

## HALF-OFF THE GRID

### Grid Connected Solar PV with Battery Energy Storage System



#### CLIENT CHALLENGE

The grid purchasing costs of an industrial consumer in Ontario comprises of hourly energy prices, delivery charges and Global Adjustment (GA). Our client has high power requirements and the high delivery and GA charges in his energy bills reflect the peak demand consumption of his factory building.

The load profile of the building shows that the average demand for the building is usually in the lower 100kW's but during peak demand hours it stays well above 200kW. At peak demand conditions, the building is having to deal with multiple power outages due to limitations in the local distribution level feeder in the area.

The client is looking at integrating renewable generation with energy storage system to eliminate a significant portion of his grid purchasing costs.

#### BACKGROUND

TROES is a Canadian company specializing in advanced distributed energy storage technologies, product and solutions. TROES has developed a Half-Off the Grid solution to address power demand issues of factory buildings, with grid tied solar PV and Battery Energy Storage System (BESS). This system alleviates issues of excess demand on the grid by charging the BESS during off-peak hours and using the BESS to support factory demands during peak period.

# RESULTS



**US\$636,750**

**Initial Cost**



**\$0.23/kWh**

**Energy Cost**



**US\$101,677**

**Annual Savings**



**~6.3 Years**

**Payback Period**

## FINANCIALS & BENEFITS

The system cost of the project is US\$636,750. The overall energy cost for the building is around \$0.23/kWh. Taking into account the annual grid connection fee of US\$21.75 per kWh as well as the annual O&M costs of solar at US\$10 per kW and BESS at US\$33 per kWh, the annual savings would be US\$101,677 with a payback period of just over 6 years. The system will save on unit cost of \$0.06/kWh and reduce GHG remissions by 278,905kg.

## ABOUT THE SYSTEM

The system comprises of a 145 kWh/50 kW BESS integrated with a 330-kW solar PV array and the grid. The solar array will occupy a total of 1740 m<sup>2</sup> area.



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