Facility Location under Economics of Scale in the Case of Uncertain Demand

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The presentation adresses facility location under uncertain demand. The problem is to determine the optimal location of facilities and allocation of customer demand to these facilities. The costs of operating the facilities are subject to economics of scale and customer demand is uncertain. The objective is then to minimize the total expected cost. These costs can be split into three parts: firstly the costs of investing in a facility and maintaining it, secondly the costs of operating a facility with strictly diminishing average costs, and thirdly linear transportation costs. We show a solution method for this problem based on Lagrangean Relaxation. We present computational results from the Norwegian meat industry and the location of slaughterhouses.