

# **International Green Construction Code (IGCC)**



## **Overview**

**Chapter 3 Jurisdictional Requirements and  
Project Electives**

**Chapter 6 Energy Conservation, Efficiency  
and Atmospheric Quality**

# Structure of IGCC Chapter 3

- 301 General & Scope
- 302 Jurisdictional Requirements,
  - Table 302.1 as selected by the jurisdiction
- 303 Project Electives
  - Table 303.1 completed by the owner or design professional & submitted with the construction documents
- 304 Whole Building Life Cycle Assessment
  - A project elective, aimed to achieve  $\geq 20\%$  improvement in environmental performance in a min. of 3 of the following:
    - Primary energy use
    - Global warming potential
    - Acidification potential
    - Eutrophication potential
    - Ozone depletion potential
    - Smog potential



# Jurisdictional Requirements

- Jurisdictional requirements are those selected in Table 302.1
- And the IGCC base requirements such as:
  - **Pre-design inventory site assessment**
    - **Storm water mgt.**
    - **Soil mgt.**
    - **Heat island mitigation**
  - **Post occupancy recycling**
  - **Material selection**
    - **recycled content**
    - **bio based content**
    - **Indigenous materials**
  - **Metering**
  - **Auto DR**
  - **Lighting controls**
  - **Appliances**
  - **Solar water heating**
  - **Renewable energy systems**
  - **Commissioning, mech., balancing, lighting, etc.**



# Section 302 & Table 302.1

- Jurisdictional Requirements
  - Are specific to and selected by the jurisdiction, Section 302 and Table 302.1



**TABLE 302.1  
REQUIREMENTS DETERMINED BY THE JURISDICTION**

Section	Section Title or Description and Directives	Jurisdictional Requirements	
<b>CH 1. ADMINISTRATION</b>			
102.4.12 302.1 (1)	ICC 700 Environmental Performance Level - Select one box.	<input type="checkbox"/> Bronze <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Emerald	
<b>CH 3. JURISDICTIONAL REQUIREMENTS AND PROJECT ELECTIVES</b>			
302.1 (2)	Optional compliance path - ASHRAE 189.1	<input type="checkbox"/> Yes	<input type="checkbox"/> No
302.1 (3)	Project Electives - The jurisdiction shall indicate a number between 0 and 14 to establish the minimum total number of project electives that must be satisfied.	—	
<b>CH 4. SITE DEVELOPMENT AND LAND USE</b>			
402.2.1.2	Floodplain preservation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
402.2.3	Conservation area	<input type="checkbox"/> Yes	<input type="checkbox"/> No
402.2.5	Agricultural land	<input type="checkbox"/> Yes	<input type="checkbox"/> No
402.2.6	Greenfields	<input type="checkbox"/> Yes	<input type="checkbox"/> No

TABLE 302.1 (continued)

# Section 302 & Table 302.1

- Jurisdictional Requirements
  - Are specific to and selected by the jurisdiction, Section 302 and Table 302.1



Section	Section Title or Description and Directives	Jurisdictional Requirements	
403.4.1	High occupancy vehicle parking	<input type="checkbox"/> Yes	<input type="checkbox"/> No
403.4.2	Low emission, hybrid and electric vehicle parking	<input type="checkbox"/> Yes	<input type="checkbox"/> No
405.1	Light pollution control	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>CH 6. MATERIAL RESOURCE CONSERVATION AND EFFICIENCY</b>			
502.1	Enhanced construction material and waste management	<input type="checkbox"/> Yes	<input type="checkbox"/> No
502.1	Minimum percentage of waste material diverted from landfills - Select a percentage only where "Yes" is selected in the previous row.	<input type="checkbox"/> 50% <input type="checkbox"/> 65%	
<b>CH 8. ENERGY CONSERVATION AND EARTH ATMOSPHERIC QUALITY</b>			
602.1, 602.3, 602.3.2, 302.1.1	Enhanced energy performance - for buildings pursuing performance based compliance and buildings greater than 25,000 square feet in total building floor area	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Table 602.1, 302.1, 302.1.1	TANEU of Jurisdictional Choice - Where "Yes" is selected in the previous row, the jurisdiction shall indicate a TANEU of 63 or less in Table 602.1 for each occupancy for which it intends to require enhanced energy performance.	See Table 602.1 and Section 302.1	
602.3.2.4	Reduced CO <sub>2</sub> e emissions calculations and reporting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
613.2	Post C. of O. TANEU, energy demand, and CO <sub>2</sub> e emissions reporting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>CH 7. WATER RESOURCE CONSERVATION AND EFFICIENCY</b>			
702.1.2	Enhanced plumbing fixture and fitting flow rates	<input type="checkbox"/> Yes	<input type="checkbox"/> No
702.1.2	Enhanced plumbing fixture and fitting flow rate tier - Select a tier only where "Yes" is selected in the previous row.	<input type="checkbox"/> Tier 1 <input type="checkbox"/> Tier 2	
702.7	Municipal reclaimed water.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>CH 9. COMMISSIONING, OPERATION AND MAINTENANCE</b>			
904.1.1.1	Periodic reporting	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>CH 10. EXISTING BUILDINGS</b>			
1007.2	Demolition	<input type="checkbox"/> Yes	<input type="checkbox"/> No
1007.3	Sale of existing buildings and tenant spaces	<input type="checkbox"/> Yes	<input type="checkbox"/> No
1007.4	Evaluation of existing buildings	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>APPENDICES</b>			
Appendix B	Greenhouse gas reduction in existing buildings	<input type="checkbox"/> Yes	<input type="checkbox"/> No
B103.1	Compliance level - The jurisdiction to select phases only where "Yes" is selected in the previous row.	<input type="checkbox"/> Phase 1 <input type="checkbox"/> Phase 2 <input type="checkbox"/> Phase 3 <input type="checkbox"/> Phase 4	
B103.2	Where "Phase 1" is selected under Section B103.1 - Jurisdiction to indicate the number of months to be used in association with Section B103.2.	_____ months	
B103.3	Where "Phase 2" is selected under Section B103.1 - Jurisdiction to indicate the number of years and the percentage to be used in association with Section B103.3.	_____ years _____ %	
B103.4	Where "Phase 3" is selected under Section B103.1 - Jurisdiction to indicate the number of years to be used in association with Section B103.4.	_____ years	

# Section 302 & Table 302.1



- Jurisdictional Requirements
  - Are specific to and selected by the jurisdiction, Section 302 and Table 302.1

Section	Section Title or Description and Directives	Jurisdictional Requirements	
B103.5	Where "Phase 4" is selected above - Jurisdiction to indicate the number of years and the percentage to be used in association with Section B103.5.	____ years	____ %
Appendix C	Sustainability measures	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Appendix D	Enforcement procedures	<input type="checkbox"/> Yes	<input type="checkbox"/> No

# Section 303 & Table 303.1 Project Electives



- Project Electives: selected by the owner or registered design professional, Section 303 and Table 303.1
- Number of Electives to be fulfilled as set in Table 302.1 between 0 and 14
- If 0 is reflected in Table 302.1 by the jurisdiction “none required”

TABLE 303.1  
PROJECT ELECTIVES CHECKLIST

Section	Description	Check the corresponding box to indicate each project elective selected.
<b>CH 3. JURISDICTIONAL REQUIREMENTS AND PROJECT ELECTIVES</b>		
304.1	Whole Building Life Cycle Assessment	<input type="checkbox"/>
<b>CH 4. SITE DEVELOPMENT AND LAND USE</b>		
407.2.1	Flood hazard avoidance	<input type="checkbox"/>
407.2.2	Agricultural land	<input type="checkbox"/>
407.2.3	Infill site	<input type="checkbox"/>
407.2.4	Brownfield site	<input type="checkbox"/>
407.2.5	Greenfield development	<input type="checkbox"/>
407.2.6	Greenfield proximity to development	<input type="checkbox"/>
407.2.7	Greenfield proximity to diverse uses	<input type="checkbox"/>
407.3.1	Changing and shower facilities	<input type="checkbox"/>
407.3.2	Long term bicycle parking and storage	<input type="checkbox"/>
407.3.3	Preferred parking	<input type="checkbox"/>
407.4.1	Site hardscape 1	<input type="checkbox"/>
407.4.2	Site hardscape 2	<input type="checkbox"/>

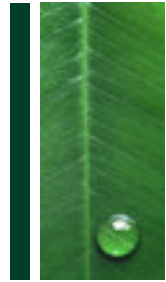
# Section 303 & Table 303.1 Project Electives



- Project Electives: selected by the owner or registered design professional, Section 303 and Table 303.1
- Number of Electives
  - Between 0 and 14
- If 0 is reflected in Table 302.1 by the jurisdiction “none required”

Section	Description	Check the corresponding box to indicate each project elective selected.
407.4.3	Site hardscape 3	<input type="checkbox"/>
407.4.4	Roof covering	<input type="checkbox"/>
407.5	Light pollution	<input type="checkbox"/>
<b>CH 6. MATERIAL RESOURCE CONSERVATION AND EFFICIENCY</b>		
507.2	Waste management (502.1 + 20%)	<input type="checkbox"/>
507.3(1)	Reused, recycled content, recyclable, bio-based and indigenous materials (50%)	<input type="checkbox"/>
507.3(2)	Reused, recycled content, recyclable, bio-based and indigenous materials (80%)	<input type="checkbox"/> (2 Electives)
507.4(1)	Multi-story building – footprint reduced by at least 45%	<input type="checkbox"/>
507.4(2)	Multi-story buildings – footprint reduced by at least 70%	<input type="checkbox"/> (2 Electives)
507.5	Reduced building volume	<input type="checkbox"/>
507.6.1	Service life – 100 year design service life category	<input type="checkbox"/>
507.6.1	Service life – 200 year design service life category	<input type="checkbox"/> (2 Electives)
507.6.2	Interior adaptability	<input type="checkbox"/>
507.7	Moisture control	<input type="checkbox"/>
<b>CH 8. ENERGY CONSERVATION, EFFICIENCY AND EARTH ATMOSPHERIC QUALITY</b>		
613.3.1	Project TANEU is at least 7 points lower than required by Table 302.1.	<input type="checkbox"/>
613.3.2	Project TANEU is at least 14 points lower than required by Table 302.1	<input type="checkbox"/> (2 Electives)
613.3.3	Project TANEU is at least 21 points lower than required by Table 302.1	<input type="checkbox"/> (3 Electives)
613.3.4	Project TANEU is at least 28 points lower than required by Table 302.1	<input type="checkbox"/> (4 Electives)
613.3.5	Project TANEU is at least 35 points lower than required by Table 302.1	<input type="checkbox"/> (5 Electives)
613.3.6	Project TANEU is at least 42 points lower than required by Table 302.1	<input type="checkbox"/> (6 Electives)
613.3.7	Project TANEU is at least 49 points lower than required by Table 302.1	<input type="checkbox"/> (7 Electives)
613.3.8	Project TANEU is at least 56 points lower than required by Table 302.1	<input type="checkbox"/> (8 Electives)
613.3.9	Project TANEU is at least 63 points lower than required by Table 302.1	<input type="checkbox"/> (9 Electives)
613.3.10	Project TANEU is at least 70 points lower than required by Table 302.1	<input type="checkbox"/> (10 Electives)
613.4	Building thermal envelope systems	<input type="checkbox"/>
613.5	Mechanical systems	<input type="checkbox"/>
613.6	Passive design	<input type="checkbox"/>
<b>CH 7. WATER RESOURCE CONSERVATION AND EFFICIENCY</b>		
710.2.1	Fixture flow rates are one tier above that required by Table 302.1	<input type="checkbox"/>
710.2.1	Fixture flow rates are two tiers above that required by Table 302.1.	<input type="checkbox"/> (2 Electives)

# Section 303 & Table 303.1 Project Electives



- Project Electives: selected by the owner or registered design professional, Section 303 and Table 303.1
- Number of Electives
  - Between 0 and 14
- If 0 is reflected in Table 302.1 by the jurisdiction “none required”

Section	Description	Check the corresponding box to indicate each project elective selected.
710.3	On-site wastewater treatment	<input type="checkbox"/>
710.4	Non-potable outdoor water supply	<input type="checkbox"/>
710.5	Non-potable water for plumbing fixture flushing	<input type="checkbox"/>
710.6	Automatic fire sprinkler system	<input type="checkbox"/>
710.7	Non-potable water supply to fire pumps	<input type="checkbox"/>
710.8	Non-potable water for industrial process makeup water	<input type="checkbox"/>
710.9	Efficient hot water distribution system	<input type="checkbox"/>
710.10	Non-potable water for cooling tower makeup water	<input type="checkbox"/>
710.11	Graywater collection	<input type="checkbox"/>
<b>CH 8 INDOOR ENVIRONMENTAL QUALITY AND COMFORT</b>		
809.2.1	VOC emissions - flooring	<input type="checkbox"/>
809.2.2	VOC emissions - ceiling systems	<input type="checkbox"/>
809.2.3	VOC emissions- wall systems	<input type="checkbox"/>
809.2.4	Total VOC limit	<input type="checkbox"/>
809.3	Views to building exterior	<input type="checkbox"/>

# Section 304

## 304 Whole Building Life Cycle Assessment

- A project elective, aimed to achieve  $\geq 20\%$  improvement in environmental performance in a min. of 3 of the following:
  - Primary energy use
  - Global warming potential
  - Acidification potential
  - Eutrophication potential
  - Ozone depletion potential
  - Smog potential



# Structure of IGCC Chapter 6



- **601 – General**
- **602 – Energy Performance, Peak Power and Reduced Emissions**
- **603 – Energy Use and Atmospheric Impacts**
- **604 – Energy Metering, Monitoring and Reporting**
- **605 – Automated Demand Response Infrastructure**
- **606 – Building Envelope Systems**
- **607 – Building Mechanical Systems**
- **608 – Building Service Water Heating Systems**
- **609 – Building Electrical Power and Lighting Systems**
- **610 – Specific Appliances and Equipment**
- **611 – Building Renewable Energy Systems**
- **612 – Energy Systems Commissioning and Completion**
- **613 – Jurisdictional Requirements and Project Electives**

# Section 601. Energy Conservation, Efficiency and Atmospheric Quality



- **601.1 Scope.** The provisions of this chapter are designed to reduce energy consumption of commercial *buildings*.
- **601.2 Intent.** Design, construction, commissioning provisions to reduce energy consumption of building energy using systems.
- **101.2 Scope.** The IGCC shall not apply to:
  - ✓ Buildings of, or portions thereof of Group R (ICC 700),
  - ✓ High-rise buildings of, or portions thereof of Group R (IGCC or ICC 700),
  - ✓ Equipment or systems that are used primarily for industrial or manufacturing processes, except as otherwise provided in this code.

# Table 602.1 – TANEU

## Total Annual Net Energy Use, Part I



**Table 602.1 Total Annual Net Energy Use by Building Occupancy Type**

Building Occupancy	2006 IECC TANEU	2009 IECC TANEU	2012 IECC TANEU	IgCC TANEU	Jurisdiction TANEU
Group A	100	85 (+15%)	77 (+23%)	70 (+30%)	63 (+37%)
Group B	100	85	77	70	--
Group E	100	85	77	70	--
Group F	100	85	77	70	--
Group H	100	85	77	70	--
Group I	100	85	77	70	--
Group M	100	85	77	70	--
Group R	100	85	77	70	--
Group S	100	85	77	70	--
Group U	100	85	77	70	--

# Table 602.1 – TANEU

## Total Annual Net Energy Use, Part II



- Total Annual Net Energy Use (TANEU) is central to the enforcement and adoption of the performance-based provisions of Chapter 6.
- **DEFINED.** A ratio representing the energy performance of the *proposed design* compared to the energy performance of a *standard reference design*. Determined by **Equation 6-2**.
- **TANEU = 77 x (PD - RE - WE) / RD**
  - PD = Annual energy consumed by *proposed design* on site
  - RE = Annual energy savings from *renewable energy* on site
  - WE = Total annual waste energy recovered on site (CHP, Cogeneration)
  - RD = Annual energy consumed by *standard reference design* on site

# Section 602. Energy Performance, Peak Power, and Reduced Emissions



- **602.3 Compliance paths.** Your “ROADMAP” to Chapter 6.
- **Buildings > 25,000 ft<sup>2</sup> (2323 m<sup>2</sup>),** other than existing buildings, are required to use IGCC *performance-based* compliance path.
- **Buildings ≤ 25,000 ft<sup>2</sup> (2323 m<sup>2</sup>)** may use either the IGCC *prescriptive* or the IGCC *performance-based* compliance path.
  - ✓ Prescriptive designs are deemed as having a TANEU of 70.
  - ✓ Prescriptive designs are exempt from lower TANEU scores (higher energy performance thresholds) as may be required by adopting jurisdictions.
- **602.4 Existing buildings** are subject to the provisions of Chapter 10 for documenting and verifying the energy performance of alterations, repairs and changes of occupancy of existing buildings.



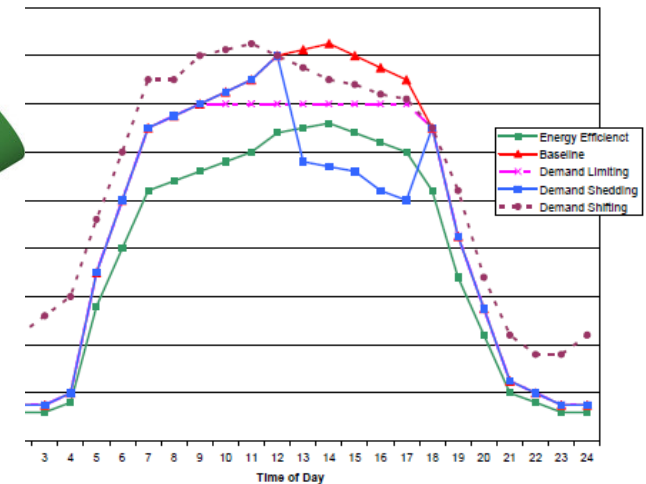
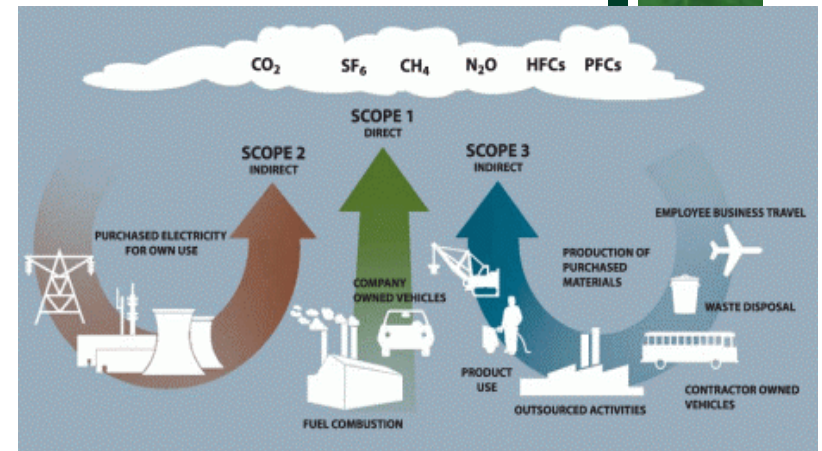
# Section 602.3.2

## Performance-based Compliance



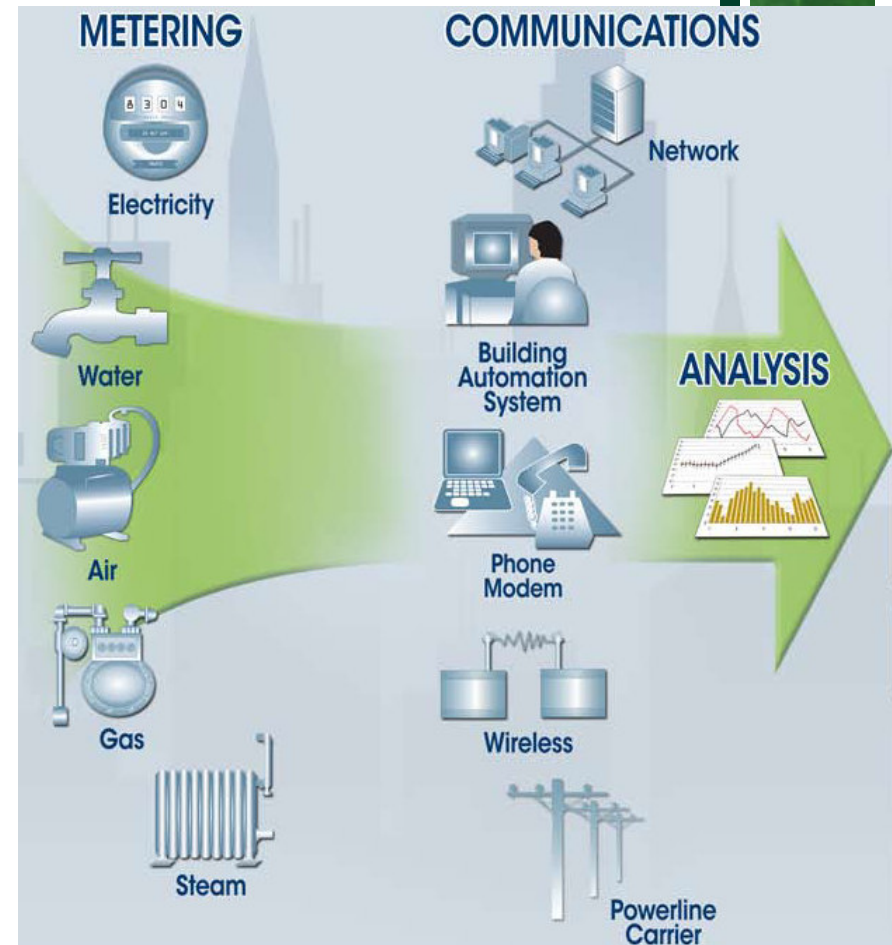
■ Buildings designed on a performance-basis must comply with:

- ✓ 602.2 – 2012 IECC
- ✓ 602.3.2.1 – TANEU Score
- ✓ 602.3.2.2 – Peak Energy Demand
- ✓ 602.3.2.3 – Reduced CO<sub>2</sub>e Emissions
- ✓ 604 – Energy Metering
- ✓ 605 – Auto Demand Response
- ✓ 609.6 – Plug Load Controls
- ✓ 610 – Appliances & Equipment
- ✓ 611 – Renewable Energy, and
- ✓ 612 – Commissioning



# Section 604. Energy Metering, Monitoring, and Reporting

- Requires all buildings which consume energy, whether designed on a prescriptive- or performance-basis, to be provided with the capability to measure, monitor and report energy consumption.
- The intent is to provide the owners who develop buildings, the professionals that design them, and the workforce that operates and maintains them with information they need to verify that buildings perform, and continue to perform.

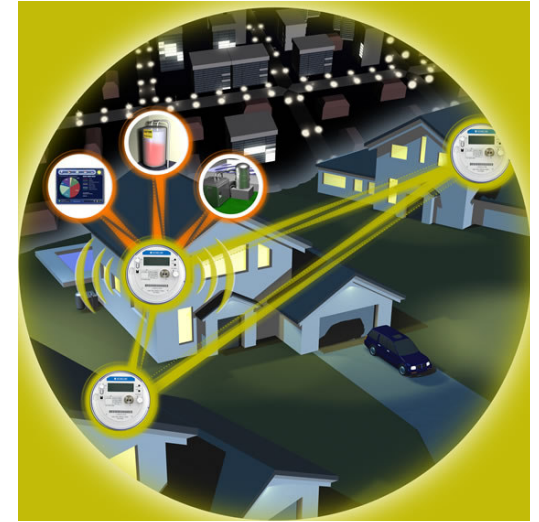


# Section 604 requires



- **604.3 Design of energy distribution systems** such energy-supply mechanisms (electrical circuits or piping) supplies one system as follows:
  - ✓ HVAC Systems
  - ✓ Lighting Systems
  - ✓ Vertical transportation, automatic doors, fountains, swimming pools, etc.
- **604.4 Energy metering by fuel-type.** Gaseous, liquid, and solid fuels; as well as Electrical, district, renewable and waste energy recovery.
- **604.5 Energy sub-metering by load-type and peak demand** as follows:
  - ✓ Required for buildings  $> 25,000 \text{ ft}^2$  ( $2323 \text{ m}^2$ );
  - ✓ Not Required for buildings  $\leq 25,000 \text{ ft}^2$  ( $2323 \text{ m}^2$ ) must provide for future sub-metering
- **604.6 Energy measurement.** All required metering must be connected to a data acquisition system.
- **604.7 Energy display.** A visible display shall be provided capable of showing energy use information for the whole building

# Section 605. Automated Demand Response Infrastructure



- Applies to all IGCC buildings located where the Independent System Operator (ISO), or Regional Transmission Operator (RTO) offers a demand response tariff program.
- **Automated Demand Response (Auto-DR)** is a set of time-dependent, programmable activities and utility tariffs that seek to reduce electricity use or shift usage to another time period. Auto-DR provides control systems that encourage load shedding or load shifting during times when the electric grid is near its capacity or electricity prices are high. Auto-DR helps to manage building electricity costs and to improve electric grid reliability.

# Section 606

## Building Envelope Systems



- Provides prescriptive-based requirements for the design of *building envelope systems*. It **applies to the prescriptive-based compliance path only**. Section 606 includes prescriptive building thermal envelope requirements related to the following:
  - ✓ Insulation R-values and U-, C- and F-factor alternatives
  - ✓ Fenestration
  - ✓ Air barrier leakage, openings, sealing and testing
  - ✓ Fireplaces
  - ✓ Vestibules

# Section 607

## Building Mechanical Systems



- Provides prescriptive-based requirements for the design of *building mechanical systems*. It applies to the **prescriptive-based compliance path** only. It includes detailed requirements related to the following:
  - ✓ HVAC equipment performance
  - ✓ Ventilation
  - ✓ Duct and plenum insulation, sealing and testing
  - ✓ HVAC piping insulation
  - ✓ Economizers
  - ✓ Variable air volume (VAV) fan control
  - ✓ Kitchen exhaust systems
  - ✓ Laboratory exhaust systems
  - ✓ Control of HVAC in hotel/motel guest rooms

# Section 608

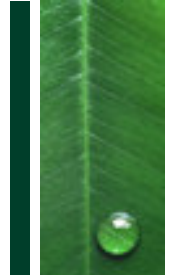
## Building Service Water Heating



- Provides prescriptive-based requirements for the design of *building service water heating systems*. It **applies to the prescriptive-based compliance path** only. It includes detailed requirements related to the following:
  - ✓ Service water heating equipment performance
  - ✓ Pools, hot tubs and spas
  - ✓ Snowmelt systems
  - ✓ Rough-ins for future solar hot water pre-heat (required)
  - ✓ Drain water energy recovery
  - ✓ Service water heating piping insulation
  - ✓ Circulation hot water systems

# Section 609

## Bldg. Electrical Power & Lighting



- Provides prescriptive-based requirements for the design of *building electrical power and lighting systems*. It applies to all buildings which consume energy, whether designed using the prescriptive- or performance-based compliance path. It includes detailed requirements related to the following:
  - ✓ Sleeping unit controls
  - ✓ Interior light reduction controls
  - ✓ Exterior light reduction controls
  - ✓ Automatic daylight controls

# Section 609 (cont.)



- Provides prescriptive-based requirements for the design of *building electrical power and lighting systems*. It applies to all buildings which consume energy, whether designed using the prescriptive- or performance-based compliance path. It includes detailed requirements related to the following:
  - ✓ Plug load controls
  - ✓ Fuel gas lighting systems
  - ✓ Electrical system efficiency
  - ✓ Exterior lighting
  - ✓ Verification of lamps and ballasts installation

# Section 610

## Specific Appliance & Equipment



- Contains requirements for the efficiency of *specific appliances and equipment* which are installed in the building or on the building site. It applies to all buildings, whether designed using the prescriptive- or performance-based compliance path. It includes detailed requirements related to the following:
  - ✓ Elevators
  - ✓ Escalators and moving walkways
  - ✓ Interior light reduction controls
  - ✓ Commercial food service equipment
  - ✓ Conveyors
  - ✓ ENERGY STAR appliances and equipment

# Section 611

## Bldg Renewable Energy Systems



- Required for buildings that consume energy. The following types of renewable energy systems are specifically addressed:
  - ✓ Photovoltaic
  - ✓ Wind
  - ✓ Solar water heating
  - ✓ Solar thermal
  - ✓ Other systems designed in accordance with Section 611
  - ✓ Renewable energy systems must be monitored and metered in accordance with Sections 611.7 and 604.

# Section 612

## Energy Commissioning & Completion



- Contains requirements for *energy systems commissioning and completion*. It is applicable to all buildings which consume energy, whether designed using the prescriptive-based or the performance-based path.

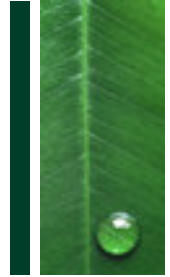
# Section 612 (Cont)



## ■ Section 612 requires the following:

- ✓ Mechanical systems commissioning and completion (Section 612.1)
  - Commissioning plan
  - Systems adjusting and balancing
  - Functional performance testing
  - Preliminary commissioning report
  - Completion requirements must be included in the construction documents

# Section 612 (Cont)



- Section 612 requires the following:
  - ✓ Lighting and electrical systems commissioning and completion (Section 612.2)
    - Lighting pre-construction documentation
    - Verification of installation
    - Commissioning
    - Post-commissioning documentation
    - Post occupancy commissioning
      - Building envelope systems commissioning and completion requirements (Section 612.3)
    - Pre-construction documentation, building thermal envelope
    - Verification of installation

# Section 613

## Jurisdictional Requirements & Project Electives



- Section 613.2
  - ✓ Contains jurisdictional requirements and project electives.
  - ✓ Provides requirements for the reporting of TANEU, energy demand and CO<sub>2</sub>e emissions. Reporting is required where the jurisdiction has indicated in Table 302.1 that the codes requirements for reduced TANEU, energy demand or CO<sub>2</sub>e emissions will be enforced in the jurisdiction.
- The remainder of Section 613 contains project electives related to energy conservation, efficiency and atmospheric quality. See the portion of Table 303.1 under Chapter 6 for a list and description of these *project electives*.



For more information and updates  
check the ICC website

[www.iccsafe.org/igcc](http://www.iccsafe.org/igcc)