

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 (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)			
High Efficiency Lighting Systems (D5020, D502001, D502003, D502004)	30	\$ 105,000	44,671	\$ 174,167	74,098	\$ 62,500	26,590	\$ 52,083	22,158	\$ 52,083	22,158	665,993	15	100	0
Outdoor Lighting (D502004)	30	\$ 25,000	10,836	\$ 22,100	9,402	\$ 26,000	11,061	\$ 23,636	10,056	\$ 22,034	9,374	153,480	15	100	0
Occupancy Sensors (D5021, D5022)	10	\$ 2,500	1,595	\$ 6,500	4,148	\$ 5,000	3,191	\$ 5,000	3,191	\$ 5,000	3,191	43,714	10	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
		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)			
Efficient Boilers (near condensing) (D3020, D302001, D302002)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	15	5	95
High-efficiency Boilers (condensing) (D3020, D302001, D302002)	15	\$ -	-	\$ 50,000	92,229	\$ 50,000	92,229	\$ 25,000	46,114	\$ 25,000	46,114	783,946	12	5	95
High-efficiency Boiler Burners (D3020)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	5	5	95
Geothermal (D302099)	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	35	100	0
Heat Recovery/Entalpy Wheels (D3090)	20	\$ 25,000	33,181	\$ -	-	\$ -	-	\$ -	-	\$ -	-	165,907	12	20	80
Economizers (D306002)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	7	50	50
Energy Efficient HVAC systems (D3050,D3040)	35	\$ 1,100,000	149,854	\$ 496,250	87,514	\$ 421,813	57,387	\$ 347,375	47,260	\$ 322,563	43,884	1,328,893	75	50	50
Energy Efficient Rooftop Units (D302098)	25	\$ 445,000	100,903	\$ 300,775	68,200	\$ 326,313	73,991	\$ 227,000	51,472	\$ 212,813	48,255	1,150,487	45	50	50
High Efficiency Domestic Hot Water (D2020)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	10	15	85
Efficient Chillers and Controls (D3030, D303011, D303012)	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	100	100	0
High-efficiency Motors (D304007, D303011)	20	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	12	100	0
VFD (D302056)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	12	75	25
Demand Ventilation (D3040)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	5	50	50
Entrance Heater Controls (D302099)	20	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	5	50	50
Deaistratification Fans (D3090)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	7	100	0
Other Hydronic Radiant Ceiling Panels	15	\$ 275,000	190,888	\$ 80,000	58,149	\$ 50,000	36,343	\$ 66,500	48,336	\$ -	-	1,437,737	35	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 (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 Automation Systems - New (D3060)	15	\$ 50,000	25,509	\$ 25,000	12,755	\$ 15,625	7,972	\$ 17,857	9,110	\$ 25,000	12,755	233,455	20	50	50
Building Automation Systems - Upgrade (D3060)	15	\$ 105,000	53,569	\$ 145,000	73,977	\$ 30,000	15,306	\$ 10,000	5,102	\$ 10,000	5,102	624,975	20	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
		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)			
Glazing (B302006, B2020, B3021)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	80	20	80
Increased Wall Insulation (B2010)	50	\$ 60,000	23,891	\$ 103,333	41,145	\$ 93,000	37,030	\$ 62,000	24,697	\$ 51,667	20,572	465,070	40	20	80
New Roof (B3010, B3020)	22	\$ 80,000	6,371	\$ 115,000	9,158	\$ 200,000	15,927	\$ 200,000	15,927	\$ 200,000	15,927	164,049	200	20	80
New Windows (B2020)	32	\$ 120,000	23,891	\$ 250,000	49,772	\$ 250,000	49,772	\$ 200,000	39,818	\$ 183,333	36,500	583,992	80	20	80
Treatments	10	\$ 80,000	31,854	\$ 12,000	4,778	\$ 12,000	4,778	\$ 12,000	4,778	\$ 12,000	4,778	207,052	40	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			
		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		\$ 2,472,500	705,613	\$ 1,780,125	565,325	\$ 1,542,250	431,577	\$ 1,248,482	328,010	\$ 1,121,492	268,611	8,008,729			

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	m³ = 1 ekWh (as per NRCan conversion table)
\$0.4116	= cost of 1 m³ of natural gas

Occupant Behaviour Strategies

Training and Education	Quantity of Time that Measure will be in place (years)	2023-2024		2019-2020 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	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2	20	285,723	1	50	50
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		\$ 2,000	20,407	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2	20	285,723			

Keys	
\$0.1567	= cost of 1 ekWh electricity
\$0.0393	= cost of 1 ekWh natural gas
0.0955	m³ = 1 ekWh
\$0.4116	= cost of 1 m³ of natural gas

Calculating Energy Conservation Goals for FY 2024 to FY 2028

Conservation Goal		
	FY 2018	
Total Building Area (includes portables) (m²)	190,692	Enter from UCD. - use square meters 1 ft² = 0.0929 m²
Total Building Area (includes portables) (ft²)	2,052,536	
Energy Consumption for the board (ekWh)	39,077,428	

	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
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Appendix B: Design, Construction and Retrofit Strategies Total	\$ 2,472,500	705,613	\$ 1,780,125	565,325	\$ 1,542,250	431,577	\$ 1,248,452	328,010	\$ 1,121,492	268,611	8,008,729
Appendix C: Operations and Maintenance Strategies Total	\$ 17,500	30,611	\$ 10,000	15,306	\$ 12,500	20,407	\$ 5,000	5,102	\$ 12,500	20,407	306,110
Appendix D: Occupant Behaviour Strategies Total	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2,000	20,407	\$ 2	20	285,723
TOTAL	\$ 2,492,000	756,632	\$ 1,792,125	601,038	\$ 1,556,750	472,392	\$ 1,255,452	353,519	\$ 1,133,994	289,038	8,600,563
Percentage reduction		1.94		1.54		1.21		0.90		0.74	6.33
Conservation Goal (ekWh/m²)		3.97		3.15		2.48		1.85		1.52	12.97
Conservation Goal (ekWh/ft²)		0.37		0.29		0.23		0.17		0.14	1.20
Note		Note		Note		Note		Note		Note	
Check the total in cell B15 to confirm validity of estimated amount to be spent during that year		Check the total in cell D15 to confirm validity of estimated amount to be spent during that year		Check the total in cell F15 to confirm validity of estimated amount to be spent during that year		Check the total in cell H15 to confirm validity of estimated amount to be spent during that year		Check the total in cell J15 to confirm validity of estimated amount to be spent during that year			