DEMAND RESPONSE: ENERGY CURTAILMENT STRATEGIES

Abstract

At Transpower we are always searching for new and innovative solutions for the challenges we face. One challenge we’re facing is demand for electricity reaching the maximum capacity of transmission lines within a few of our regions.

To combat this challenge, our Demand Response Programme has been developed to allow electricity consumers to respond to an event signal, reducing their electricity demand for a period of time in exchange for a payment.

Below are a number of simple, industry-specific demand response measures to help our participants respond to these event signals by making small adjustments to their business operations.
Energy Curtailment Strategies – Industrial

Table of Contents

Energy Curtailment Strategies – Industrial ................................................................. 1
  Manufacturing ........................................................................................................... 2
  Minerals and Chemicals .......................................................................................... 2
  Petroleum .................................................................................................................. 3
  Water and Wastewater Treatment ......................................................................... 4
Manufacturing

- Curtail all non-essential indoor/outdoor lighting, signage, window displays and office equipment not in use (i.e., printers, copiers, shredders, coffee makers).
- Curtail all decorative features, such as fountains, lighting and ambient audio and video displays.
- Pre-cool work areas, then cycle constant air volume heating, ventilation and air conditioning (HVAC) units or temporarily re-set static pressure in variable air volume HVAC, curtail ceiling fans and room fans, and raise temperature settings.
- Some facilities with package AC units can do load-cycling, temperature reset, and possibly pre-cooling.
- Curtail beverage vending machines and shift use of ice makers before or after an event.
- Conduct meetings during events to minimize use of equipment.
- Charge batteries and battery-operated equipment prior to an event, then unplug battery chargers and use only pre-charged equipment during an event.
- Adjust employee schedules and shifts so that times of increased production or energy use occur before or after planned events.
- Curtail all motors, vertical lifts and other non-essential process and pumping equipment.
- Reduce or reschedule production to avoid unnecessary use of compressed air.
- Curtail or turn down chillers, and reset chilled water temperature.
- Adjust variable speed drive controls to reduce load from fans, pumps and chillers.
- Reduce or reschedule production.
- Shift melting (kilns), finishing (grinders) and other tasks to either before or after an event, or to another day.
- Pre-cool, then float or cycle refrigeration.
- Delay use of scrap grinders, bailing and other non-essential equipment.
- Stockpile inventory prior to an event, then stop production during the event.
- Move batch and continuous processes to either before or after an event, or to another day.
- Produce extra product a day ahead, and do only packaging on the event day.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Minerals and Chemicals

- Curtail all non-essential indoor/outdoor lighting, signage, window displays and office equipment not in use (i.e., printers, copiers, shredders, coffee makers).
- Curtail all decorative features, such as fountains, lighting and ambient audio and video displays.
- Pre-cool work areas, then cycle constant air volume heating, ventilation and air conditioning (HVAC) units or temporarily re-set static pressure in variable air volume HVAC, curtail ceiling fans and room fans, and raise temperature settings.
Energy Curtailment Strategies – Industrial (May 2017)

- Some facilities with package AC units can do load-cycling, temperature reset, and possibly pre-cooling.
- Curtail beverage vending machines and shift use of ice makers before or after an event.
- Conduct meetings during events to minimize use of equipment.
- Charge batteries and battery-operated equipment prior to an event, then unplug battery chargers and use only pre-charged equipment during an event.
- Adjust employee schedules and shifts so that times of increased production or energy use occur before or after planned events.
- Curtail vertical lifts, conveyor belts, crushers and all non-essential process and pumping equipment.
- Stock pile or overproduce inventory prior to an event, then shut down production and resume operations after the event.
- Move batch and continuous processes to either before or after an event, or to another day.
- Produce extra product day ahead, and do only packaging or transport on the event day.
- Reduce, slow down, or shut down operations completely.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Petroleum

- Curtail all non-essential indoor/outdoor lighting, signage, window displays and office equipment not in use (i.e., printers, copiers, shredders, coffee makers).
- Curtail all decorative features, such as fountains, lighting and ambient audio and video displays.
- Pre-cool work areas, then cycle constant air volume heating, ventilation and air conditioning (HVAC) units or temporarily re-set static pressure in variable air volume HVAC, curtail ceiling fans and room fans, and raise temperature settings.
- Some facilities with package AC units can do load-cycling, temperature reset, and possibly pre-cooling.
- Curtail beverage vending machines and shift use of ice makers before or after an event.
- Conduct meetings during events to minimize use of equipment.
- Charge batteries and battery-operated equipment prior to an event, then unplug battery chargers and use only pre-charged equipment during an event.
- Adjust employee schedules and shifts so that times of increased production or energy use occur before or after planned events.
- Curtail pumping units.
- Postpone post-extraction pumping, transportation and storage activities.
- Move to standby generation, batteries, or other alternative energy sources on event day.
Water and Wastewater Treatment

- Curtail all non-essential indoor/outdoor lighting, signage, window displays and office equipment not in use (i.e., printers, copiers, shredders, coffee makers).
- Curtail all decorative features, such as fountains, lighting and ambient audio and video displays.
- Pre-cool work areas, then cycle constant air volume heating, ventilation and air conditioning (HVAC) units or temporarily re-set static pressure in variable air volume HVAC, curtail ceiling fans and room fans, and raise temperature settings.
- Some facilities with package AC units can do load-cycling, temperature reset, and possibly pre-cooling.
- Curtail beverage vending machines and shift use of ice makers before or after an event.
- Conduct meetings during events to minimize use of equipment.
- Charge batteries and battery-operated equipment prior to an event, then unplug battery chargers and use only pre-charged equipment during an event.
- Adjust employee schedules and shifts so that times of increased production or energy use occur before or after planned events.
- Shut off all or most pumps during an event.
- Pump water into storage tanks prior to an event, and use this water during an event.
- Shut off operations completely during an event, then store and collect untreated water for processing after the event.
- Decrease use of aerators during an event.
- Move to standby generation, batteries, or other alternative energy sources on event day.