**VERBATIM FEEDBACK**

(Highlighted portions responded to below)

* Does the overview describe what problem is to be solved by a website with DB back end?
  + I really enjoy the topic/problem you have decided to address with your DB! The problem is well described and how the DB will solve it is clear.
* Does the overview list specific facts?
  + The overview lists clear facts
* Are at least four entities described and does each one represent a single idea to be stored as a list?
  + Yes, there are at least 4 entities each representing a single idea to be stored as a list.
* Does the outline of entity details describe the purpose of each, list attribute data types and constraints and describe relationships between entities?
  + Purpose of each entity is listed
  + Attributes with constraints are listed
  + Relationships between entities are listed
* Are 1:M relationships correctly formulated? Is there at least one M:M relationship? Does the ERD present a logical view of the database?
  + 1:M are correct
  + At least one M:M
* Is there consistency in a) naming between overview and entity/attributes b) entities plural, attributes singular c) use of capitalization for naming?
  + I am unsure if this is required, but I may make your intersection tables plural. It could be just the normal Entity tables that need this but just in case especially because you add other attributes other than the FKs.
  + All attributes are singular
  + Capitalization is consistent
* Other:
  + Question: Is the Sust\_Rating attribute under the Energy\_Types entity a descriptive rating? I would assume it would be a number so an INT rather than VARCHAR rating so maybe specify the rating system (this is just nitpicky btw, I was just wondering how things are rated)
  + You might consider adding a “Year” attribute under Consumed\_Energy and Provided\_Energy tables as you mention “Annual\_Cost” and “Annal\_Amount” unless this is an average value rather than per year. Basically what I'm asking is are you recording Consumed\_Energy and PRovided\_Energy per year for each Consumer or just once but updating the average consumption annually as the figures are provided? Furthermore, for Consumers, is Annual\_Consumption an average or is this for one specific year? Just something to think about.

*Does the overview describe what problem is to be solved by a website with DB back end?*

* The summary is extremely descriptive and detailed, covering the problems of “information fragmentation” and energy usage/accessibility and how leveraging a structured database and web application can help overcome these issues.

*Does the overview list specific facts?*

* Yes the overview lists specific facts (350 energy providers, 14,000 customer, and 100 countries). In short, the scope and scale of the project is well-documented and thought out.

*Are at least four entities described and does each one represent a single idea to be stored as a list?*

* Yes, there are four entities (Countries, Providers, Consumers and Energy\_Types). Each entity is distinct in its reach and necessary to the overall implementation of the project.

*Does the outline of entity details describe the purpose of each, list attribute data types and constraints and describe relationships between entities?*

* Yes the outline clearly illustrates the entities, their details, attributes, constraints and relationships. It is thorough in its description and reflects effort and time drafting the project. As an aside, and not sure this entirely matters for the outline, you have ordering and syntax like “int, FK, not Null.” When it should be INT, not Null, FK. That is, data type, constraints and then key reference.

*Are 1:M relationships correctly formulated? Is there at least one M:M relationship? Does the ERD present a logical view of the database?*

* There are two listed M:M relationships and the ERD presents a logical view of the database, with well thought out intersection tables. As far as the 1:M relationships are formulated, while the formulation appears correct, the one question I did have was the implementation of energy types to providers 1:M. That is, I could envision an energy provider having natural gas and oil, or solar and wind, etc. In that sense, it seems to lend itself to “there are many providers, and each provider can supply many types of energy). My understanding may be incorrect with how you will implement the DB, but maybe some clarification on that would benefit the outline.

*Is there consistency in a) naming between overview and entity/attributes b) entities plural, attributes singular c) use of capitalization for naming*?

There is consistency in naming between overview and entity/attributes. Entities are plural and capitalized as instructed, and all attributes are singular. However, the attributes are also capitalized and use snake\_case. I realized upon review that the module SQL FAQ asked us to use camelCase and lowercase, just a heads up!

\* Does the overview describe what problem is to be solved by a website with DB back end?  
 \* Your idea is very well thought out, I enjoyed reading it! I have nothing I can think of to improve it aside from one note I have listed under the other section.

\* Does the overview list specific facts?  
 \* There are specific facts throughout and they are very well defined.

\* Are at least four entities described and does each one represent a single idea to be stored as a list?  
 \* Yes

\* Does the outline of entity details describe the purpose of each, list attribute data types and constraints and describe relationships between entities?  
 \* Purpose of each entity is listed  
 \* Attributes with constraints are listed  
 \* Relationships between entities are listed

\* Are 1:M relationships correctly formulated? Is there at least one M:M relationship? Does the ERD present a logical view of the database?  
 \* 1:M relationships are correct  
 \* There is at least one M:M relationship present

\* Is there consistency in a) naming between overview and entity/attributes b) entities plural, attributes singular c) use of capitalization for naming?  
 \* Entities are plural  
 \* Attributes are singular  
 \* Capitalization and naming are consistent

\* Other:  
 \* Will this database only cover a year's worth of data or will it be expanded? If so, maybe a year attribute should be added so things can be tracked per annum over multiple years. Other than that your draft looks fantastic!

Very interesting idea - praises sent your way on thinking of a unique concept to use for your database!

The overview provides a concise and accurate overview of the problem will solve for - by providing a single back-end DB to review and analyze different energy consumption patters from different countries of the world. The project team also did a thorough job of painting a picture of what could be gleaned from this database and how others could benefit in the long run. The overview listed specific facts the scope of countries, providers, and consumers that was helpful for the reader to understand how expansive this project could be and the size of the entities.

Four entities were provided and clearly explained. The associated attributes also make sense in relation to the related Entity.

Overall, superb job on the outline as you explained the purpose, attributes, constraints, and relationships. Below are my comments on the outline of entities:

**Countries:**

* Country\_Name: *Should this be classified as unique as to ensure a country is not entered in accidentally as duplicate, making it difficult to establish which is the "real" country?*

**Energy\_Types:**

* Sust\_Rating: *Is this going to be a numerical or alphabetical rating? It may be difficult to sort or rank if it is varchar (string) and they are stored as numbers (0-100, %...). If it is an authoritative sustainability standard, will it be universal across countries or will it be dependent on individual countries or coalitions they are a part of?*

**Consumers:**

* Municipality: *How will you determine on what scale to measure and/or if the area will overlap (such as a town or city; Austin, TX & Cedar Park Tx. : 2 separate areas but Austin is used to capture the larger metro areas including Cedar Park)*
* Annual\_Consumption: *What unit of measurement will this be?*
* Annual\_Spending: *What unit will this be given the expanse of countries? Will there be some converted base used to compare various countries & currencies?*

**Providers:**

* Capacity: *What unit will this be measured in?*

***ERD Diagram Feedback:***

There are no 1:Many relationships, and numerous 1:M & M:M relationships; see below for comments. A logical view is present for the ERD Diagram.

**Countries & Providers:**

* *The relationship is stated 1 to many, and the ERD diagram shows 1 to many. Should this be many to many if a provider can expand multiple countries, or will each provider have an account specific to the country they service? Ex: Repsol serves UK, Spain, Brazil, and Libya among others (Repsol may not be the best example - but wanted to provide something tangible).*

**Providers & Energy\_Types:**

* *The relationship is stated 1 to many, and the ERD diagram shows 1 to many. Should this be many to many if a provider can expand multiple energy types, or will each provider have an account specific to the country they service? Ex: Shell offers petroleum, wind, solar, and hydrogen (Shell may not be the best example - but wanted to provide something tangible).*

**Providers to Consumers:**

* *No feedback - great job!*

**Consumers to Energy\_Types:**

* *No feedback - great job!*

The ERD diagram and naming convention follows database requirements and guidelines - no issues from my observation on capitalization, spacing, or consistency. Way to go on keeping information clear and easy to decipher.

Really cool project! Appreciate the opportunity to review the draft - feel free to push back on feedback about the various entities and attributes if they don't fully fit in the scope or mechanics of the database goal.

**OUR RESPONSES**

* "I am unsure if this is required, but I may make your intersection tables plural. It could be just the normal Entity tables that need this but just in case especially because you add other attributes other than the FKs."
  + We did so in our revision.
* "Question: Is the Sust\_Rating attribute under the Energy\_Types entity a descriptive rating? I would assume it would be a number so an INT rather than VARCHAR rating so maybe specify the rating system (this is just nitpicky btw, I was just wondering how things are rated)"
* "Sust\_Rating: Is this going to be a numerical or alphabetical rating?"
  + To address these points, we replaced Sust\_Rating with emissionsRate and deathRate, both quanitifiable and descriptive.
* "You might consider adding a “Year” attribute under Consumed\_Energy and Provided\_Energy tables as you mention “Annual\_Cost” and “Annal\_Amount” unless this is an average value rather than per year"
* "Will this database only cover a year's worth of data or will it be expanded?"
  + We implemented a "year" attribute into these two tables and plan to record one consumption and one provision transaction per year.
* you have ordering and syntax like “int, FK, not Null.” When it should be INT, not Null, FK. That is, data type, constraints and then key reference.
  + We fixed this as recommended.
* "one question I did have was the implementation of energy types to providers 1:M. That is, I could envision an energy provider having natural gas and oil, or solar and wind, etc."
* **"Providers & Energy\_Types:** The relationship is stated 1 to many, and the ERD diagram shows 1 to many. Should this be many to many if a provider can expand multiple energy types, or will each provider have an account specific to the country they service?"
  + We implemented a M:N relationship between Providers and Energy\_Types to address this.
* "attributes are also capitalized and use snake\_case"
  + Per convention, we switched all attributes to camelCase.
* "Country\_Name: Should this be classified as unique"
  + Yes. Done.
* "How will you determine on what scale to measure and/or if the area will overlap"
  + A fair question, but we feel this will not be an issue since we are tracking energy use per *municipality*, the entity which most often coordinates energy provision for an area. It's not a perfect approach, but it should result in the least amount of overlap.
* "Annual\_Consumption: What unit of measurement will this be?"
* "Capacity: What unit will this be measured in?"
  + In all descriptions of energy amounts, we have included the appropriate watt and watt-hour units.
* "Annual\_Spending: What unit will this be given the expanse of countries? Will there be some converted base used to compare various countries & currencies?"
  + We've addressed this by creating a Currencies table which functions as a conversion hub for the local currency used in each transaction.
* **"Countries & Providers:** The relationship is stated 1 to many, and the ERD diagram shows 1 to many. Should this be many to many if a provider can expand multiple countries, or will each provider have an account specific to the country they service?"
  + This is a good point, but for the sake of reducing complexity, we will treat multinational providers as separate providers for each country in which they operate: i.e. Shell Spain, Shell Italy, etc.