Moore's Law is the principle that asserts a doubling of microchip transistors every two years, correspondingly halving the cost of computers. This trend implies regular enhancements in computer speed and capabilities while reducing their price. A corollary notion of this law is that the microprocessor industry's growth will maintain a consistent and swift trajectory over time.

* **Rising Power Consumption**: As the density of transistors rises, a corresponding escalation in power consumption occurs. This phenomenon can lead to thermal challenges that have the potential to adversely affect the chip's performance and longevity.
* **Power Escalation with Density:** Greater transistor packing density is associated with elevated demands for power.
* **Dennard Scaling:** This concept implies that lowering voltage is a strategy to decrease dynamic power consumption. Nonetheless, a notable constraint emerges if the voltage drops beneath the threshold necessary to initiate transistor operation. In situations where the voltage isn't adequate to stimulate proper transistor functioning, the result can be disturbances to both the chip's overall functioning and the accuracy of the system.
* **Threshold Voltage Range:** The criticality of the voltage activation range for a transistor should not be underestimated. This range acts as a safeguard, enabling the possibility for ambient interference to potentially lower the voltage requirement for initiating transistor action.
* **Power Leakage:** With the ongoing reduction in transistor dimensions, the concern of power leakage becomes pronounced, owing to the decreasing scale of the insulating component within the transistor structure.