Hybrid Power Solutions for Pumping in Cotton Irrigation

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Australian Government
Department of Industry and Science

cotton industry
CottonInfo Big Days Out 2015

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Characteristics of Cotton Irrigation

- Volume – 5 to 15ML per day
- Seasonality and timing
- Bore – SWL drives energy
- Grid connect electric
- Diesel engine mechanical
- $ per ML pumped; ROI
  - Requires extensive analysis and modeling

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Energy – regulation of input costs

- Diesel – variable cost related to TGP, AUD, DFR, O&M and freight
- Hybrid power plant focused on diesel saved
- Grid electricity – volume user
  - kWh charge (cents per kWh)
  - Demand charge ($ per kW or kVA peak)
- Hybrid power plant reduces kWh but not necessarily demand peaks

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Options for the control of energy costs

- Diesel replacement – Solar Diesel Saver
  - Hybrid y.Drive solution
  - High volume
  - 24/7 operation
  - Solar only operation
  - Efficient diesel use
  - No solar inverters

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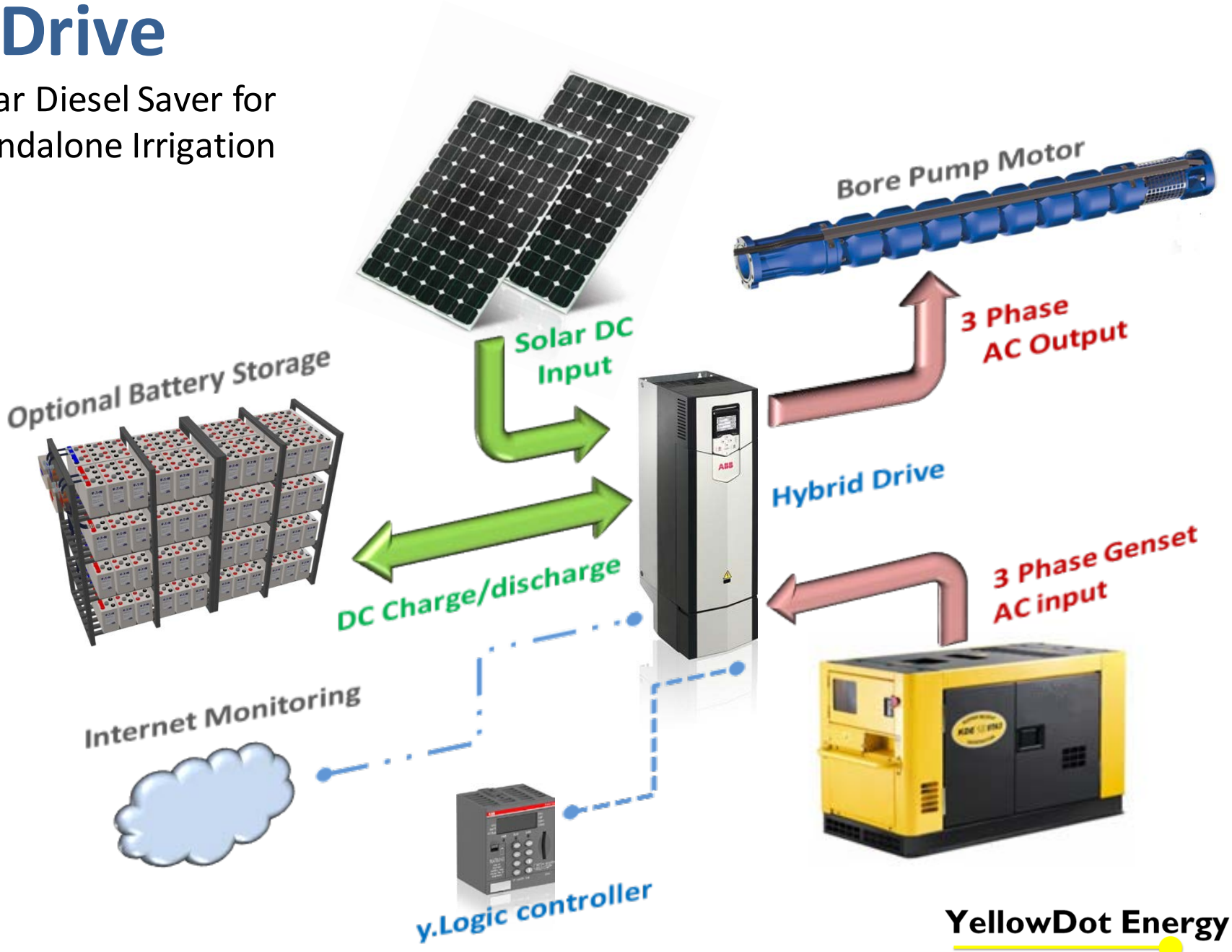
y.Drive

Solar Diesel Saver for
Standalone Irrigation



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Options for the control of energy costs

- Grid Connected pumps
  - Bill structure means traditional grid connect solar generally not economic
  - y.Logic Peak Demand Control
  - PLC and battery bank
  - Generator option
  - Sets cap on grid peaks
  - Reduces demand charge

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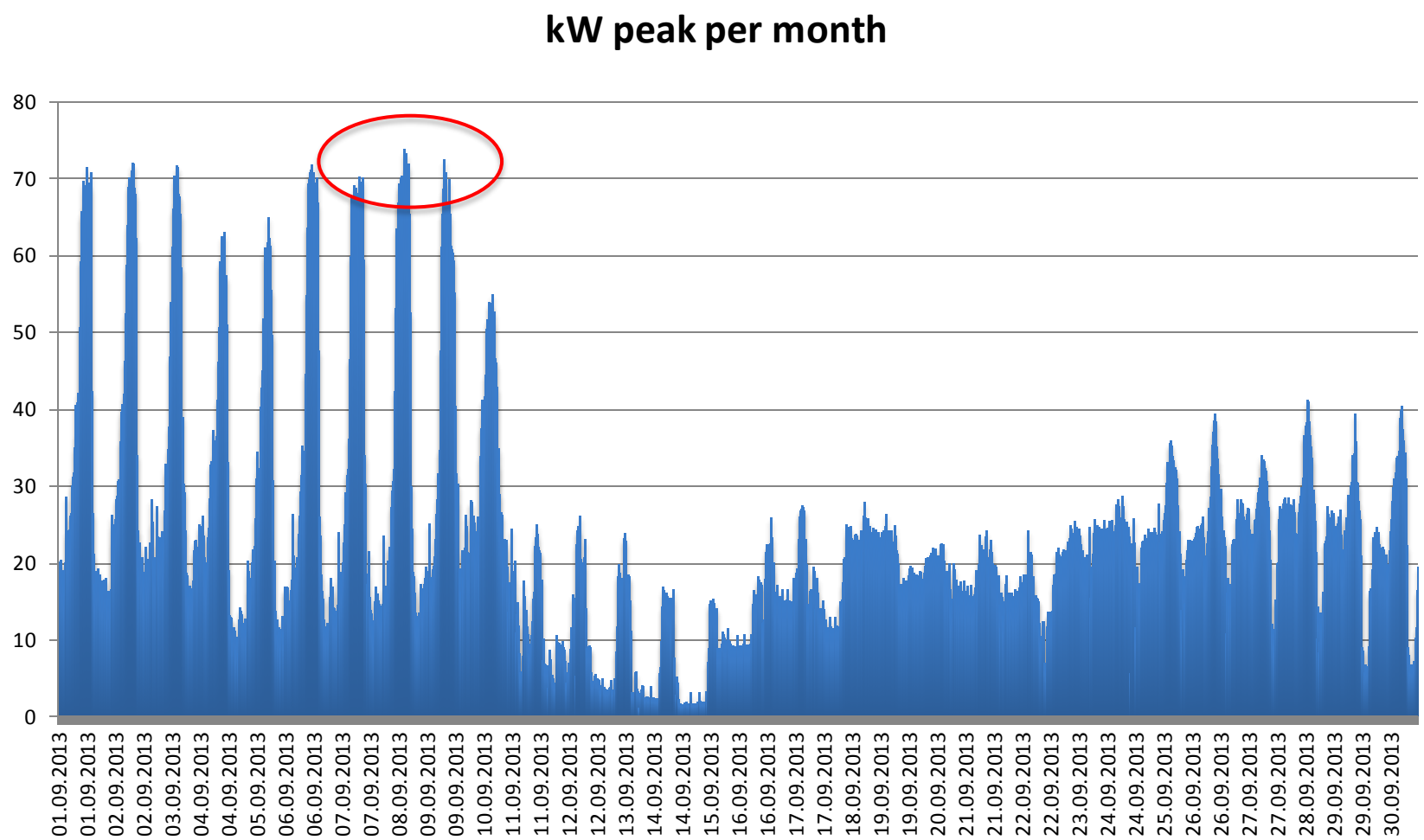
Demand charges example



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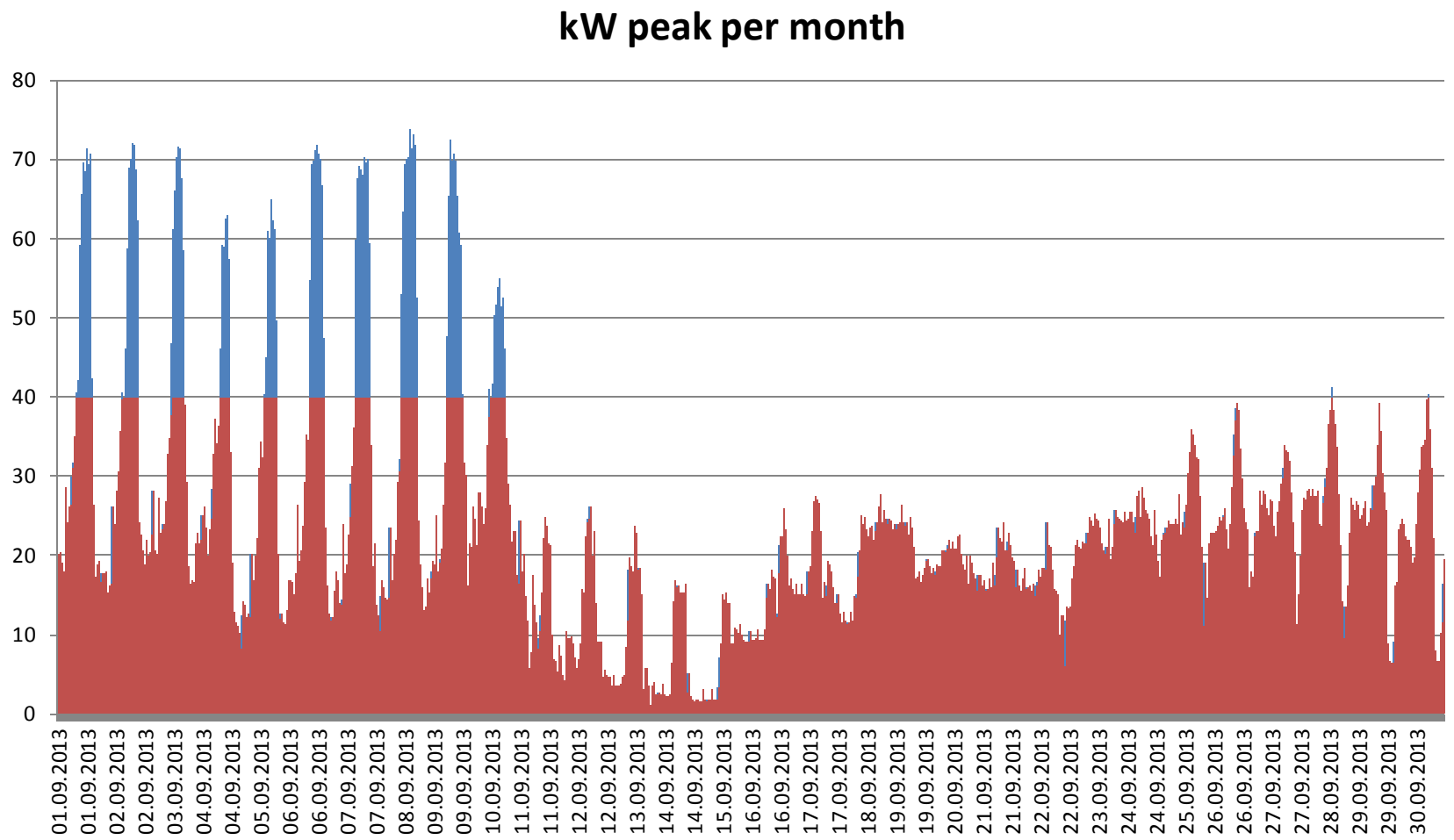
Peak demand control set at 40kW



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Hybrid Power Solutions

- Options available now to control energy costs
- Hybrid y.drive solution for diesel reduction
- Peak demand control for grid connect
- Well established technologies
- Low operational risk – built in redundancy
- Capital cost to hedge operational expense
- Opens opportunity for operational change
- Attractive commercial returns

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