

Design, Construction and Retrofit Strategies

Lighting	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28		Energy Payback Period	% related to Electricity	% related to Natural Gas
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Total Accumulated Energy Savings (kWh)				
High Efficiency Lighting Systems (D5020, D502001, D502003, D502004)	30	\$ 210,000	191,449	\$ 1,083,500	987,784	\$ 1,970,975	210,000	\$ 551,000	602,325	\$ -	-	6,543,028	7	100	0	
Outdoor Lighting (D502004)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	7	100	0	
Occupancy Sensors (D5021, D5022)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	5	100	0	
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	0		100	

H.V.A.C.	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28		Energy Payback Period	% related to Electricity	% related to Natural Gas
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Efficient Boilers (near condensing) (D3020, D302001, D302002)	30	\$ -	-	\$ 1,000,000	-	\$ 800,000	-	\$ -	-	\$ -	-	-	15	5	95	
High-efficiency Boilers (condensing) (D3020, D302001, D302002)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	10	5	95	
High-efficiency Boiler Burners (D3020)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	5	5	95	
Geothermal (D302099)	25	\$ -	-	\$ -	-	\$ 140	140	\$ -	-	\$ -	-	420	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	\$ -	-	\$ 1,500,000	204,074	\$ 2,500,000	340,123	\$ -	-	\$ -	-	1,836,662	75	50	50	
Energy Efficient Rooftop Units (D302098)	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	30	50	50	
High Efficiency Domestic Hot Water (D3020)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	10	15	85	
Efficient Chillers and Controls (D3030, D303011, D303012)	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	100	100	0	
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	
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	0		100	

Controls	Quantity of Time that Measure will be in place	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28		Energy Payback Period	% related to Electricity	% related to Natural Gas
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Total Accumulated Energy Savings (kWh)				
Building Automation Systems - New (D3060)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	15	50	50	
Building Automation Systems - Upgrade (D3060)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	15	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	

Building Envelope	Quantity of Time that Measure will be in place	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28		Energy Payback Period	% related to Electricity	% related to Natural Gas
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Glazing (B302006, B2020, B3021)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	80	20	80	
Increased Wall Insulation (B2010)	50	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	40	20	80	
New Roof (B3010, B3020)	22	\$ -	-	\$ -	-	\$ 1,096,640	87,331	\$ 3,731,520	297,161	\$ 1,375,000	109,499	965,814	200	20	80	
New Windows (B2020)	32	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	80	20	80	
Treatments	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	10	20	80	
Shading Devices	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	20	100	0	
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	0		100	

Design, Construction & Retrofit Strategies Total	Quantity of Time that Measure will be in place	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28		Energy Payback Period	% related to Electricity	% related to Natural Gas
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (kWh)	Estimated Total Accumulated Energy Savings (kWh)				
Total		\$ 210,000	191,449	\$ 3,583,500	2,667,521	\$ 6,367,615	1,818,125	\$ 4,282,520	799,485	\$ 1,375,000	109,499	18,790,171				

Keys	
colour: yellow	= Default value
colour: blue	= Calculated Value
\$ 0.1667	= cost of 1 kWh electricity
\$ 0.0393	= cost of 1 kWh natural gas
0.0955	m ³ = 1 kWh (see per NRCAN consumption table)
\$ 0.4116	= cost of 1 m ³ of natural gas

Calculating Energy Conservation Goals for FY 2024 to FY 2028

From 143 to 144 on the right side. From 143 to 144 on the right side. From 143 to 144 on the right side.

Operations and Maintenance Strategies

Policy and Planning	Quantity of Time that Measure will be in place (years)	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)	Energy Payback Period	% related to Electricity	% related to Natural Gas
New School Design/Construction Guidelines and Specifications	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	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	50	50
Commissioning (redo and re)	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	10	50	50
Other (Describe)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	0		100

Energy Audits	Quantity of Time that Measure will be in place	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)	Energy Payback Period	% related to Electricity	% related to Natural Gas
Walk Through Audit	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	1000	50	50
Engineering Audit	5	\$ 40,000	\$ 408	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	2,041	1000	50	50
Other (Describe)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-	9		100

Operations and Maintenance Strategies Total	Quantity of Time that Measure will be in place	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)			
Total		\$ 40,000	\$ 408	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	2,041			

Keys	
\$0.1567	= cost of 1 ekWh electricity
\$0.0363	= cost of 1 ekWh natural gas
0.0005	m ³ = 1 ekWh
\$0.4118	= cost of 1 m ³ of natural gas

End of worksheet.

Press TAB to move to input area. Press UP or DOWN ARROW in column A to read through the document.

Occupant Behaviour Strategies

Training and Education	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28		Energy Payback Period	% related to Electricity	% related to Natural Gas
		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)				
Building Operator Training	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-	3	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	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-	10	90	10
Detailed Information on Building Operational Costs	1	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-	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		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-			

Keys	
\$0.1667	= cost of 1 ekWh electricity
\$0.0393	= cost of 1 ekWh natural gas
0.0955	m ² = 1 ekWh
\$0.4116	= cost of 1 m ³ of natural gas

End of worksheet.

Calculating Energy Conservation Goals for FY 2024 to FY 2028

Press TAB to move to input area. Press UP or DOWN ARROW in column A to read through the document.

Conservation Goal		FY 2018	
Total Building Area (includes portables) (m²)		84,561	Enter from UCD. - use square meters
Total Building Area (includes portables) (ft²)		910,207	Enter from UCD - use square feet
Energy Consumption for the board (ekWh)		16,987,270	Enter from UCD

1 ft² = 0.0929 m²

	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	\$ 2,073,000	191,449	\$ 3,583,500	2,667,521	\$ 6,367,615	1,818,125	\$ 4,282,520	799,485	\$ 1,375,000	109,499	18,790,171
Appendix C: Operations and Maintenance Strategies Total	\$ 40,000	408	\$ -	0	\$ -	0	\$ -	0	\$ -	0	2,041
Appendix D: Occupant Behaviour Strategies Total	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	0
TOTAL	\$ 2,113,000	191,857	\$ 3,583,500	2,667,521	\$ 6,367,615	1,818,125	\$ 4,282,520	799,485	\$ 1,375,000	109,499	18,792,212
Percentage reduction		1.13		15.70		10.70		4.71		0.64	32.89
Conservation Goal (ekWh/m²)		2.27		31.55		21.50		9.45		1.29	
Conservation Goal (ekWh/ft²)		0.21		2.93		2.00		0.88		0.12	6.14

Note
Check the total in cell B15 to confirm validity of estimated amount to be spent during that year

Note
Check the total in cell D15 to confirm validity of estimated amount to be spent during that year

Note
Check the total in cell F15 to confirm validity of estimated amount to be spent during that year

Note
Check the total in cell H15 to confirm validity of estimated amount to be spent during that year

Note
Check the total in cell J15 to confirm validity of estimated amount to be spent during that year

End of worksheet.

