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.

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Energy Curtailment Strategies – Commercial, Education & Healthcare

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Energy Curtailment Strategies – Commercial, Education & Healthcare (May 2017)

**Biotech**
- 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 non-essential process and pumping equipment.
- Shut down or cycle air compressors, air handlers and ventilation systems.
- Curtail / turn down chillers, and reset chilled water temperature or variable speed drive controls.
- Produce extra product a day ahead, and only do packaging on event day.
- Move to standby generation, batteries, or other alternative energy sources on event day.

**Office Buildings**
- 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.
- Complete dishwashing and housekeeping activities before or after an event.
Energy Curtailment Strategies – Commercial, Education & Healthcare (May 2017)

- Curtail or turn down boilers, pumps, fans and equipment not in use, especially in printing facilities.
- Curtail excess elevator banks and escalators (as permitted).
- Curtail / turn down chillers, and reset chilled water temperature.
- Adjust variable speed drive controls to reduce load from fans, pumps and chillers.
- Apply ventilation control – temporarily reducing outside air flow can help reduce cooling demand.
- Move to standby generation, batteries, or other alternative energy sources on event day.

**Warehouses**

- 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, such as forklifts and conveyers, before or after an event.
- Adjust employee schedules and shifts so that times of increased production or energy use occur before or after planned events.
- Schedule non-essential operations to before or after an event.
- Apply ventilation control – temporarily reducing outside air flow can help reduce cooling demand.
- Move to standby generation, batteries, or other alternative energy sources on event day.

**Health Care**

**Hospitals**

- Reduce use of non-essential testing and diagnostic equipment.
- Reduce lighting and air conditioning in back office areas.
- Move to standby generation, batteries, or other alternative energy sources on event day.
Medical Office Buildings/Elderly Care Facilities (in addition to those stated above)

- Curtail excess elevator banks and escalators (as permitted).
- Conduct dishwashing, housekeeping, waste processing and laundry activities before or after an event.
- Curtail all non-essential food preparation equipment not in use.

High Tech

Server Rooms and Data Centres

- Use cloud computing.
- Leverage "power capping" software or slow down workloads during an event.
- In laboratories, reschedule engineering tests to occur before or after an event.
- Raise set point temperature by a few degrees.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Manufacturing Plants

- Curtail all non-essential process and pumping equipment.
- Reduce or reschedule production.
- Curtail process loads that can be served by generators or alternative fuels.
- Schedule testing before or after an event.
- Move batch and continuous processes before or after an event, or to another day.
- Stockpile inventory prior to an event, then stop production during the event.
- Produce extra product a day ahead, and do only packaging on event day.
- Move to standby generation, batteries, or other alternative energy sources on event day.

Hospitality

- 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 saunas, pools, hot tubs, exercise equipment 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.
• Complete dishwashing, housekeeping and laundry before or after an event.
• Curtail excess elevator banks and escalators (as permitted).
• Move to standby generation, batteries, or other alternative energy sources on event day.

Retail

Small Retailers and Restaurants
• 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.
• Shut doors and windows to pre-cool, then curtail air conditioning during an event.
• 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 excess cash registers and computers.
• Perform housekeeping-related tasks before or after an event.
• Move to standby generation, batteries, or other alternative energy sources on event day.

Product Retailers (in addition to those stated above)
• Reduce lighting and decrease air conditioning in back-office and unused space.
• Curtail excess elevators and escalators (as permitted).
• Grocery Retailers (in addition to those stated above)
• Delay use of electric resistance defrost controls and the use of anti-sweat heaters.
• Shift use of electrically-operated equipment before or after an event.
• Back-store refrigerated storage and refrigerant compressors can be turned down, cycled or turned off, and may safely float for hours with little temperature change.
Schools

- 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 food service equipment, non-essential office equipment, excess elevators and escalators (as permitted).
- Perform dishwashing and housekeeping tasks before or after an event.
- Curtail pool heating and pumps.
- Move to standby generation, batteries, or other alternative energy sources on event day.