

## **Energy Aware Scheduling for Weighted Completion Time and Weighted Tardiness**

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The ever-increasing adoption of mobile devices with limited energy storage capacity, on the one hand, and more awareness of the environmental impact of massive data centers and server pools, on the other hand, have both led to an increased interest in energy management algorithms. The main contribution of this paper is to present several new constant factor approximation algorithms for energy aware scheduling problems where the objective is to minimize weighted completion time plus the cost of the energy consumed, in the one machine non-preemptive setting, while allowing release dates and deadlines. Unlike previous known algorithms, these new algorithms can handle general job-dependent energy cost functions. Our algorithms also extend to approximating weighted tardiness plus energy cost, an inherently more difficult problem that has not been addressed in the literature. We also present experimental results that show that our algorithms perform very close to optimal, and that they can be improved and extended to the on-line setting.