

## Automobile Production Planning

Cars of America (CA) produces four types of vehicles: subcompact, compact, standard, and luxury. CA also produces trucks and vans. Vendor capacities limit total production capacity to 1.2 million vehicles per year. Subcompacts and compacts are built together in a facility with a total annual capacity of 620,000 cars. Standard and luxury cars are produced in another facility with a capacity of 400,000 cars. The truck/van facility has a capacity of 275,000 vehicles. CA's marketing strategy requires that subcompacts and compacts constitute at least half of the product mix for the four car types. Profit margins, market potential, and fuel efficiencies are summarized in the table below.

type	profit Margin (\$/vehicle)	market potential (sales in 1000s)	Fuel Efficiency (mpg)
subcompact	150	600	40
compact	225	400	34
standard	250	300	15
luxury	500	225	12
truck	400	325	20
van	200	100	25

The Corporate Average Fuel Efficiency (CAFE) standards in the Energy Policy and Conservation Act require an average fleet fuel efficiency of at least 27 mpg. CA would like to to maximize profits under these restrictions in order to better understand the government and corporate policies on it production plans.