A characteristic feature of hub and spoke networks is the bundling of flows on the interhub links. This agglomeration of flows leads to reduced travel costs across the interhub links. Current models of hub location do not adequately model the scale economies of flow that accrue due to the agglomeration of flows. This paper shows that current hub location models, by assuming flow-independent costs, not only mis-calculate total network cost, but may also erroneously select optimal hub locations and allocations. The model presented in this paper more explicitly models the scale economies that are generated on the interhub links and in doing so provides a more reliable model representation of the reality of hub and spoke networks.