

2. Define the different views (virtual tables) required. For each view, list the data and transaction requirements. Give a few examples of queries, in English, to illustrate.

- ***Virtual Table 1: Guest can view selected energy sources and their kBTu costs within a certain yearly or monthly time frame***
  - For this virtual table, the user will have the following data displayed: starting year, ending year, total energy source supply in kbtu, and a cost of operation, kbtu/cost
  - An example of a query may be a user selecting three energy sources: electric-grid, fuel oil, and natural gas using a monthly breakdown between 2009 and 2012. The result would display the total energy source supply for each month from 2009 to 2012 and have a column for a cost of operation of kbtu/cost.
- ***Virtual Table 2: Guest can view selected energy sources and their kBTu costs within a certain 15 minute time frame***
  - For this virtual table, the user will have the following data displayed: starting year, ending year, total energy source supply in kbtu, and a cost of operation, kbtu/cost.
  - The query would use input from the user, allowing them to select three energy sources for example (electric-grid, fuel oil, and natural gas) and observe the kbtu/cost breakdown over the course of a couple of hours within a day.
- ***Virtual Table 3: Guest can view an energy meter costs comparison operation within a certain time frame***
  - For this virtual table, the user will be able to access the data of Virtual Table 1 as well as viewing the meter cost operation within that specified time frame. The user is able to select which energy sources they would like to have shown to them, meaning that it can display all 4 types, or just 1 depending on what the user wants. Finally, the grand total of the costs is shown by adding the selected energy source costs for a chosen date type, which allows the user to compare how much was spent on a given energy source in that time period.
  - An example of a query may be a user selecting four energy sources: electric-grid, fuel oil, natural gas, and other between the years 2009 and 2011 where the data involved will show a breakdown of cost for each individual energy source and have a column displaying the total cost for each year.
  - The meter cost breakdown applies only to the yearly and monthly breakdown; the meter cost will not be available for 15 minute intervals
- ***Virtual Table 4: Guest can view a usage chart depending on the energy sources and time frame***
  - For this virtual table, the user will be able to observe the variation of energy usage and units over a specified interval (month and period of years).

- An example of a query may be a user selecting three energy sources: electric-grid, natural gas, and other, choosing one specific month such as January from a range of years like 2012 to 2018.
- ***Virtual Table 5: Guest can view a usage chart depending on the energy sources and season***
  - For this virtual table, the user will be able to observe the variation of energy usage and units over a specific season (heating season, cooling season).
  - An example of a query may be a user selecting three energy sources: electric-grid, natural gas, and other, choosing a season such as heating.