Calculating Energy Conservation Goals for FY 2024 to FY 2028

Design, Construction and Retrofit Strategies

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28			
Lighting	**Quantity of Time that Measure will be in place (years)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Saving (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
High Efficiency Lighting Systems (D5020, D502001, D502003, D502004)	30	$ -	-	$ -	-	$ -	-	$ -	-		-	-	7	100	0
Outdoor Lighting (D502004)	30	$ 5,000	4,558	$ 5,000	4,558	$ 5,000	4,558	$ 5,000	4,558	$ 5,000	4,558	68,375	7	100	0
Occupancy Sensors (D5021, D5022)	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28			
H.V.A.C.	**Quantity of Time that Measure will be in place (years)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
Efficient Boilers (near condensing) (D3020, D302001, D302002)	30	$ 2,488,000	2,202,871	$ 960,000	849,982	$ -	-	$ -	-	$ -	-	14,414,284	25	5	95
High-efficiency Boilers (condensing) (D3020, D302001, D302002)	15	$ -	-	$ 1,360,000	1,505,177	$ 3,200,000	3,541,593	$ 2,240,000	2,479,115	$ 3,200,000	3,541,593	25,145,310	20	5	95
High-efficiency Boiler Burners (D3020)	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	5	95
Geothermal (D302099)	25	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	35	100	0
Heat Recovery/Enthalpy Wheels (D3090)	20	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	8	20	80
Economizers (D306002)	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7.5	50	50
Energy Efficient HVAC systems (D3050,D3040)	35	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	75	50	50
Energy Efficient Rooftop Units (D302098)	25	$ 1,200,000	408,147	$ 250,000	85,031	$ 250,000	85,031	$ 250,000	85,031	$ 250,000	85,031	2,891,041	30	50	50
High Efficiency Domestic Hot Water (D2020)	10	$ 219,000	384,773	$ 20,000	35,139	$ 20,000	35,139	$ 20,000	35,139	$ 20,000	35,139	2,275,258	10	15	85
Efficient Chillers and Controls (D3030, D303011, D303012)	25	$ 500,000	87,848	$ -	-	$ 1,500,000	263,543	$ -	-	$ 1,500,000	263,543	1,493,412	100	15	85
High-efficiency Motors (D304007, D303011)	20	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	100	0
VFD (D302056)	10		-		-		-	$ -	-	$ -	-	-	5	75	25
Demand Ventilation (D3040)	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	50	50
Entrance Heater Controls (D302099)	20	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	50	50
Destratification Fans (D3090)	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7	100	0
New Cooling Centres	15	$ 5,863,000	- 5,345,063	$ 2,760,000	- 2,516,182	$ 2,500,000	2,279,150	$ 2,000,000	1,823,320	$ 2,000,000	- 1,823,320	- 49,097,456	-7	100	0

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28			
Controls	**Quantity of Time that Measure will be in place**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
Building Automation Systems - New (D3060)	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	15	50	50
Building Automation Systems - Upgrade (D3060)	15	$ 2,244,300.00	763,337	$ 2,250,000.00	765,276	$ 2,400,000.00	816,294	$ 2,250,000.00	765,276	$ 2,350,000.00	799,288	11,656,509	30	50	50
Real-time energy data for operators to identify and diagnose building issues	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	3	50	50
Voltage Harmonizers (D501001)	15	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	7	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-		-	-	0		100

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28			
Building Envelope	**Quantity of Time that Measure will be in place**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
Glazing (B302006, B2020, B3021)	30	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	80	20	80
Increased Wall Insulation (B2010)	50	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	40	20	80
New Roof (B3010, B3020)	22	$ 12,000,000	955,623	$ 10,000,000	796,353	$ 10,000,000	796,353	$ 10,000,000	796,353	$ 10,000,000	796,353	12,741,645	200	20	80
New Windows (B2020)	32	$ 1,650,000	328,496	$ 1,000,000	199,088	$ 1,000,000	199,088	$ 1,000,000	199,088	$ 1,000,000	199,088	3,633,360	80	20	80
Treatments	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	20	80
Shading Devices	30	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	20	100	0
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
Design, Construction & Retrofit Strategies Total	**Quantity of Time that Measure will be in place**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**
Total		**$ 26,169,300**	**- 209,410**	**$ 18,605,000**	**1,724,422**	**$ 20,875,000**	**3,462,449**	**$ 17,765,000**	**2,541,240**	**$ 20,325,000**	**3,901,273**	**25,221,738**

Keys	
colour: yellow	= Default value
colour: blue	= Calculated Value
$0.1567	= cost of 1 ekWh electricity
$0.0393	= cost of 1 ekWh natural gas
0.0955	m^3 = 1 ekWh (as per NRCan conversion table)
$0.4116	= cost of 1 m^3 of natural gas

Calculating Energy Conservation Goals for FY 2024 to FY 2028

Operations and Maintenance Strategies

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028					
Policy and Planning	**Quantity of Time that Measure will be in place (years)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
New School Design/Construction Guidelines and Specifications	5	$ 2,000	4,081	$ 2,000	4,081	$ 2,000	4,081	$ 2,000	4,081	$ 2,000	4,081	61,222	5	50	50
Day and Night Temperature Guidelines for all Schools	10		-		-		-		-		-	-	5	20	80
Nighttime Blackout of Sites - Interior	10		-		-		-		-		-	-	7	100	-
Nighttime Blackout of Sites - Exterior	10		-		-		-		-		-	-	7	100	-
Procures Only Energy Star Certified Appliances	5	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	100	-
Demand Ventilation (servicing) (D3020,D3030, D3040)	3	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	50	50
HVAC Optimization (coil cleaning, re-calibration of equipment) (D3020)	3	$ 2,000	10,204	$ 2,000	10,204	$ 2,000	10,204	$ 2,000	10,204	$ 2,000	10,204	153,055	2	50	50
Commissioning (retro and re)	10	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	10	50	50
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028					
Energy Audits	**Quantity of Time that Measure will be in place**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
Walk Through Audit	5	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1000	50	50
Engineering Audit	5	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1000	50	50
Other (Describe)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028					
Operations and Maintenance Strategies Total	**Quantity of Time that Measure will be in place**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh**	**Estimated Total Accumulated Energy Savings (ekWh)**			
Total		$ 4,000	14,285	$ 4,000	14,285	$ 4,000	14,285	$ 4,000	14,285	$ 4,000	14,285	214,277			

Keys	
$0.1567	= cost of 1 ekWh electricity
$0.0393	= cost of 1 ekWh natural gas
0.0958	m^3 = 1 ekWh
$0.4116	= cost of 1 m^3 of natural gas

Occupant Behaviour Strategies

		2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28			
Training and Education	**Quantity of Time that Measure will be in place (years)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Cost of Implementation**	**Estimated Annual Energy Savings from all projects (ekWh)**	**Estimated Total Accumulated Energy Savings (ekWh)**	**Energy Payback Period**	**% related to Electricity**	**% related to Natural Gas**
Building Operator Training	3	$ 5,000	4,556	$ 5,000	4,556	$ 5,000	4,556	$ 5,000	4,556	$ 5,000	4,556	68,341	10	60	40
Energy Benchmarking Program	5	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1000	50	50
Building Automation Training (site specific)	3	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	1	60	40
Ongoing Training and Awareness Programs for Energy Conservation	5	$ 2,000	1,380	$ 2,000	1,380	$ 2,000	1,380	$ 2,000	1,380	$ 2,000	1,380	20,695	10	90	10
Detailed Information on Building Operational Costs	1	$ 5,000	51	$ 5,000	51	$ 5,000	51	$ 5,000	51	$ 5,000	51	765	1000	50	50
Detailed Information on Energy Consumption (e.g. via the Utility Consumption Database or other database)	1		-		-		-		-		-	-	1000	50	50
Participate in Environmental Programs, such as EcoSchools, Earthcare	1	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	5	90	10
Other Tools (Define)		$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	-	0		100
Occupant Behaviour Strategies Total		**$ 12,000**	**5,987**	**$ 12,000**	**5,987**	**$ 12,000**	**5,987**	**$ 12,000**	**5,987**	**$ 12,000**	**5,987**	**89,802**			

Keys	
$0.1567	= cost of 1 ekWh electricity
$0.0393	= cost of 1 ekWh natural gas
0.0955	m^3 = 1 ekWh
$0.4116	= cost of 1 m^3 of natural gas

Calculating Energy Conservation Goals for FY 2024 to FY 2028

Conservation Goal

	FY 2023
Total Building Area (includes portables) (m^2)	1,518,623
Total Building Area (includes portables) (ft^2)	16,346,320
Energy Consumption for the board (ekWh)	286,016,556

	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Appendix B: Design, Construction and Retrofit Strategies Total	$ 26,169,300	-209,410	$ 18,605,000	1,724,422	$ 20,875,000	3,462,449	$ 17,765,000	2,541,240	$ 20,325,000	3,901,273	25,221,738
Appendix C: Operations and Maintenance Strategies Total	$ 4,000	14,285	$ 4,000	14,285	$ 4,000	14,285	$ 4,000	14,285	$ 4,000	14,285	214,277
Appendix D: Occupant Behaviour Strategies Total	$ 12,000	5,987	$ 12,000	5,987	$ 12,000	5,987	$ 12,000	5,987	$ 12,000	5,987	89,802
TOTAL	**$ 26,185,300**	**-189,138**	**$ 18,621,000**	**1,744,694**	**$ 20,891,000**	**3,482,721**	**$ 17,781,000**	**2,561,512**	**$ 20,341,000**	**3,921,545**	**25,525,817**
Percentage reduction		**- 0.07**		**0.61**		**1.22**		**0.90**		**1.37**	**4.03**
Conservation Goal (ekWh/m^2)		**- 0.12**		**1.15**		**2.29**		**1.69**		**2.58**	**7.59**
Conservation Goal (ekWh/ft^2)		**- 0.01**		**0.11**		**0.21**		**0.16**		**0.24**	**0.70**