Abstract - This paper presents the development of a heuristic algorithm to partition an observable power-system-state-estimation (PSSE) network into two or more observable subnetworks. The proposed algorithm partitions a spanning tree of an observable PSSE network, that guarantees the observability of all partitioned subnetworks. The partitioning technique is based on Otten's eigensolution approach that is used for placement of modules in single-stack-layout circuits. Otten's method provides a full screen of all possibilities a spanning tree can be partitioned into. The performance of this heuristic algorithm is evaluated by using several IEEE PSSE networks.