

Library Location (25 points)

The charity *Foundation for the Highest Education* (FHE in short) decided to establish a network of public libraries in Mine county serving all who live there. The county has 5 small townships along State Hwy 301. At each place the FHE identified a potential building that could be turned into a library. They know the expected cost (of renovating the building and maintaining the library for 20 years), as well as the possible capacities (in terms of the number of patrons that could be served there). They also know the population that is expected to ask for library service at each place (see data in the next table).

Assuming that people will drive to the nearest existing library for service, what is a cost minimizing feasible plan for library openings? (A plan is not feasible, if more people want to use a library than its capacity OR if some of the population is not served by a library.)