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(54) **DEMAND RESPONSE OF LOADS HAVING THERMAL RESERVES**

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(57) **ABSTRACT**

Systems and methods are described herein that improve grid performance by smoothing demand using thermal reserves. The smoothed demand can reduce peak loads as well as the ramp rate of demand that will otherwise require the use of inefficient, expensive generation sources. These improvements are tied to the selective switching on or off electrical loads that are coupled to thermal reserves, effectively using the thermal reserves as an energy storage mechanism. Historical data of past usage can be used to create load model and ensure that effects on customer comfort are minimized while still accomplishing the beneficial effects for the overall grid, which enables grid owners to both reduce their operational cost by avoiding expensive generation and improve system reliability by achieving more predictable power demand.