



**Industrial
Assessment
Center**
U.S. DEPARTMENT OF ENERGY

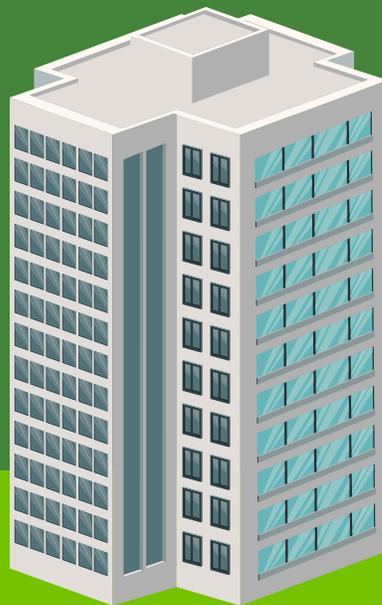


U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Guide to Energy Efficiency: *Commercial Buildings*

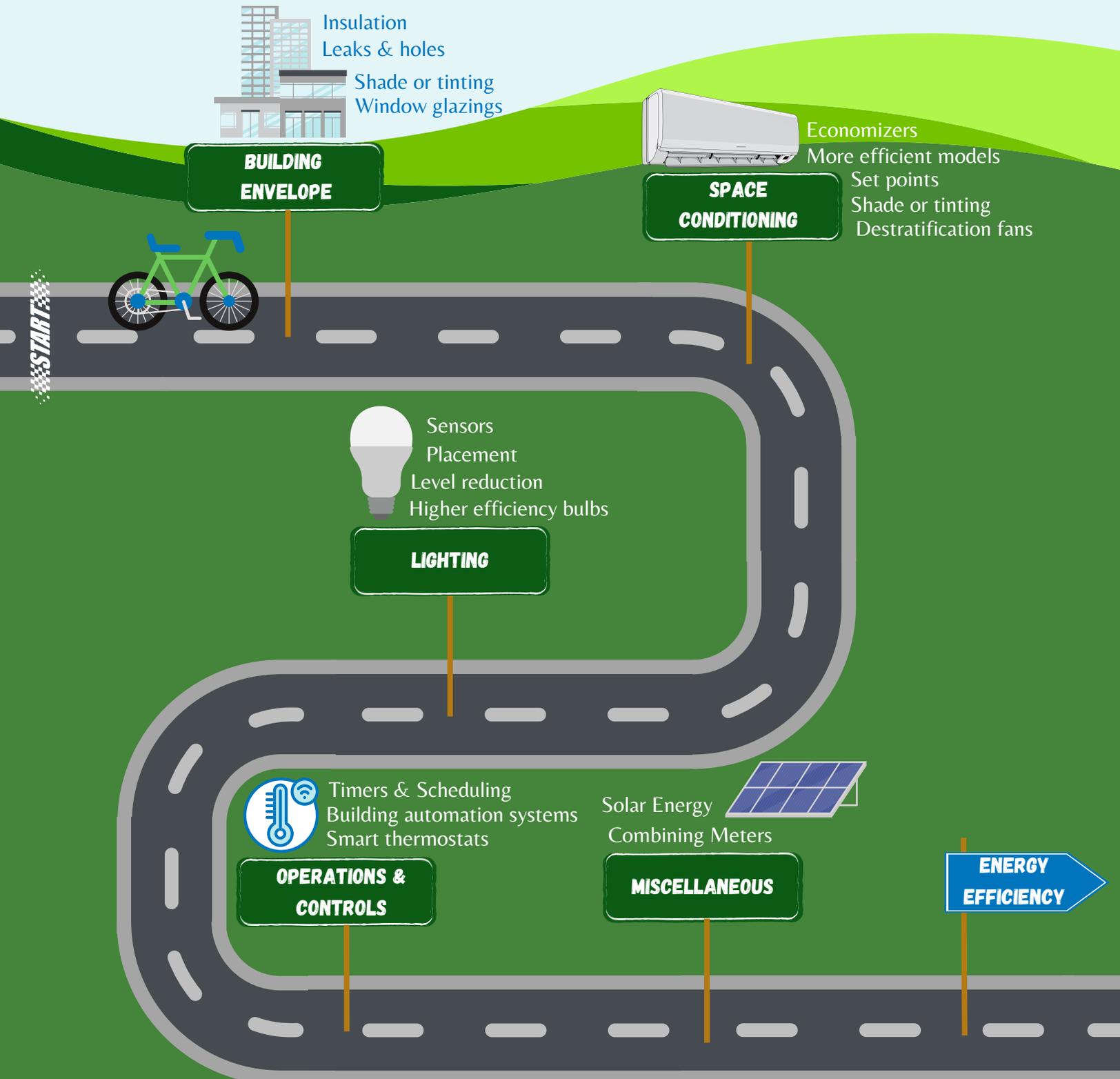
Do you want to make your building more energy efficient, but you don't know where to start? This guide will provide a list of commonly identified commercial building projects and a framework for finding funding resources.



START



Roadmap Towards Efficiency





Roadmap Towards Efficiency

Building Envelope

Assessment Recommendations	Avg Cost	Avg Savings	Avg Payback Period
REDUCE HEAT GAIN BY WINDOW TINTING	\$4,097.88	\$3,108.11	1.3 yrs
CLEAN OR COLOR ROOF TO REDUCE SOLAR LOAD	\$14,379.20	\$7,217.20	2.0 yrs
CLOSE HOLES AND OPENINGS IN BUILDING SUCH AS BROKEN WINDOWS	\$176.59	\$1,882.84	0.1 yrs
USE DOUBLE OR TRIPLE GLAZED WINDOWS TO MAINTAIN HIGHER RELATIVE HUMIDITY AND TO REDUCE HEAT LOSSES	\$61,496.67	\$5,549.17	1.9 yrs
INSTALL VINYL STRIP / HIGH SPEED / AIR CURTAIN DOORS	\$5,031.33	\$2,678.63	11.1 yrs

Rebates/Incentives



BUILDING ENVELOPE

SPACE CONDITIONING

LIGHTING

OPERATIONS & CONTROLS

MISCELLANEOUS

ENERGY EFFICIENCY



*Source: IAC Database, Criteria: all centers, >=2013, NAICS 54,55,61,62,71



Roadmap Towards Efficiency

Space Conditioning

Assessment Recommendations	Avg Cost	Avg Savings	Avg Payback Period
CLEAN AND MAINTAIN REFRIGERANT CONDENSERS AND TOWERS	\$1,096.93	\$4,901.68	0.2 yrs
LOWER TEMPERATURE DURING THE WINTER SEASON AND VICE-VERSA	\$1,827.22	\$9,199.48	0.2 yrs
REDUCE SPACE CONDITIONING DURING NON-WORKING HOURS	\$8,460.77	\$3,587.07	2.4 yrs
INSTALL OUTSIDE AIR DAMPER / ECONOMIZER ON HVAC UNIT	\$15,677.60	\$12,466.94	1.3 yrs
INSTALL TIMERS AND/OR THERMOSTATS	\$1,007.53	\$11,510.32	0.1 yrs

Rebates/Incentives



BUILDING ENVELOPE

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Roadmap Towards Efficiency

Lighting

Assessment Recommendations	Avg Cost	Avg Savings	Avg Payback Period
REDUCE ILLUMINATION TO MINIMUM NECESSARY LEVELS	\$665.00	\$1,757.34	0.4 yrs
MAKE A PRACTICE OF TURNING OFF LIGHTS WHEN NOT NEEDED	\$60.00	\$17,199.00	0.0 yrs
USE PHOTOCCELL CONTROLS	\$671.86	\$687.14	1.0 yrs
INSTALL OCCUPANCY SENSORS	\$1,417.46	\$1,751.25	0.8 yrs
UTILIZE HIGHER EFFICIENCY LAMPS AND/OR BALLASTS	\$15,933.11	\$7,341.68	2.2 yrs

Rebates/Incentives



*Source: IAC Database, Criteria: all centers, >=2013, NAICS 54,55,61,62,71



Roadmap Towards Efficiency

Operations & Controls

Assessment Recommendations	Avg Cost	Avg Savings	Avg Payback Period
CONSERVE ENERGY BY EFFICIENT USE OF VENDING MACHINES	\$1,119.50	\$716.95	1.6 yrs
TURN OFF EQUIPMENT DURING BREAKS, REDUCE OPERATING TIME	\$214.00	\$1,092.00	0.2 yrs
TURN OFF EQUIPMENT WHEN NOT IN USE	\$435.47	\$2,470.30	0.2 yrs
UTILIZE CONTROLS TO OPERATE EQUIPMENT ONLY WHEN NEEDED	\$450.50	\$3,282.42	0.1 yrs
INSTALL SET-BACK TIMERS	\$142.76	\$4,436.01	0.0 yrs

Rebates/Incentives



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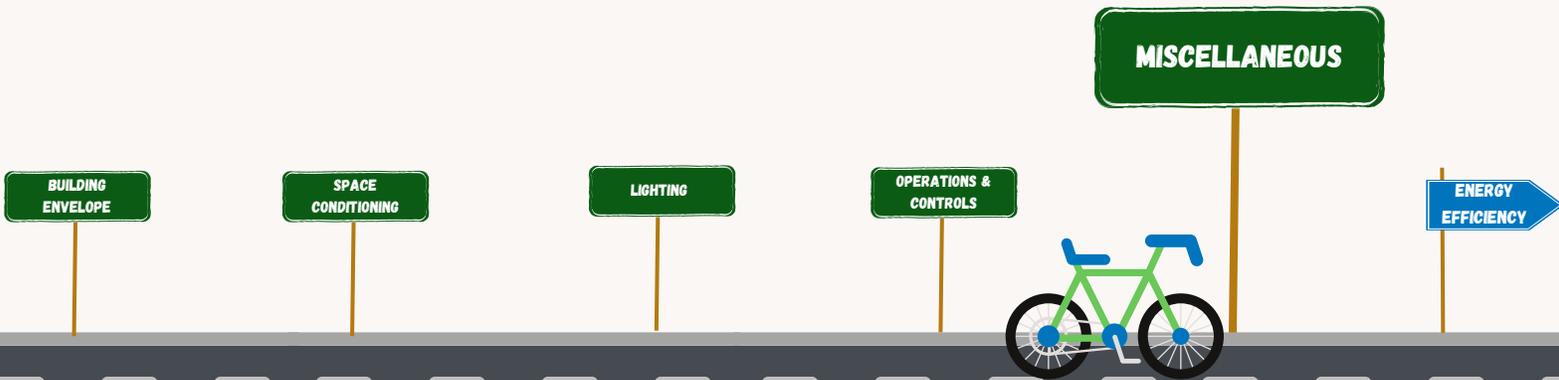
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Roadmap Towards Efficiency

Miscellaneous

Assessment Recommendations	Avg Cost	Avg Savings	Avg Payback Period
INSULATE BARE EQUIPMENT	\$837.97	\$3,207.30	0.3 yrs
USE OR REPLACE WITH ENERGY EFFICIENT SUBSTITUTES	\$12,163.11	\$4,637.20	2.6yrs
COMBINE UTILITY METERS	\$435.47	\$3,800.00	0.0 yrs
CHANGE RATE SCHEDULES OR OTHER CHANGES IN UTILITY SERVICE	\$105.00	\$29,512.33	0.8 yrs
USE SOLAR HEAT TO MAKE ELECTRICITY	\$231,050.71	\$13,883.57	16.6 yrs



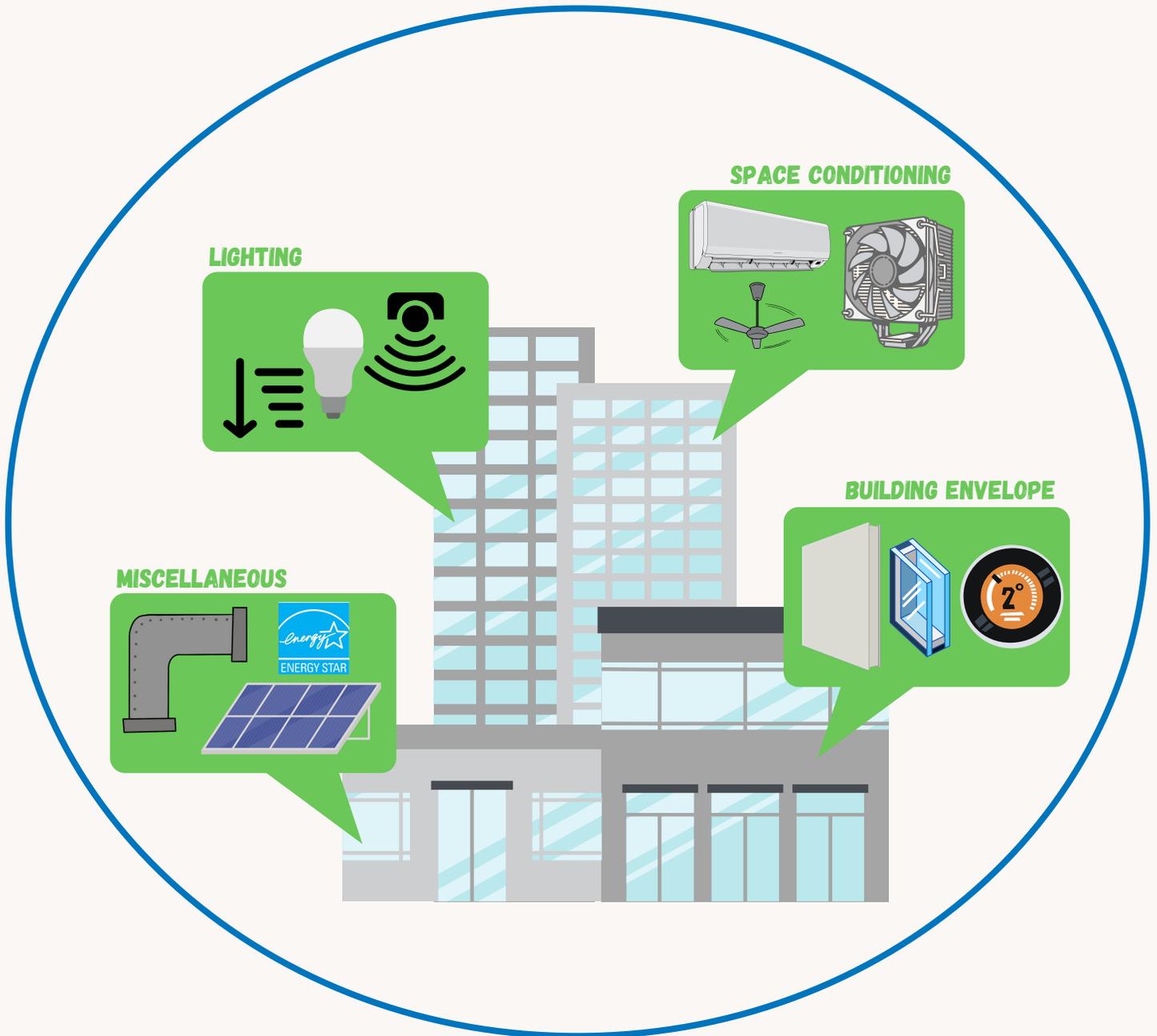
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Summary

There are many projects that promote energy efficiency, but here is a reminder of common systems with major opportunities in commercial buildings.

OPERATIONS & CONTROLS



*Others to consider are motor, thermal, and combustion systems, which may include pumps, boilers, furnaces, and ovens etc.