, usage, usageUnits, cost, estimationYn, lastModifiedDate, lastModifiedBy

GREEN_POWER_INFO: meterConsumptionId, quantity, biogasPercent, geothermalPercent, hydropowerPercent, solarPercent, windPercent, unknownPercent, generationFacilityLocation, generationFacilityId, generationFacilityName, egridSubRegion

RENEWABLE_METER_INFO: meterConsumptionId, usedOnSiteYn, usedOnSiteUnits, exportedOffSiteYn, exportedOffSiteUnits, cost, recOwnership, generationLocation, egridSubregion, generationFacilityLocation, generationFacilityId

DISPOSED_WASTE_METER_INFO: meterConsumptionId, landfillPercent, incinerationPercent, incinerationPercent, unknownPercent

Relational Schema

Map the ER diagram to a relational schema, i.e. show the relations that evolve out of the ER diagram.
Specify the keys and relationships between the relations.