**SPEA V401 – Financial and Cost-Benefit Analysis**

1. The city of Greenville is planning a large solar electricity production project. Once completed the solar facility will be able to produce 200,000 kilowatthours (kWh) of electricity each month. This will be a large increase in the town’s electricity supply. Prior to the project, other electricity suppliers provided and the town’s consumers used 500,000 kWh per month. Due to the new project, it is expected that the price of electricity will fall from $0.20 per kWh to $0.17 per kWh. As a result, the existing electricity producers will decrease their production by 50,000 kWh. Also due to the lower price, consumers are expected to increase the electricity consumption to 650,000 kWh per month.
   1. Of the 200,000 kWh produced by the solar project, how much will result in demand expansion?
   2. Of the 200,000 kWh produced by the solar project, how much will result in supply displacement?
   3. How much monthly revenue will the city bring in from the project?
   4. Based on the information provided, will the monthly economic benefits of the project be more, less, or the same as the monthly revenue? What will be the monetary value of these economic benefits?
2. A number of residents of Dullsville have complained to the mayor that the center of town looks shabby compared to the centers of many other nearby towns. At the mayor’s request, the Parks Department has put together a proposal for converting the town square parking lot into a sitting park with flower displays— it modeled the design on a similar park in the neighboring town of Flowerville. The annualized cost of installing and maintaining the park, and relocating parking to nearby Short Street, would be about $120,000. With about 40,000 households paying property taxes, the project would cost an average household about $3 per year. You have been asked to give advice about conducting a survey to measure the benefits of the project.
   1. Write a statement that could be read by the interviewer to describe the project.
   2. Write questions to implement the open-ended WTP method.
   3. Propose a procedure for implementing the dichotomous choice method.
3. Consider a project that would involve purchasing marginal farmland that would then be allowed to return to wetlands capable of supporting migrant birds. Researchers designed a survey to implement the dichotomous choice method. They reported the following data.

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| Stated Price (annual payment in dollars) | Fraction of Respondents Accepting Stated Price (percent) |
| 0 | 98 |
| 5 | 91 |
| 10 | 82 |
| 15 | 66 |
| 20 | 48 |
| 25 | 32 |
| 30 | 20 |
| 35 | 12 |
| 40 | 6 |
| 45 | 4 |
| 50 | 2 |

1. What is the mean willingness to pay for the sampled population?
2. If the population impacted by this project includes 135,000 people, what will be the total benefits of the project.