



DEVELOPMENT SERVICES

CUSTOMER ENERGY CONSERVATION PLAN REVIEW CHECKLIST

This checklist is provided as a reference tool and is not intended to be exhaustive of all possible requirements. It may also include more items than a specific set of plans may require.

Referenced Codes:

- 2021 International Energy Conservation Code ([IECC](#))
- Unified Development Code ([UDC](#))
- COSA Chapter 10 Amendments ([Chapter 10](#))

#	GENERAL REQUIREMENTS	✓	N/A
1.	Provide a description of the scope of work:		
	a. New Building		
	b. Existing Building		
2.	If an existing building, provide more detail of the scope or work.		
	1. Additions C502		
	2. Alterations C503		
	3. Repairs C504		
	4. Change of Occupancy C505		
3.	Provide occupancy group		
4.	Was a Preliminary Plan Review (PPR) meeting held IB 116 ? If so, please include documentation or PPR number.		
5.	Was a Code Modification Request (CMR) for an alternative material, design and/or method of construction requested for this project IB 114 ? If so, please include documentation.		
6.	If this is a phased permit application, provide partial permits (site work, foundation, demo permit, etc.), if applicable.		
7.	Registered design professional and licenses and registration to comply with IB 103 .		
8.	Provide pages 18 and 19 of IB 221 – Commercial Energy Commissioning Checklist		

#	COMMERCIAL BUILDING SHALL COMPLY WITH ONE OF THE FOLLOWING (C402)	✓	N/A
a.	Prescriptive Method (Proceed to Page 2)		
b.	Total Building Performance Method (Skip to Page 6)		

PRESCRIPTIVE METHOD FOR COMMERCIAL PROJECTS					
#	BUILDING ENVELOPE REQUIREMENTS			✓	N/A
1.	Insulation requirements should be met by one of the following:				
	a.	R-Value			
	b.	U-, C-, or F- Value			
	c.	Component Performance Alternative			
2.	Opaque swinging doors shall comply with Table C402.1.4.				
3.	Provide verification of minimum thermal resistance in roof assembly based on construction materials used in roof assembly C402.2.1				
4.	Provide verification of the minimum thermal resistance of materials installed in the wall cavity C402.2.2				
5.	Provide verification of the thermal properties of the floor assemblies over outdoor air or unconditioned space based on the construction materials used in the floor assembly C402.2.3				
6.	Provide verification of the minimum thermal resistance of the insulation for unheated or heated slab-on-grade floors C402.2.4				
7.	Provide verification of below grade walls meet the minimum values based on the path chosen C402.2.5				
8.	Insulation of radiant heating systems C402.2.6				
9.	Airsapces C402.2.7				
10.	Roof solar reflectance and thermal emittance (Table C402.3 and COSA Ch.10)				
11.	Maximum vertical fenestration area C402.4.1				
12.	Minimum skylight fenestration C402.4.2				
13.	Haze factor C402.4.2.2				
14.	Maximum U-factor and SHGC C402.4.3				
15.	Daylight zones C402.4.4				
16.	Provide verification of continuous air barrier throughout the building thermal envelope C402.5.1				
17.	Air barrier compliance C402.5.1.2				
18.	Dwelling and sleeping unit enclosure testing C402.5.2				
19.	Building thermal envelope testing C402.5.3				
20.	Air leakage of fenestration C402.5.4				
21.	Doors and access openings from conditioned spaces to shafts, chutes stairways and elevator lobbies C402.5.6				
22.	Air intakes, exhaust openings, stairways, and shafts C402.5.7				
23.	Loading dock weather seals C402.5.8				
24.	Vestibules C402.5.9				
25.	Recessed lighting C402.5.10				
26.	Operable opening interlocking C402.5.11				

#	BUILDING MECHANICAL SYSTEMS C403			✓	N/A
27.	Mechanical Systems Compliance Certificate				
28.	Calculations of heating and cooling loads C403.1.1				
29.	Data Centers C403.1.2				
30.	Zone isolation requirements C403.2.1				
31.	Ventilation C403.2.2				

32.	Fault detection and diagnostics C403.2.3		
33.	Equipment sizing C403.3.1		
34.	HVAC equipment performance requirements C403.3.2		
35.	Water cooled centrifugal chilling packages C403.3.2.1		
36.	Positive displacement air- and water-cooled chilling packages C403.3.2.2		
37.	Hot gas bypass limitation C403.3.3		
38.	Boiler turndown C403.3.4		
39.	Thermostatic controls C403.4.1		
40.	Heat pump supplementary heat C403.4.1.1		
41.	Deadband C403.4.1.2		
42.	Setpoint overlap restrictions C403.4.1.3		
43.	Heated or cooled vestibule C403.4.1.4		
44.	Hot water boiler outdoor temperature setback control C403.4.1.5		
45.	Thermostatic setback C403.4.2.1		
46.	Automatic setback and shutdown C403.4.2.2		
47.	Automatic start and stop C403.4.2.3		
48.	Three pipe systems C403.4.3.1		
49.	Two-pipe changeover system C403.4.3.2		
50.	Hydronic (water loop) heat pump systems C403.4.3.3		
51.	Part-load controls C403.4.4		
52.	Pump isolation C403.4.5		
53.	Economizer C403.5		
54.	Integrated economizer control C403.5.1		
55.	Economizer heating system impact C403.5.2		
56.	Air economizer C403.5.3		
57.	Water-side economizer C403.5.4		
58.	Economizer fault detection and diagnostics C403.5.5		
59.	Variable air volume and multiple zone systems C403.6.1		
60.	Single-duct VAV systems, terminal devices C403.6.2		
61.	Dual-duct and mixing VAV systems, terminal devices C403.6.3		
62.	Single-fan dual-duct and mixing VAV systems, economizers C403.6.4		
63.	Supply-air temperature reset controls C403.6.5		
64.	Multiple-zone VAV system ventilation optimization control C403.6.6		
65.	Parallel-flow fan-powered VAV air terminal control C403.6.7		
66.	Setpoint for direct digital control C403.6.8		
67.	Static pressure sensor location C403.6.9		
68.	Demand control ventilation C403.7.1		
69.	Enclosed parking garage ventilation controls C403.7.2		
70.	Ventilation air heating controls C403.7.3		
71.	Non-transient dwelling units C403.7.4.1		
72.	Spaces other than non-transient dwelling units C403.7.4.2		
73.	Kitchen exhaust systems C403.7.5		
74.	Automatic control of HVAC systems serving guestrooms C403.7.6		

75.	Shutoff dampers C403.7.7		
76.	Allowable fan horsepower C403.8.1		
77.	Motor nameplate horsepower C403.8.2		
78.	Fan efficiency C403.8.3		
79.	Fractional hp fan motors C403.8.4		
80.	Low-capacity ventilation fans C403.8.5		
81.	Fan control C403.8.6		
82.	Fan speed controls C403.10.1		
83.	Multiple-cell heat rejection equipment C403.10.2		
84.	Limitation on centrifugal fan open-circuit cooling towers C403.10.3		
85.	Tower flow turndown C403.10.4		
86.	Large diameter ceiling fans C403.9		
87.	Heat recovery for service water heating C403.10.5		
88.	Heat recovery for space conditioning in healthcare facilities C403.10.6		
89.	Commercial refrigerators, refrigerator freezers and refrigeration C403.11.1		
90.	Walk-in coolers and walk-in freezers C403.11.2		
91.	Condensers serving refrigeration systems C403.11.3.1		
92.	Compressor system C403.11.3.2		
93.	Duct and plenum insulation and sealing C403.12.1		
94.	Duct construction C403.12.2		
95.	Piping insulation C403.12.3		
96.	Protection of piping insulation C403.12.3.1		
97.	Mechanical systems located outside of the building thermal envelope C403.13		
98.	Operable opening interlocking controls C403.14		

#	SERVICE WATER HEATING C404	✓	N/A
99.	Mechanical Systems Compliance Certificate		
100.	Service water-heating equipment performance efficiency C404.2		
101.	High input service water-heating systems C404.2.1		
102.	Verify heat traps for the hot water storage tanks C404.3		
103.	Verify insulation of piping from the water heater to termination of heated water fixture C404.4		
104.	Verify heated water supply piping method and compliance with method C404.5		
	a. Maximum Allowed Pipe Length Method C404.5.1		
	b. Maximum Allowed Pipe Volume Method 404.5.2		
105.	Circulation system C404.6.1 and COSA Ch.10		
106.	Demand recirculation controls C404.6.1.1		
107.	Heat trace system C404.6.2		
108.	Controls for hot water storage C404.6.3		
109.	Drain water heat recovery units C404.7		
110.	Heaters for pools and permanent spas (C404.8.1)		
111.	Time switches for pools and permanent spas (C404.8.2)		
112.	Covers for outdoor heated pools and outdoor permanent spas (C404.8.3)		

113.	Portable spas (C404.9)		
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#	ELECTRICAL POWER AND LIGHTING SYSTEMS (C405)	✓	N/A
114.	Interior lighting compliance certificate		
115.	Exterior lighting compliance certificate		
116.	Lighting for dwelling units (C405.1.1)		
117.	Time-switch controls C405.2.2		
118.	Time-switch control function C405.2.2.1		
119.	Light-reduction controls C405.2.3		
120.	Light-reduction control function C405.2.3.1		
121.	Daylight responsive controls C405.2.4		
122.	Daylight responsive control function C405.2.4.1		
123.	Verify side lit daylight zones C405.2.4.2		
124.	Verify top lit daylight zones C405.2.4.3		
125.	Atriums C405.2.4.4		
126.	Time-switch controls C405.2.2		
127.	Time-switch control function C405.2.2.1		
128.	Light-reduction controls C405.2.3		
129.	Light-reduction control function C405.2.3.1		
130.	Daylight responsive controls C405.2.4		
131.	Daylight responsive control function C405.2.4.1		
132.	Verify side lit daylight zones C405.2.4.2		
133.	Verify top lit daylight zones C405.2.4.3		
134.	Atriums C405.2.4.4		
135.	Specific application controls C405.2.5		
136.	Manual Controls C405.2.6		
137.	Daylight shutoff C405.2.7.1		
138.	Building façade and landscape lighting C405.2.7.2		
139.	Lighting setback C405.2.7.3		
140.	Exterior time switch control function C405.2.7.4		
141.	Parking garage lighting controls C405.2.8		
LIGHTING CONTROLS - shall comply with one of the following methods:			
142.	Lighting Controls		
	a. Total interior lighting power C405.3.1		
	b. Interior lighting power allowance method C405.3.2		
	i. Building Area Method		
	ii. Space-by-Space Method		
143.	Luminaire Level Lighting Controls C405.2.1		
	a. Provide occupancy sensor controls installed in the list of spaces C405.2.1		
	b. Provide occupancy sensor control function C405.2.1.1		
	c. Provide occupancy sensor control function in warehouse storage areas C405.2.1.2		
	d. Provide occupancy sensor control function in open plan office areas C405.2.1.3		
	e. Provide occupancy sensor control function in corridors C405.2.1.4		

#	ADDITIONAL EFFICIENCY REQUIREMENTS (C406)	✓	N/A
144	Additional energy efficiency credit requirement C406.1		
145	Tenant spaces C406.1.1		
146	More efficient HVAC equipment performance C406.2		
147	Reduced lighting power C406.3		
148	Enhanced digital lighting controls C406.4		
149	On-site renewable energy C406.5		
150	Dedicated outdoor air systems C406.6		
151	Reduced energy use in service water heating C406.7		
152	Enhanced envelope performance C406.8		
153	Reduced air infiltration C406.9		
154	Energy monitoring C406.10		
155	Fault detection and diagnostics system C406.11		
156	Efficient kitchen equipment C406.12		

#	EXISTING BUILDING GENERAL REQUIREMENTS	✓	N/A
157	For historic buildings, provide verification of compliance with C501.5 and COSA Ch.10		
158	ADDITIONS		
	a. Change in space conditioning C502.2		
	b. Vertical fenestration area C502.3.1		
	c. Skylight area C502.3.2		
	d. Building mechanical systems C502.3.3		
	e. Service water-heating systems C502.3.4		
	f. Pools and in grounds permanently installed C502.3.5		
	g. Interior lighting power C502.3.6.1		
	h. Exterior lighting power C502.3.6.2		
159	ALTERATIONS C503		
	a. Building envelope C503.2		
	b. Roof replacement C503.2.1		
	c. Vertical fenestration C503.2.2		
	d. Application to replacement fenestration products C503.2.2.1		
	e. Skylight area C503.2.3		
	f. Heating and cooling systems C503.3		
	g. Service hot water systems C503.4		
	h. Lighting systems C503.5		
160	REPAIRS C504		
	a. Application C504.2		
161	CHANGE OF OCCUPANCY C505		
	a. Increase in demand for fuel or electricity C505.1		

<i>TOTAL BUILDING PERFORMANCE METHOD FOR COMMERCIAL BUILDINGS</i>			
#	REQUIRED SUBMITTAL DOCUMENTS	✓	N/A
1.	Provide an annual energy cost report from an approved source, such as the Department of Energy, Energy Information Administration's State Energy Data System Prices and Expenditures reports C407.2		
2.	Provide the Compliance Report to include information in Section C407.3.1		
3.	Specifications for the standard reference and proposed design C407.4		
#	BUILDING ENVELOPE REQUIREMENTS	✓	N/A
4.	Provide Air leakage / thermal envelope C402.5		
#	BUILDING MECHANICAL SYSTEMS (C403)	✓	N/A
5.	Calculation of Heating and Cooling loads C403.1.1		
6.	Data Centers C403.1.2		
7.	System Design C403.2		
8.	Heating and cooling equipment efficiencies C403.3		
9.	Heating and cooling system controls C403.4, except C403.4.3, C403.4.4 and C403.4.5		
10.	Economizer fault detection and diagnostics C403.5.5		
11.	Ventilation and exhaust systems C403.7, except C403.7.4.1		
12.	Fan and fan controls C403.8, except C403.8.6		
13.	Large-diameter ceiling fans C403.9		
14.	Refrigeration equipment performance C403.11, except C403.11.3		
15.	Construction of HVAC system elements C403.12		
16.	Mechanical systems located outside of the building thermal envelope C403.13		
#	SERVICE WATER HEATING (C404)	✓	N/A
17.	Service water-heating C404		
#	ELECTRICAL POWER AND LIGHTING SYSTEMS (C405)	✓	N/A
18.	Electrical Power and Lighting Systems C405		
#	MAINTAINANCE INFORMATION AND SYSTEM CONFIGURATION (C408)	✓	N/A
19.	Commissioning Plans for mechanical, lighting and service water heating, if applicable C408		

<u>RESIDENTIAL ENERGY</u>			
#	GENERAL REQUIREMENTS	✓	N/A
1.	Registered design professional and licenses and registration to comply with IB 103 .		
2.	Provide Manual J calculations.		
3.	Provide Manual S efficiency calculations		
4.	Verify submittal of energy compliance report from the building design: REScheck, IC3, REM/Rate, Energy Gauge, Energy Star, Ekotrope, or other DOE approved software based on the current IECC		
5.	Provide clarification of method of compliance.		
	a. Prescriptive Method		
	b. Performance Method		
	c. ERI Method		
	d. Energy Star Method House Bill 3215		

<u>PRESCRIPTIVE METHOD FOR RESIDENTIAL ENERGY</u>			
#	BUILDING THERMAL ENVELOPE R402	✓	N/A
1.	Verify if the building is a low energy building and meets the exceptions R402.1		
2.	If prescriptive, verify thermal envelope requirements are met by one of the following options and do not exceed the values based on the method of compliance		
	a. R-Value		
	b. U-Factor		
	c. Total UA Alternative		
3.	If R-value method is used verify R-values match Table R402.1.3 in the construction documents and compliance certificate R402.1.3 and COSA Ch.10		
4.	If R-value required continuous insulation per Table R402.1.3 verify if insulation type is allowed to be used as continuous insulation R402.1.4		
5.	If U-factor method is used verify U-factor values match Table R402.1.2 in the construction documents and the compliance certificate R402.1.2		
6.	If UA alternative is used verify the U-factor is less than or equal to total UA using Table R402.1.2		
7.	If UA alternative is used verify UA calculations are performed using a method consistent with ASHRAE handbook of fundamentals		
8.	If UA alternative is used verify UA method meets SHGC requirements of Table R402.1.2 and the maximum U-factor of Section R402.5		
#	SPECIFIC INSULATION REQUIREMENTS	✓	N/A
9.	Ceilings with attics shall have R-38 R402.2.1 and COSA Ch.10		
10.	Ceilings without attics shall have a minimum of R-30 R402.2.2 <i>Does not apply to UA Alternative</i>		
11.	Verify eave baffles are installed for air permeable insulation R402.2.2.3		
12.	Access hatches and doors shall be insulated R402.2.4		
13.	Mass walls used as part of the building thermal envelope R402.2.5		
14.	Steel-frame ceiling, walls, and floors R402.2.6		
15.	Floor cavity insulation R402.2.7		
16.	Basement walls R402.2.8		
17.	Slab-on-grade floor insulation R402.2.9		
18.	Crawl space walls (R402.2.10)		
19.	Sunroom and heated garage insulation (R402.2.12)		

#	FENESTRATION REQUIREMENTS	✓	N/A
20.	Area weighted average of fenestration products for U-factor (R402.3.1)		
21.	Glazed fenestration SHGC (R402.3.2)		
22.	Glazed fenestration exception (R402.3.3) <i>Does not apply to UA Alternative</i>		
23.	Opaque door exception (R402.3.3) <i>Does not apply to UA Alternative</i>		
24.	Sunroom and heated garage fenestration (R402.3.5)		

#	AIR LEAKAGE	✓	N/A
25.	Fireplaces shall be listed and labeled in accordance with UL 127(R402.4.2)		
26.	Fenestration air leakage (R402.4.3)		
27.	Recessed lighting within the thermal envelope (R402.4.5)		
28.	Electrical boxes and communication outlet boxes (R402.4.6)		
29.	Verify that the Air Barrier, Air Sealing and Insulation Installation Table is provided Table R402.4.1.1		
30.	Maximum fenestration U-factor and SHGC tradeoff R402.5 <i>Only Prescriptive and Performance</i>		

#	SYSTEMS	✓	N/A
31.	Verify a thermostat for each separate heating and cooling system R403.1		
32.	Programmable thermostat R403.1.1		
33.	Heat pump supplementary heat R403.1.2		
34.	Hot water boiler temperature reset R403.2		
35.	Ducts located outside of conditioned space R403.3.1		
36.	Ducts located in conditioned space R403.3.2		
37.	Ducts buried within ceiling insulation R403.3.3		
38.	Duct, air handler, and filter boxes sealing R403.3.4 and IRC M1601.4		
39.	Duct testing R403.3.5		
40.	Duct leakage R403.3.6		
41.	Building framing cavities R403.3.7		
42.	Mechanical system piping insulation R403.4		
43.	Protection of piping insulation R403.4.1		
44.	Heated water circulation and temperature maintenance systems R403.5.1		
45.	Circulation system R403.5.1.1		
46.	Heat trace system R403.5.1.2		
47.	Demand recirculation water system R403.5.1.1.1		
48.	Hot water pipe insulation R403.5.2		
49.	Drain water heat recovery units R403.5.3		
50.	Dampers on mechanical ventilation R403.6		
51.	Whole-dwelling mechanical ventilation system fan efficacy R403.6.2		
52.	Verify equipment sizing and efficiency rating meet minimum requirements and match construction document mechanical schedule R403.7		
53.	Systems serving multiple dwelling units shall comply with C403 and C404 of the IECC R403.8		
54.	Snow melt and ice system controls R403.9		

55.	Electric power heaters in pools and spas R403.10.1		
56.	Time switches in pools and spas R403.10.2		
57.	Covers in heated pools and outdoor permanent spas R403.10.3		
58.	Portable spas R403.11		
59.	Hot water pipe insulation R403.5.2		

#	ELECTRICAL POWER AND LIGHTING SYSTEMS (R404)	✓	N/A
60.	Lighting Equipment R404.1		
61.	Connected exterior lighting for residential buildings comply with Section C405.5 see exceptions		
62.	Fuel gas lighting equipment R404.1.2		
63.	Interior lighting controls R404.2		
64.	Exterior lighting controls R404.3		

ENERGY RATING INDEX METHOD		✓	N/A
#	GENERAL		
1.	Rated design meets maximum ERI of 59 COSA Chap. 10 Table R406.5		
2.	Additional efficiency packages R401.2.5		
3.	Certificate R401.3		
4.	Compliance Report R406.7.2		

#	BUILDING THERMAL ENVELOPE	✓	N/A
5.	Vapor retarder R402.1.1		
6.	Eave baffle R402.2.3		
7.	Access hatches and door insulation installation and retention R402.2.4.1		
8.	Crawl space wall insulation installation R402.2.10.1		
9.	Installation R402.4.1.1		
10.	Testing R402.4.1.2		

#	MECHANICAL	✓	N/A
11.	Controls R403.1		
12.	Ducts R403.3 except Sections R403.3.2, R403.3.3 and R403.3.6		
13.	Mechanical system piping insulation R403.4		
14.	Heater water calculation and temperature maintenance systems R403.5.1		
15.	Drain water heat recovery units R403.5.3		
16.	Mechanical ventilation R403.6		
17.	Equipment sizing and efficiency rating R403.7		
18.	Systems serving multiple dwelling units R403.8		
19.	Snow melt and ice systems R403.9		
20.	Energy consumption of pools and spas R403.10		
21.	Portable spas R403.11		
22.	Residential pools and permanent residential spas R403.12		

#	ELECTRICAL POWER AND LIGHTING SYSTEMS	✓	N/A
23.	Lighting equipment R404.1		
24.	Interior lighting controls R404.2		
25.	Building thermal envelope R406.3		

#	EXISTING BUILDINGS	✓	N/A
26.	Verify if building is a historic building C501.5 and COSA Ch.10		
27.	AdditionsC502		
	a. Change in space conditioning C502.2		
	b. Prescriptive compliance R502.3		
	c. Building envelope R502.3.1		
	d. Heating and cooling system R502.3.2		
	e. Service hot water system R502.3.3		
	f. Lighting R502.3.4		
28.	AlterationsC503		
	a. General R503.1		
	b. Building envelope R503.1.1		
	c. Replacement fenestration R503.1.1.1		
	d. Heating and cooling systems R503.1.2		
	e. Service hot water system R503.1.3		
	f. Lighting R503.1.4		
29.	Repairs C504		
	a. Application R504.2		
30.	Change of Occupancy or Use C505		
	a. General R505.1		
	b. Unconditioned space R505.1.1		

<u>PERFORMANCE METHOD FOR RESIDENTIAL PROJECT</u>		✓	N/A
1.	GENERAL		
	a. An annual energy cost report that is less than or equal to the annual energy cost of the standard reference design R405.3		
	b. Compliance report shall have the information in Section R405.3.2.1		
	c. Specifications for the standard reference and proposed design R405.4.2(1)		
	d. Additional energy efficiency R401.2.5		
	e. Certificate R401.3		

#	BUILDING THERMAL ENVELOPE	✓	N/A
2.	Vapor Retarder R402.1.1		
3.	Eave Baffle R402.2.3		
4.	Access hatches and door insulation and retention R402.2.4.1		
5.	Crawl space wall insulation installations R402.2.10.1		
6.	Installation R402.4.1.1		
7.	Testing R402.4.1.2		

8.	Maximum fenestration U-factor and SHGC R402.5		
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#	MECHANICAL	✓	N/A
9.	Controls R403.1		
10.	Ducts R403.3, including R403.3.1, except Sections R403.3.2, R403.3.3 and R403.3.6		
11.	Mechanical system piping insulation R403.4		
12.	Heated water circulation and temperature maintenance systems R403.5.1		
13.	Drain water heat recovery units R403.5.3		
14.	Mechanical ventilation R403.6		
15.	Equipment sizing and efficiency rating R403.7		
16.	Systems serving multiple dwelling units R403.8		
17.	Snow melt and ice systems R403.9		
18.	Energy consumption of pools and spas R403.10		
19.	Portable spas R403.11		
20.	Residential pools and permanent residential spas R403.12		

#	ELECTRICAL POWER AND LIGHTING SYSTEMS	✓	N/A
21.	Lighting equipment R404.1		
22.	Interior lighting controls R404.2		