



***Economics of Solar + Storage
MMA Annual Meeting***

January 25, 2020

Hastings School Net Zero Design

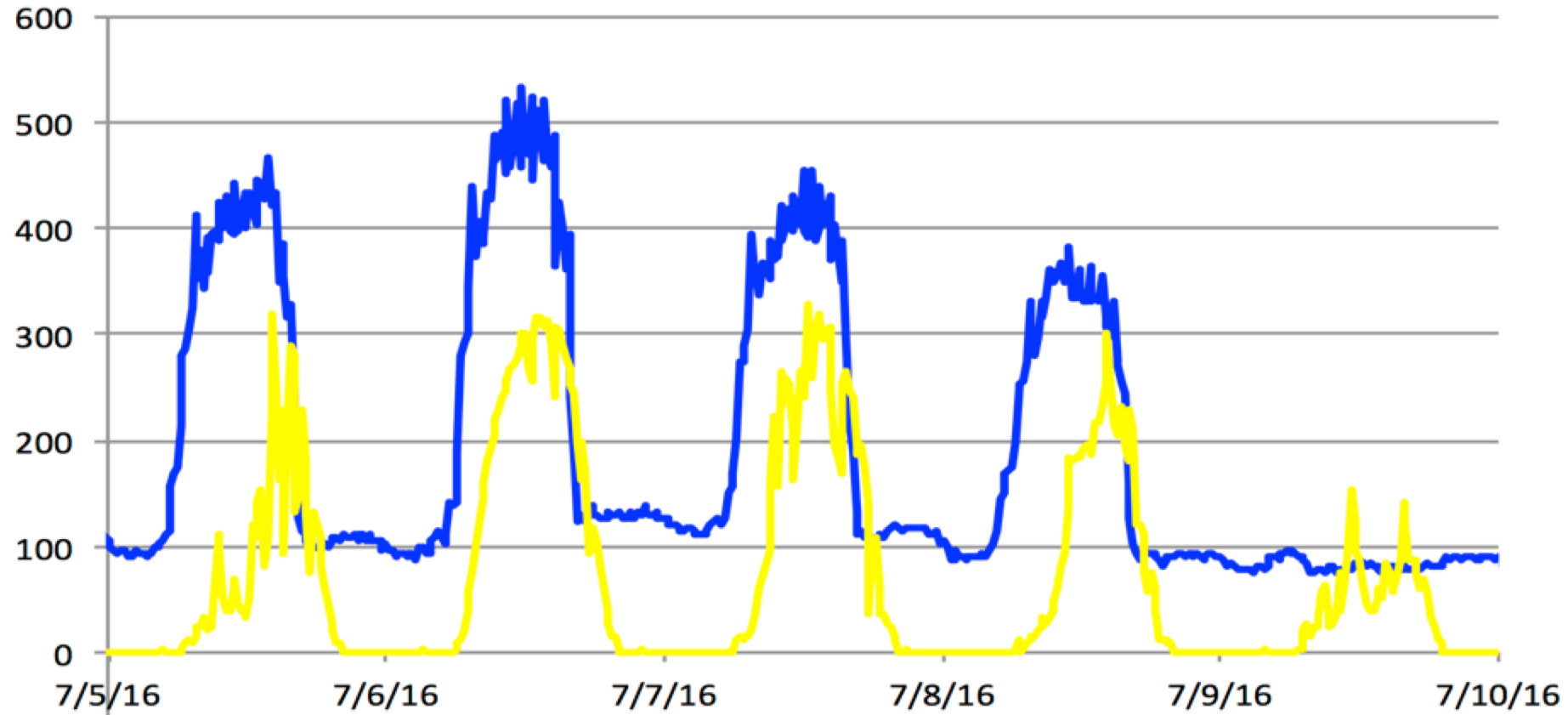


The motivation for energy storage

- Peak demand charges
 - Account for about 45% of Lexington electricity bills
- Demand charge reductions from solar are often limited
 - Solar production is not correlated with building energy demand
 - Passing clouds can cause solar generation to drop, setting that month's peak.
- Future rate changes may increase demand charges and lower per kWh charges
- Energy storage can help control all three issues

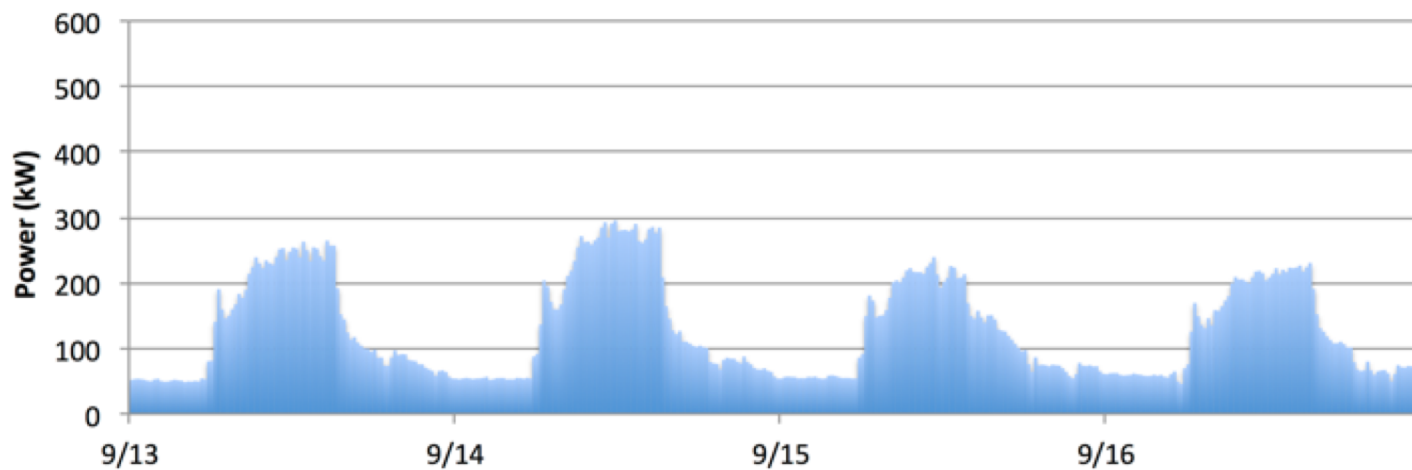


LHS Peak Demand with Solar

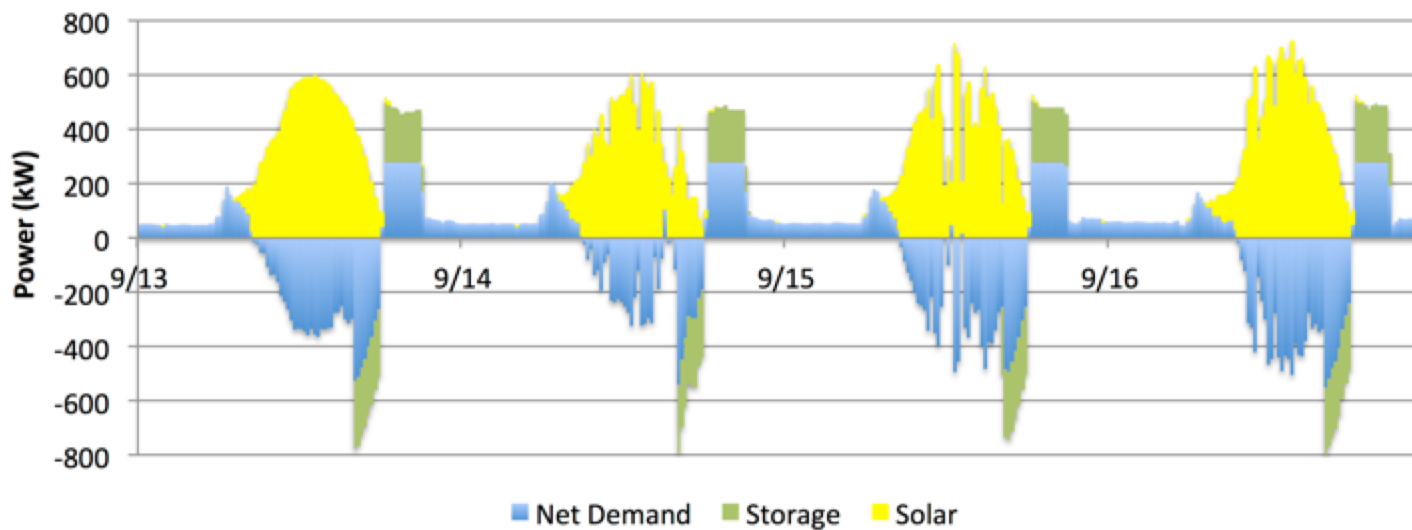


— LHS Demand (kW) — Solar Power (kW)

Hastings School Demand without Solar + Storage



Hastings Peak Demand Reduction

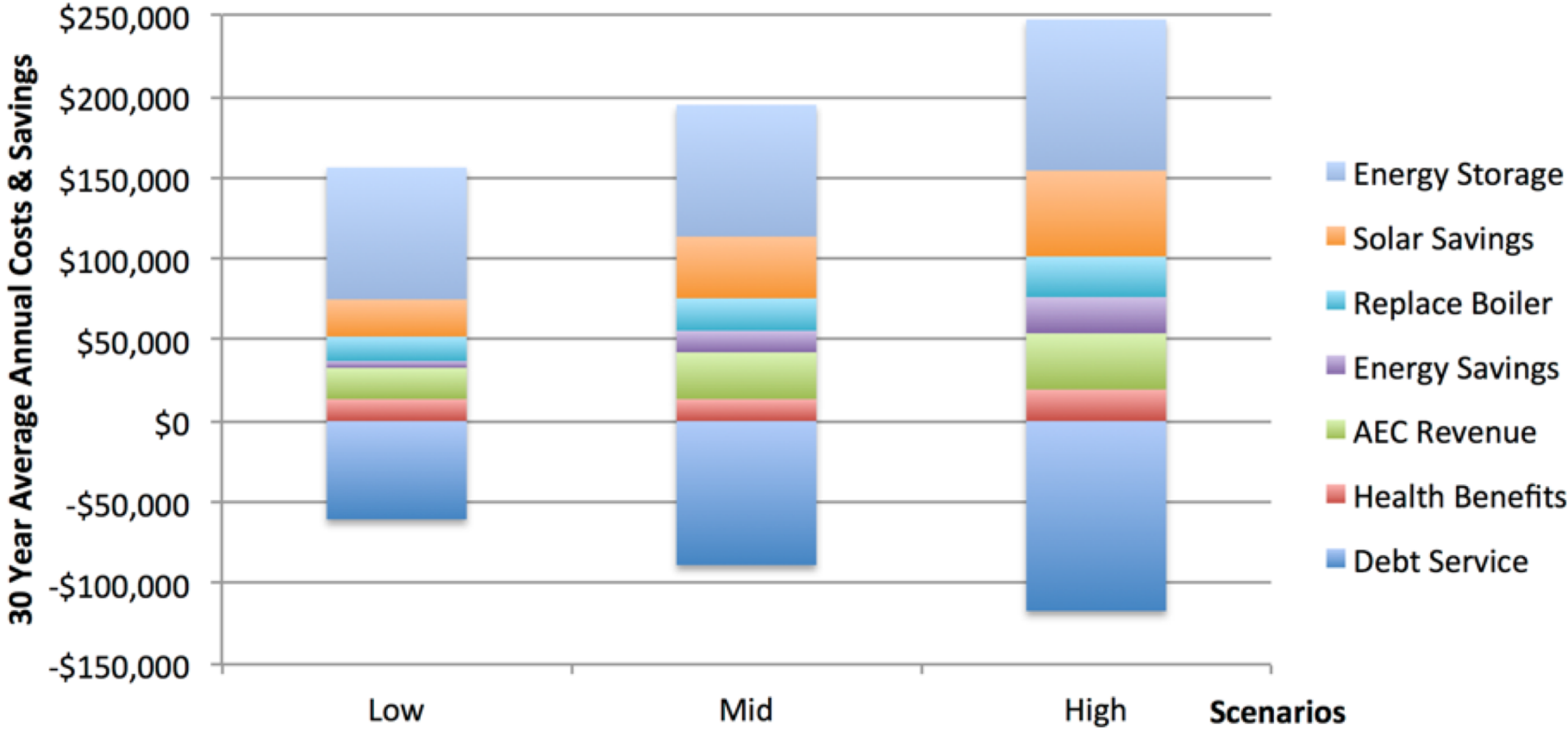


Hastings Solar + Storage Economics

- Pre-solar annual electricity bill ~\$250,000
- 975,000 kWh annual usage
 - \$135,000 annual usage charges
 - \$115,000 peak demand charges
- 1.1 million kWh solar + 150 kW demand reduction
 - \$ 23,000 solar energy annual savings
 - \$ 93,000 storage revenue & peak demand savings
 - \$ 37,000 ground source heat pump incentives
 - \$ 16,000 health benefits



Ground Source Heat Pump with Solar + Storage Annual Savings vs. Debt Service



Solar Canopies & Schools

