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 – Agriculture & Food Processing (May 2017)

Dairies
- 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.
- Pre-cool, then float or cycle refrigeration.
- Shift irrigation tasks to take place before or after an event.
- Instead of running at full operation, conduct only certain processes and delay the rest until after the event or the next day.
- Curtail barn and yard lights.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Food Processing
- 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 vertical lifts and conveyor belts and all non-essential process and product transportation equipment.
- Shut down or cycle air compressors, air handlers and ventilation systems.
Energy Curtailment Strategies – Agriculture & Food Processing (May 2017)

- Curtail or turn down chillers, and reset chilled water temperature.
- Adjust variable speed drive controls to reduce load from fans, pumps and chillers.
- Turn down, curtail or cycle blowers, pump motors, and any other air circulation motors.
- Pre-cool, then float or cycle refrigeration.
- Reduce or reschedule production.
- Stockpile inventory before an event, stop production during the event and store for packaging processes after the event.
- Move batch and continuous processes to either before or after an event, or to another day.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Greenhouses
- 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.
- Turn down or curtail greenhouse lights.
- Turn down or cycle cooling fans, ceiling fans, blowers, chillers, or any other air circulation equipment and motors.
- Adjust variable speed drive controls to reduce load from fans, pumps and chillers.
- Shift use of non-essential electrical equipment, such as pumps, fans and ventilation controls, to before or after an event.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Industrial Refrigeration
- 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 – Agriculture & Food Processing (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.
- Pre-cool, then float or cycle refrigeration. Certain products can safely float for hours.
- Turn down, curtail or cycle evaporator and condenser fans, some or all compressors and all non-essential motors.
- Alternate cooling methods between cold storage areas to lower simultaneous demand.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Wineries

- 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 or turn down chillers, and reset chilled water temperature.
- Adjust variable speed drive controls to reduce load from fans, pumps and chillers.
- Turn down or curtail pumping equipment, conveyor belts, vertical lifts and all non-essential process equipment.
- Stockpile inventory prior to an event, and reduce production, packaging or storage functions.
- Move batch and continuous processes to either before or after an event, or to another day.
- Decrease use of aerators during an event.
- Move to standby generation, batteries, or other alternative energy sources on event day.