

**NEEDS FOR AND ALTERNATIVES TO (NFAT)**

**Manitoba Hydro Undertaking #17**

**Manitoba Hydro to provide the initial list of measures proposed by EnerNOC.**

**Response:**

The following response is provided by EnerNOC Utility Solutions.

The following is the list of measures initially proposed by EnerNOC for review by Manitoba Hydro under the DSM Potential Study.

Seg-ment	End-Use	Energy Efficiency Measure
Residential	Cooling	Central Air Conditioner - ENERGY STAR or better, including ductless mini-split systems
Residential	Cooling	Room Air Conditioner, ENERGY STAR or better
Residential	Cooling	Air Conditioner, Evaporative Cooler
Residential	Cooling	Central Air Conditioner - Maintenance and Tune-Up
Residential	Cooling	Attic Fan, Installation
Residential	Cooling	Attic Fan, Photovoltaic
Residential	Cooling	Ceiling Fan, Installation
Residential	Cooling	Whole-House Fan, Installation
Residential	Cooling	Dehumidifier
Residential	Heating	Boiler - Gas, High Efficiency
Residential	Heating	Furnace - Gas, High Efficiency
Residential	Heating	Furnace - Gas, Maintenance
Residential	Heating / Cooling	Central Heat Pump, High-Efficiency Air Source, including ductless mini-split systems
Residential	Heating / Cooling	Heat Pump - Room, High Efficiency Air Source
Residential	Heating / Cooling	Heat Pump, Geothermal
Residential	Heating / Cooling	Central Heat Pump - Maintenance
Residential	HVAC (all)	Insulation, Ducting
Residential	HVAC (all)	Ducting, Repair and Sealing
Residential	HVAC (all)	Insulation - Infiltration Control (caulk, weather strip, etc.)
Residential	HVAC (all)	Insulation, Ceiling
Residential	HVAC (all)	Insulation, Foundation
Residential	HVAC (all)	Insulation, Wall Cavity
Residential	HVAC (all)	Insulation, Wall Sheathing
Residential	HVAC (all)	Doors, Storm and Thermal
Residential	HVAC (all)	Windows, ENERGY STAR
Residential	Cooling	Windows, Install reflective film
Residential	Cooling	Roofs, High Reflectivity
Residential	HVAC (all)	Thermostat, Clock/Programmable
Residential	Water Heating	Water Heater - Electric, High-Efficiency

Seg-ment	End-Use	Energy Efficiency Measure
Residential	Water Heating	Water Heater, Heat Pump
Residential	Water Heating	Water Heater, Solar
Residential	Water Heating	Water Heater, Ground-Source Heat Pump
Residential	Water Heating	Water Heater - Electric, Tankless
Residential	Water Heating	Hot Water System Pumps, High Efficiency
Residential	Water Heating	Faucet Aerators
Residential	Water Heating	Pipe Insulation
Residential	Water Heating	Low-Flow Showerheads
Residential	Water Heating	Water Heater, Tank Blanket/Insulation
Residential	Water Heating	Water Heater, Thermostat Setback
Residential	Water Heating	Water Heater, Timer
Residential	Water Heating	Water Heating, Hot Water Saver
Residential	Water Heating	Water Heating, Drainwater Heat Recovery
Residential	Water Heating	Water Heating, Heat Trap
Residential	Water Heating	Water Heater - Gas, High-Efficiency
Residential	Water Heating	Water Heater - Gas, Tankless
Residential	Interior Lighting	Infrared Halogen Lamps, Screw-In
Residential	Interior Lighting	Compact Fluorescent Lamps, Screw-In
Residential	Interior Lighting	Compact Fluorescent Lamps, Pin-Based
Residential	Interior Lighting	LED Lamps
Residential	Interior Lighting	Fluorescent, T5 Lamps and Fixtures
Residential	Interior Lighting	Fluorescent, T8 Lamps and Fixtures
Residential	Interior Lighting	Fluorescent, Super T8 Lamps and Fixtures
Residential	Interior Lighting	Fluorescent Torchieres
Residential	Interior Lighting	Occupancy Sensor
Residential	Exterior Lighting	Infrared Halogen Lamps, Screw-In
Residential	Exterior Lighting	High Pressure Sodium Lamps, Outdoor
Residential	Exterior Lighting	Metal Halide, Outdoor
Residential	Exterior Lighting	Compact Fluorescent Lamps, Screw-In
Residential	Exterior Lighting	LED Lamps - Outdoor
Residential	Exterior Lighting	Outdoor Lighting - Photovoltaic, Installation
Residential	Exterior Lighting	Outdoor Lighting - Photosensor Control
Residential	Exterior Lighting	Outdoor Lighting - Timeclock Installation
Residential	Appliances	Clothes Washer, ENERGY STAR or better
Residential	Appliances	Clothes Dryer - Electric, High Efficiency
Residential	Appliances	Clothes Dryer, Heat Pump
Residential	Appliances	Clothes Dryer, Microwave
Residential	Appliances	Clothes Dryer Duct Heat Recovery
Residential	Appliances	Clothes Dryer - Gas, High Efficiency
Residential	Appliances	Dishwasher, ENERGY STAR or better
Residential	Appliances	Refrigerator/Freezer, ENERGY STAR or better
Residential	Appliances	Freezer, ENERGY STAR or better
Residential	Appliances	Refrigerator/Freezer, Remove Second Unit
Residential	Appliances	Refrigerator/Freezer, Maintenance
Residential	Appliances	Stove/ Oven - Electric, High Efficiency
Residential	Appliances	Convection Oven - Gas, High Efficiency
Residential	Appliances	Induction Stovetop

Seg-ment	End-Use	Energy Efficiency Measure
Residential	Electronics	Home Electronics - Personal Computers and Monitors, ENERGY STAR or better
Residential	Electronics	Home Electronics - Printer/Fax/Copier, ENERGY STAR
Residential	Electronics	Home Electronics - Television, ENERGY STAR or better
Residential	Electronics	Home Electronics - Set-Top boxes/DVRs
Residential	Electronics	Home Electronics - Reduce Standby Wattage
Residential	Misc	Furnace Fan, Electronically Commutated Motor
Residential	Misc	Pool, Efficient Pool Pumps
Residential	Misc	Pool, Pump Timer
Residential	Misc	Pool, Solar Heating System
Residential	Misc	Spa, Efficient Spa Pumps
Residential	Misc	Spa, Pump Timer
Residential	Misc	Spa, Solar Heating System
Residential	Misc	Well Pump, High Efficiency
Residential	Multiple End Uses	Advanced New Construction Designs
Residential	Multiple End Uses	ENERGY STAR Homes
Residential	Multiple End Uses	Energy Efficient Manufactured Homes
Residential	Multiple End Uses	Home Energy Management System (including In-Home Displays, etc.)
Commercial	Cooling	Chiller - Air-cooled, High-efficiency
Commercial	Cooling	Chiller - Water-cooled, High-efficiency
Commercial	Cooling	Chiller, Variable Speed Drive
Commercial	Cooling	Chilled Water, Reset
Commercial	Cooling	Air-cooled Chiller, High-Efficiency Fans
Commercial	Cooling	Cooling Tower, High-Efficiency Fans
Commercial	Cooling	Water-cooled Chiller, Condenser Water Temperature Reset
Commercial	Cooling	Air Conditioner - High-efficiency roof top units (including ductless mini-split)
Commercial	Cooling	Air Conditioner - Room, Energy Star or Better
Commercial	Cooling	Air Conditioner - Roof top AC, Maintenance
Commercial	Cooling	Air Conditioner, Evaporative Cooler
Commercial	Cooling	Cooling Other, High Efficiency
Commercial	Combined Heating and Cooling	Roof Top Heat Pump - Air-Source, High-efficiency (including ductless mini-split)
Commercial	Combined Heating and Cooling	Roof Top Heat Pump - Room, High Efficiency
Commercial	Combined Heating and Cooling	Geothermal or Water Source Heat Pump
Commercial	Cooling	Economizer, Installation
Commercial	Cooling	Thermal Energy Storage - Cooling
Commercial	Combined Heating and Cooling	Roof Top Heat Pump, Maintenance
Commercial	Venilation	Variable Air-Volume Systems
Commercial	Venilation	Ventilation - Variable Speed Control
Commercial	Venilation	Ventilation - CO2 Controlled
Commercial	Venilation	Ventilation - Exhaust Hood Sensor Control
Commercial	Venilation	Fans, Energy-Efficient Motors
Commercial	HVAC	Pumps, High-Efficiency Motors

Seg-ment	End-Use	Energy Efficiency Measure
Commercial	HVAC	Pumps, Variable Speed Control
Commercial	HVAC	Ducting, Insulation
Commercial	HVAC	Ducting, Repair and Sealing
Commercial	HVAC	Insulation, Ceiling
Commercial	HVAC	Insulation, Wall Cavity
Commercial	HVAC	Roofs, Cool Roof
Commercial	HVAC	Windows, High Efficiency
Commercial	HVAC, Lighting	Energy Management System
Commercial	Other	Top Daylighting with Skylights, new construction
Commercial	HVAC	Occupancy Sensors, HVAC
Commercial	HVAC	Thermostat, Clock/Programmable
Commercial	Interior Lighting	Screw-in: Halogen, CFL, Cold Cathode, LED
Commercial	Interior Lighting	High-Bay Fixtures
Commercial	Interior Lighting	Linear Fluorescent
Commercial	Interior Lighting	LED Exit Lighting
Commercial	Interior Lighting	Occupancy Sensors
Commercial	Interior Lighting	Task Lighting
Commercial	Interior Lighting	Time Clocks and Timers (lighting)
Commercial	Interior Lighting	Fluorescent, Delamp and Install Reflectors
Commercial	Interior Lighting	Interior Fluorescent - Bi-Level Fixture w/Occupancy Sensor
Commercial	Interior Lighting	Interior Fluorescent - Photocell-Controlled Diming Ballasts
Commercial	Interior Lighting	Indoor Lighting - Daylighting Controls
Commercial	Exterior Lighting	Screw-in: Halogen, CFL, Cold Cathode, LED
Commercial	Exterior Lighting	High Intensity Discharge (HID)
Commercial	Exterior Lighting	Linear Fluorescent
Commercial	Exterior Lighting	Exterior Fluorescent - Bi-Level Fixture w/Occupancy Sensor
Commercial	Exterior Lighting	Daylighting Controls, Outdoors
Commercial	Interior and Exterior Lighting	Lighting Retrocommissioning
Commercial	Water Heating	Water Heater - Electric, High-Efficiency and Heat Pump Water Heaters
Commercial	Water Heating	Water Heater - Electric, Tankless
Commercial	Water Heating	Water Heating, Heat Trap
Commercial	Water Heating	Faucet Aerators and Low Flow Nozzles
Commercial	Water Heating	Pipe - Hot Water, Insulation
Commercial	Water Heating	Water Heating, Tank Blanket
Commercial	Water Heating	Water Heating, Hot Water Saver
Commercial	Water Heating	Pump - Hot Water Circulation, High-Efficiency
Commercial	Water Heating	Water Heater, Install Timer
Commercial	Water Heating	Water Heater, Thermostat Setback
Commercial	Water Heating	Water Heating, Solar Water Heating System
Commercial	Refrigeration	Refrigerator - Walk-In, High-Efficiency
Commercial	Refrigeration	Refrigerator - Reach-In, High-Efficiency
Commercial	Refrigeration	Refrigerator - Glass Door Display, High-Efficiency
Commercial	Refrigeration	Refrigerator - Open Display Case, High-Efficiency
Commercial	Refrigeration	Grocery - Display Case Motion Sensors
Commercial	Refrigeration	Grocery - ECMs for Display Cases
Commercial	Refrigeration	Icemaker, High Efficiency

Seg-ment	End-Use	Energy Efficiency Measure
Commercial	Refrigeration	Refrigerator Decommissioning and Recycling
Commercial	Refrigeration	Controls, Anti-Sweat Heater
Commercial	Refrigeration	Door Gasket, Replacement
Commercial	Refrigeration	Night Covers
Commercial	Refrigeration	High-Efficiency Display Case LED Lighting
Commercial	Other	Vending Machine, High Efficiency
Commercial	Other	Vending Machine, Controller
Commercial	Food Prep	Cooking Equipment, High Efficiency
Commercial	Office Equipment	Office Electronics - Desktop Computers, ENERGY STAR
Commercial	Office Equipment	Office Electronics - Laptop Computers, ENERGY STAR
Commercial	Office Equipment	Office Electronics - Monitor, ENERGY STAR
Commercial	Office Equipment	Office Electronics - Server, ENERGY STAR
Commercial	Office Equipment	Office Electronics - Copier/Printer, ENERGY STAR
Commercial	Office Equipment	Office Electronics - POS Terminal
Commercial	Office Equipment	Office Electronics - Plug Load Occupancy Sensors
Commercial	Office Equipment	Office Electronics - Power Supply, ENERGY STAR
Commercial	Multiple	Hotel Guestroom Controls (occupancy)
Commercial	Misc.	Non-HVAC Motors
Commercial	Misc.	Non-HVAC Motors, Variable Speed Control
Commercial	Other	Pool, Efficient Pool Pumps
Commercial	Other	Pool, Heat Pump or Solar Heating System
Commercial	Misc.	Pool, Pump Timer
Commercial	Multiple	Comprehensive Retrocommissioning
Commercial	Other	Advanced New Construction Designs
Commercial	Other	Comprehensive Commissioning
Commercial	Other	Custom Measures
Industrial	Refrigeration	Refrigeration System Controls
Industrial	Refrigeration	Refrigeration System Maintenance
Industrial	Refrigeration	Refrigeration System Optimization
Industrial	Refrigeration	Repair Refrigerant Leak
Industrial	Boilers	High-Pressure Condensate Return System
Industrial	Boilers	Speed Control: Variable Frequency Drive
Industrial	Boilers	Speed Control: Magnetic Adjustable Speed Drives
Industrial	Air Compressor	Air leak Reduction
Industrial	Air Compressor	Compressed Air System Controls
Industrial	Air Compressor	Compressed Air System Optimization and Improvements
Industrial	Air Compressor	Compressed Air System Maintenance
Industrial	Air Compressor	Compressor Replacement
Industrial	Air Compressor	Waste Heat Recovery from Air Compressors
Industrial	Process Equipment	Fan System Controls
Industrial	Process Equipment	Fan System Optimization
Industrial	Process Equipment	Fan System Maintenance
Industrial	Process Equipment	Pumping System Controls
Industrial	Process Equipment	Pumping System Optimization
Industrial	Process Equipment	Pumping System Maintenance
Industrial	Process Equipment	Premium Efficiency Motors
Industrial	Process Equipment	Speed Control: Variable Frequency Drive

Seg-ment	End-Use	Energy Efficiency Measure
Industrial	Process Equipment	Speed Control: Magnetic Adjustable Speed Drives
Industrial	Process Heating	Autothermal Reforming
Industrial	Process Heating	Direct-Arc Melting
Industrial	Process Heating	Direct-Resistance Melting
Industrial	Process Heating	Electron Beam Heating
Industrial	Process Heating	Heat Cascading
Industrial	Process Heating	Heat Recovery
Industrial	Process Heating	Heat Transformers
Industrial	Process Heating	Induction Curing
Industrial	Process Heating	Induction Heating
Industrial	Process Heating	Industrial Process Heat Pumps
Industrial	Process Heating	Infrared Drying and Curing
Industrial	Process Heating	Insulated Surfaces
Industrial	Process Heating	Microwave Heating
Industrial	Process Heating	Process Heat Recovery
Industrial	Process Heating	Radio Frequency
Industrial	Industry-Specific Processes	Chilled Water Pipe Insulation
Industrial	Industry-Specific Process	Direct Drive Extruders
Industrial	Industry-Specific Processes	Efficient Baghouses
Industrial	Industry-Specific Process	Efficient curing ovens
Industrial	Industry-Specific Process	Efficient Electric Melting
Industrial	Industry-Specific Process	Efficient Grinding
Industrial	Industry-Specific Processes	Electrolysis - Membrane Separation
Industrial	Industry-Specific Processes	Electrolytic
Industrial	Industry-Specific Process	Extruders/Injection Molding
Industrial	Industry-Specific Process	Farm Based Digester
Industrial	Industry-Specific Processes	Fine Bubble Diffusers
Industrial	Industry-Specific Processes	Furnace Upgrades
Industrial	Industry-Specific Process	Injection Molding - direct drive
Industrial	Industry-Specific Process	Injection Molding - impulse cooling
Industrial	Industry-Specific Process	Livestock Waterer
Industrial	Industry-Specific Process	Low-Pressure Irrigation
Industrial	Industry-Specific Process	Microwave Dryer
Industrial	Industry-Specific Process	Near Net Shape Casting
Industrial	Industry-Specific Processes	Sludge Reduction Techniques
Industrial	Industry-Specific Processes	Soil Moisture Monitoring and Services
Industrial	Industry-Specific Processes	Speed Control: Magnetic Adjustable Speed Drives

Segment	End-Use	Energy Efficiency Measure
Industrial	Industry-Specific Processes	Speed Control: Variable Frequency Drive
Industrial	Industry-Specific Processes	Steam and Hot Water Pipe Insulation
Industrial	Industry-Specific Process	Top-heating Glass
Industrial	Industry-Specific Process	Tractor Heater Timers
Industrial	Industry-Specific Processes	Ultrasonic Cleaning
Industrial	Industry-Specific Process	Variable Speed Vacuum Pumps
Industrial	Industry-Specific Processes	Water Management System Improvements
Industrial	Cooling	Air Conditioner - Packaged, High-Efficiency
Industrial	Cooling	Air Conditioner - Packaged, Ductless and Variable Refrigerant Flow System
Industrial	Cooling	Air Conditioner - Packaged, Maintenance
Industrial	Cooling	Air Conditioner - Room, Energy Star or Better
Industrial	Cooling	Air Conditioner, Evaporative Cooler
Industrial	Cooling	Chilled Water, Reset
Industrial	Cooling	Chiller - Air-Cooled, High-Efficiency
Industrial	Cooling	Chiller - Water-Cooled, High-Efficiency
Industrial	Cooling	Chiller, Variable Speed Drive
Industrial	Cooling	Cooling Tower, High-Efficiency Fans
Industrial	Cooling	Condenser Water, Temperature Reset
Industrial	Cooling	Economizer, Installation
Industrial	Cooling	Thermal Energy Storage - Cooling
Industrial	Heating	Boiler - Gas, High Efficiency
Industrial	Heating	Furnace - Gas, High Efficiency
Industrial	Heating	Furnace - Gas, Maintenance
Industrial	Heating	Hot Water, Reset
Industrial	Heating / Cooling	Heat Pump - Air-Source, High-Efficiency
Industrial	Heating / Cooling	Heat Pump - Air-Source, Maintenance
Industrial	Heating / Cooling	Heat Pump - Ductless and Variable Refrigerant Flow System
Industrial	Heating / Cooling	Heat Pump - Room, High Efficiency
Industrial	Heating / Cooling	Heat Pump, Geothermal or Water Source
Industrial	HVAC	Ducting, Insulation
Industrial	HVAC	Ducting, Repair and Sealing
Industrial	HVAC	Energy Management System
Industrial	HVAC	Exhaust Hoods - Cooking, Sensor Control
Industrial	HVAC	Fans, Energy-Efficient Motors
Industrial	HVAC	Fans, Variable Speed Control
Industrial	HVAC	HVAC Retrocommissioning
Industrial	HVAC	Pumps, High-Efficiency Motor
Industrial	HVAC	Pumps, Variable Speed Control
Industrial	HVAC	Thermostat, Clock/Programmable
Industrial	HVAC	Variable Air-Volume Systems
Industrial	HVAC	Ventilation, CO2-Controlled
Industrial	Building Envelope	Insulation, Ceiling
Industrial	Building Envelope	Insulation, Wall Cavity

Seg-ment	End-Use	Energy Efficiency Measure
Industrial	Building Envelope	Roofs, High Reflectivity
Industrial	Building Envelope	Windows, High Efficiency
Industrial	Lighting	Compact Fluorescent Fixtures
Industrial	Lighting	Compact Fluorescent Lamps
Industrial	Lighting	Compact Fluorescent Lamps, Outdoor
Industrial	Lighting	Daylighting Controls, Photocell-Controlled Dimming Ballasts for T8 Fluorescent Systems
Industrial	Lighting	Daylighting Controls, Outdoors
Industrial	Lighting	Fluorescent, Delamp and Install Reflectors
Industrial	Lighting	Fluorescent, Bi-Level Fixture w/ Integrated Occupancy Sensor
Industrial	Lighting	Fluorescent, High Bay Fixtures
Industrial	Lighting	Fluorescent, T5 Lamps and Fixtures
Industrial	Lighting	Fluorescent, T8 Lamps and Fixtures
Industrial	Lighting	Fluorescent, Super T8 Lamps and Fixtures
Industrial	Lighting	High-Pressure Sodium Lamps
Industrial	Lighting	Induction Lamps
Industrial	Lighting	LED Exit Lighting
Industrial	Lighting	LED Lamps
Industrial	Lighting	LED Lamps - Outdoor
Industrial	Lighting	Lighting Retrocommissioning
Industrial	Lighting	Metal Halide Lamps
Industrial	Lighting	Metal Halide Lamps, Outdoor
Industrial	Lighting	Metal Halide Lighting with Pulse Start
Industrial	Lighting	Occupancy Sensors
Industrial	Lighting	Task Lighting
Industrial	Lighting	Time Clocks and Timers (lighting)
Industrial	Other	Comprehensive System-Level Optimization
Industrial	Other	High Efficiency Material Handling Systems
Industrial	Other	Irrigation Improvements
Industrial	Other	Motor Downsizing
Industrial	Other	Motor Rewind Training/Standards
Industrial	Other	Power Factor Improvements
Industrial	Other	Process Optimization
Industrial	Other	Proper Motor Sizing
Industrial	Other	Steam Trap Maintenance
Industrial	Other	Transformer, High Efficiency
Industrial	Other	Custom Measures