Team WattsNext

Dev & Cade's mission is to unlock the power of big data to enable resilient energy grids. Our suite of ML models enable utility companies to accurately forecast power loads one week ahead and classify building electrification to mitigate weather driven outages. Our models can intelligently handle situations with limited data and be used by utilities nationwide, as depicted in the flow chart.

The performance of each model substantially outperforms baseline (naïve) models, showing significant signal being mined from the immense training data. We benchmarked 28 ML algorithms to arrive at the best performing model for each task. The models have proven to perform well in extreme weather scenarios. We quantified the rate of mechanical cooling adoption and how increases will impact substation loads many years into the future. Our solution comes complete with a data cleaning pipeline and dashboards to backtest model performance over time.

Task	ML Algorithm	Error/ Accuracy %	Baseline Lift
1: Weather Sensitivity	Elastic Net	5.1 MAE	39%
2: Electric Heaters	Random Forest	80%	13%
2: Heat Pump	Logistic Regression	68%	13%
2: Air Conditioning	Light GBM	82%	10%
2: Water Heating	Light GBM	74%	14%
4: External Region Forecast	Light GBM	5.5 MAE	33%