The Closed Loop Comfort-Cost Control Thermostat and Monitor

**Title:** HVAC Prediction for a Cost-Limited Home Thermostat

**Invention:** This technology utilizes a novel management framework for thermostats targeted towards the end-user. Using a data-driven prediction component to learn data relationships, this technology predicts future HVAC loads within a given time frame. In its totality, the cost-effective hardware monitor with cloud-based computation and control calculations has the potential to help homeowners or building operators predict their HVAC load and plan accordingly for costs.

**Background:** Thermostats often use closed-loop controls which require a state-update function and frequent modifications of the optimization functions. Overall, the standard techniques for close-loop controls are inefficient and disturbances can have high impacts on performance of the thermostat. This technology makes the closed-loop control more efficient and allows users to predict how much their HVAC will cost.

**Applications:**
- HVAC systems

**Advantages:**
- In-expensive hardware
- Cloud compatible
- Predictive capabilities

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