



AUSTIN ENERGY®  
GREEN BUILDING



# 2016 Multifamily Rating

Guidebook

# TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	<b>4</b>
<b>BASIC REQUIREMENTS</b> .....	<b>4</b>
1. Plans and Specifications .....	4
2. Current Codes and Regulations .....	4
3. Transportation Alternatives - Bicycle Use .....	5
4. Building Energy Performance .....	8
5. Mechanical Systems .....	10
6. Tenant Education .....	15
7. Testing .....	15
8. Indoor Water Use Reduction .....	18
9. Outdoor Water Use Reduction .....	20
10. Low VOC Interior Paints and Coatings .....	21
11. Filtration for Indoor Air Quality .....	22
12. Storage and Collection of Recyclables .....	22
13. Construction Waste Management .....	23
<b>TEAM</b> .....	<b>27</b>
1. Integrated Project Design .....	27
<b>SITE</b> .....	<b>28</b>
1. Site Selection .....	28
1.a Environmental Sensitivity .....	28
1.b Desired Development.....	28
1.c Density.....	28
2. Diverse and Walkable Communities.....	29
3. Brownfield Redevelopment .....	30
4. Site Specific Design .....	30
5. Public Transportation .....	31
6. Bicycle Storage.....	32
7. Parking Capacity .....	33
8. Electrical Vehicle Charging Stations.....	34
9. Protect and Restore Habitat .....	35
10. Beneficial Open Space.....	36
11. Heat Island Reduction.....	36
12. Light Pollution Reduction.....	37
13. Integrated Pest Management .....	41

<b>ENERGY</b> .....	<b>43</b>
1. Building Energy Efficiency.....	43
1.a Building Energy Efficiency Performance Option .....	43
1.b. Building Energy Efficiency Prescriptive Options .....	45
1.b.1. Cooling Equipment Efficiency .....	45
1.b.2 Heating System Efficiency .....	45
1.b.3 Water Heaters .....	45
1.b.4 Ceiling Fans .....	46
1.b.5 Interior Lighting.....	46
1.b.6 Exterior Lighting.....	47
2. High Efficiency Clothes Washers .....	47
3. Variable Capacity Systems.....	48
4. District Cooling.....	48
5. Green Energy .....	49
6. On-Site Renewable Energy.....	50
7. Additional Commissioning.....	51
<b>WATER</b> .....	<b>52</b>
1. Outdoor Water Use Reduction .....	52
2. Building Water Use Reduction.....	53
3. Water Efficient Appliances .....	54
4. Stormwater Management.....	55
<b>INDOOR ENVIRONMENTAL QUALITY</b> .....	<b>57</b>
1. Indoor Chemical & Pollutant Sources .....	57
2. Green Housekeeping.....	57
3. Daylighting .....	60
4. Views to Outside.....	61
5. Low-Emitting Materials .....	61
5a. Interior Sealants and Adhesives.....	62
5b. Composite Wood and Agrifiber Products.....	62
5c. Insulation.....	62
5d. Ceiling and Wall Systems.....	62
5e. Exterior Applied Products .....	62
6. Flooring Systems .....	63
7. Humidity and Control.....	64
8. Outdoor Pollutant Control .....	64
9. Construction Indoor Air Quality.....	66

<b>MATERIALS &amp; RESOURCES</b> .....	<b>68</b>
1. Additional Construction Waste Management.....	68
2. Building Material Use Reduction .....	70
3. High Performance Envelope .....	71
4. Durable Floor Materials.....	72
5. Sustainably Sourced Materials .....	72
5a. Performance Option .....	72
5b. Prescriptive Option .....	73
6. Certified Wood .....	73
7. PVCs and Phthalates.....	74
<b>EDUCATION &amp; EQUITY</b> .....	<b>76</b>
1. Housing Affordability .....	76
2. Access to Information.....	77
3. Car-free Living .....	78
4. Accessibility.....	78
5. Construction Worker Equity.....	79
6. Educational Outreach .....	80
<b>INNOVATION</b> .....	<b>81</b>
<b>APPENDIX – General Green Building Resources</b> .....	<b>83</b>

# INTRODUCTION

## **Great buildings don't just happen - they are planned green from the start.**

Austin Energy Green Building® (AEGB) promotes an integrated team approach to design in order to achieve higher-performing buildings. The program recognizes that great buildings do not just happen; they are created by teams that aspire for greatness from day one. An integrated approach, that establishes sustainability goals early in the design process, results in buildings that are energy and water efficient; healthier and more comfortable to live and work in; well-constructed; economical to operate; easier to maintain; and help create a better community. Incorporating the services offered by AEGB as early as possible helps ensure that you will take advantage of valuable resources available to your project.

## **The AEGB Multifamily Rating**

The AEGB Multifamily Rating is a tool developed to help guide projects and measure the impact of the team's sustainability efforts. The AEGB Rating is made up of a series of Basic Requirements required for all rated projects and eight additional categories containing measures that can be achieved to attain points for a higher rating. These are Team, Site, Energy, Water, Indoor Environmental Quality, Materials and Resources, Education and Equity, and Innovations. Compliance with all Basic Requirements satisfies the requirement for a 1-Star Rating. Projects that achieve points for voluntary measures may attain a higher Star Rating at the point thresholds described below:

### **AEGB Multifamily Ratings:**

1 star	Basic Requirements
2 stars	29-42 points
3 stars	43-51 points
4 stars	52-66 points
5 stars	67 points or more

## **Who Should Be Using the AEGB Multifamily Rating?**

The Multifamily Rating is applicable for residential and mixed-use developments six stories or less in height above grade. Residential and mixed use developments taller than six stories shall use the Commercial Rating. Townhouses (that meet the definition of the IRC) must use the Single-Family Home Rating. If there are multiple buildings in a development, each building must meet AEGB requirements and credits.

## **Residential Uses and Non Residential Uses**

Residential Criteria are for buildings containing multifamily dwellings and their common spaces, such as hallways, leasing office, gym or media room. Non-residential criteria are for mixed-use buildings, where part of the building is dedicated to non-residential uses, such as retail businesses or offices and for those accessory buildings that do not contain multifamily dwellings such as a separate clubhouse or leasing office.

## **About the AEGB Online Rating System (ORS)**

This website is a means for you and your AEGB representative(s) to communicate and track your progress in meeting your sustainability goals and AEGB Rating. Throughout the rating process, you will be receiving feedback, advice, and comments informing you on the progress of the rating of your project through the ORS.

**Getting Started: Login to the ORS:**

[www.greenbuildingsystem.austinenergy.com/Login/HowToParticipate.aspx](http://www.greenbuildingsystem.austinenergy.com/Login/HowToParticipate.aspx)

1. **Select or Create an Organization Profile and Personal Profile:**
  - If your organization is new to AEGB, you must create a new Organization Profile with basic information about the services your company provides and lead contact information. If your organization has previously participated in an AEGB project you may already have an Organization profile. Search the list of Organizations to select your organization's profile.
  - Create a Personal Profile with login information you will use to access the ORS throughout the project.
2. **Start a New Project:** The registration information you provide about your project will enable us to verify whether your project is eligible for a rating. If eligible, the project will be assigned to the appropriate rating system, and AEGB representative(s). Note: for proper assignment, please indicate whether the project is participating in SMART Housing and/or located in a PUD.
3. **Accept the "Terms and Conditions":** Once the project has been assigned AEGB representatives, the project's primary contact will receive an email requesting them to login to the ORS and accept the Terms and Conditions to participate.

Now that you have accepted the "Terms and Conditions," you will find additional tabs available on your organization's profile page.

- **"Worksheet" Tab:** contains all specific information about the requirements for achieving and documenting measures in your assigned rating program.
- **"Team" Tab:** Invite other professionals working on this project to the ORS. On the TEAM tab, select Add Team Member. The other team members may already have a profile, registered from a previously AEGB rated project. You may search for them by typing searching for their company name in the "Select Organization:" field or by selecting the first letter. If the team member's company name is not found, select "Click Here to invite an unregistered organization" at the bottom of the page.
- **"Documents" Tab:** This section provides a landing for documents such as the Terms and Conditions and the Letter of Intent (LOI). This is a good location to upload your SMART Housing Certificate, if applicable. As you achieve milestones, additional documents including the Conditional Approval and Final Approval, will become available to you here.

For technical assistance with the ORS,, use the help menu or contact the System Administrators at [Frontier Associates](mailto:greenbuilding@frontierassoc.com) (512) 697-9093, [greenbuilding@frontierassoc.com](mailto:greenbuilding@frontierassoc.com)

**RATING PROCESS**

**Planning and Design Phase:** This phase is the time for planning, meeting, establishing goals and developing plans and designs.

- **Letter of Intent:** When zoning or other City of Austin criteria requires an AEGB Rating, please download, execute, and upload the signed AEGB Letter of Intent (LOI) to the Documents tab of the ORS. Your AEGB representative will sign and return this LOI. You will need to present the completed LOI to Land Use Review in order to apply for a Site Development Permit.
- **Meetings:** Your AEGB representative would like to meet with the entire design team as early in the process as possible. This will provide an opportunity to walk through the ORS, explain features of the Multifamily Rating Program and answer any questions you may have. Meeting early is a great way to set the tone for a successful project.
- **Review and Conditional Approval:** Your AEGB representative(s) provide a comprehensive review of the project's design, specifications, and other documentation applicable to the rating. Upon the satisfactory review of this phase, a **Conditional Approval** letter will be issued. The signed and executed Conditional Approval letter will be uploaded within the ORS "Documents" tab.
  - The conditional approval does not guarantee award of any requirement or point, but enables project teams to assess likelihood of credit achievement. All measures will require follow-up through construction completion.

- For mandated AEGB projects, the letter should be attached to the front of all the Building Permit sets at the time of intake with the Planning and Development Review Department (PDRD), and at a minimum MUST be submitted to PDRD prior to a Building Permit being issued.

**The Construction Phase:** This phase is the time for action by following through with the well laid plans and updating AEGB with your progress towards your goals.

- **Updates and Documents:** During construction, provide regular updates on the “Worksheet” tab in the ORS. Required construction phase documentation is described within the guidebook and on the ORS. If the construction schedule changes please provide updates with the ORS “Schedule” tab.
- **Preconstruction Meeting:** Your AEGB representative would like to meet with the construction team to review the rating requirements, construction phase documentation, and any required site visits. This will provide an opportunity to answer any questions, and set the tone for a successful project.
- **Site Visits:** Your AEGB representative(s) will need to conduct site visits throughout construction, and are available as a resource to your Contractor to verify the project’s progress toward achieving certain measures directly on site. Please coordinate access to the building site with your AEGB project representative(s), as necessary.

**The Close-Out Phase:** The Close-Out Phase offers the project an opportunity to celebrate the team’s successes as AEGB awards the final Star Rating.

- **Professional Directory:** Project team members may verify their Company Profile and confirm whether or not you want to be added to the AEGB Professional Directory.
- **Case Studies:** Your AEGB representative(s) will assist in developing and publishing to our website a project Case Study using the AEGB Case Study template. The Case Study is an opportunity to share the project’s accomplishments with building occupants, stakeholders, clients, and the community.
- **Certificates and Plaque:** All AEGB rated projects receive a certificate listing the participating team members. Projects receiving 3, 4, or 5 stars may receive a complimentary plaque.

Your AEGB project representative(s) is always available to answer questions or concerns about the AEGB Rating and project deliverable.

### **PROJECTS WITH COMMERCIAL TENANTS**

Your AEGB Rating applies to the entire building and site, however, some projects contain tenant, speculative, or unfinished shell space. The work done by subsequent tenants is an important contributor to the overall sustainability of a project. In order to ensure that the sustainable measures of the original design are carried throughout the project, a **Tenant Lease Agreement** must be implemented for future tenant finish outs. Your AEGB Representative is available to assist in the development of the agreement, a draft of which shall be reviewed prior to Conditional Approval and the final Tenant Lease Agreement verified for Final Approval.

## **ABOUT THE GUIDEBOOK**

This guidebook is intended to assist the project team in understanding the purpose or intent of each sustainable building measure and the requirements and documentation needed for compliance to earn points. It also includes helpful links to resources that may assist in measure achievement. It is intended to be used in conjunction with the ORS to guide your project team through the AEGB Rating process. We encourage your team members to become familiar with the Guidebook.

Please bring any malfunctioning links to the attention of AEGB; we are aware that the links sometimes expire due to the dynamic nature of websites.

### **Disclaimer:**

AEGB does not make any warranty (expressed or implied) or assume any liability or responsibility, to you or any third parties for the accuracy, completeness or use of, or reliance on, any information contained in the AEGB Multifamily Guidebook and Online Tool. Any discrepancies between the AEGB Multifamily Guidebook and Online Tool are unintentional and will be resolved by AEGB.



2016 MULTIFAMILY RATING SCORECARD PLANNER



PROJECT NAME

MEASURE		POINT AVAILABLE	YES	MAYBE	NO
<b>BASIC REQUIREMENTS</b>					
1	Plans and Specifications	Req'd			
2	Current Codes and Regulations	Req'd			
3	Transportation Alternatives - Bicycle Use	Req'd			
4	Building Energy Performance	Req'd			
5	Mechanical Systems	Req'd			
6	Tenant Education	Req'd			
7	Testing	Req'd			
8	Indoor Water Use Reduction	Req'd			
9	Outdoor Water Use Reduction	Req'd			
10	Low VOC Paints and Coatings	Req'd			
11	Filtration for Indoor Air Quality	Req'd			
12	Storage and Collection of Recyclables	Req'd			
13	Construction Waste Management	Req'd			
<b>TEAM</b>					
1	Integrated Project Design	1			
	<b>Team Subtotals</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>SITE</b>					
1a	Environmental Sensitivity	2			
1b	Desired Development	2			
1c	Density	2			
2	Diverse and Walkable Communities	1			
3	Brownfield Redevelopment	1			
4	Site Specific Design	1			
5	Public Transportation	3			
6	Bicycle Storage	1			
7	Parking Capacity	1			
8	Electrical Vehicle Charging Stations	1			
9	Protect and Restore Habitat	1			
10	Beneficial Open Space	1			
11	Heat Island Reduction	1			
12	Light Pollution Reduction	1			
13	Integrated Pest Management	1			
	<b>Site Subtotals</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>

<b>ENERGY</b>					
1a	Building Energy Efficiency-Performance	12			
1b.1	Cooling Equipment Efficiency	2			
1b.2	Heating System Efficiency	1			
1b.3	Water Heaters	1			
1b.4	Ceiling Fans	1			
1b.5	Interior Lighting	3			
1b.6	Exterior Lighting	2			
2	High Efficiency Clothes Washers	2			
3	Variable Capacity Systems	2			
4	District Cooling	1			
5	Green Energy	2			
6	On-Site Renewable Energy	4			
7	Additional Commissioning	3			
<b>Energy Subtotals</b>		<b>26</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>WATER</b>					
1	Outdoor Water Use Reduction	3			
2	Building Water Use Reduction	4			
3	Water Efficient Appliances	2			
4	Stormwater Management	2			
<b>Water Subtotals</b>		<b>11</b>			
<b>INDOOR ENVIRONMENTAL QUALITY</b>					
1	Indoor Chemical & Pollutant Services	1			
2	Green Housekeeping	1			
3	Daylighting	1			
4	Views to Outside	1			
5a	Interior Sealants	1			
5b	Composite Wood and Agrifiber	1			
5c	Insulation	1			
5d	Ceiling and Wall Systems	1			
5e	Exterior Applied Products	1			
6	Flooring Systems	2			
7	Humidity and Control	2			
8	Outdoor Pollutant Control	1			
9	Construction Indoor Air Quality	1			
<b>IEQ Subtotals</b>		<b>15</b>			
<b>MATERIALS &amp; RESOURCES</b>					
1	Additional Construction Waste Mngmnt	1			
2	Building Material Use Reduction	3			
3	High Performance Envelope	1			
4	Durable Floor Materials	2			
5	Sustainably Sourced Materials	6			
6	Certified Wood	2			
7	PVCs and Phthalates	1			
<b>Materials &amp; Resources Subtotals</b>		<b>16</b>			

<b>EDUCATION &amp; EQUITY</b>					
1	Housing Affordability	3			
2	Access to Information	1			
3	Car Free Living	1			
4	Accessibility	1			
5	Construction Worker Equity	1			
6	Educational Outreach	2			
<b>Education &amp; Equity Subtotals</b>		<b>9</b>			
<b>INNOVATION</b>					
1	Innovation #1	1			
2	Innovation #2	1			
3	Innovation #3	1			
4	Innovation #4	1			
5	Innovation #5	1			
<b>Innovation Subtotals</b>		<b>5</b>			
<b>Grand Total Points</b>		<b>103</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>AEGB MULTIFAMILY RATING STAR LEVELS</b>					
1 STAR		BASIC REQUIREMENTS			
2 STARS		29-42 points			
3 STARS		43-51 points			
4 STARS		52-66 points			
5 STARS		67 or more points			

# BASIC REQUIREMENTS

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## 1. Plans and Specifications

### Requirements

Provide complete set of plans and specifications for review at all major milestones, and at a minimum the 100% Design Development and Building Permit Sets.

Provide access via one of the following:

- **OPTION 1 – Hard Copies**  
Provide one half size set of drawings and one set of specifications to Austin Energy Green Building (AEGB).  
Mailing Address:  
Attn: Residential Program  
Austin Energy Green Building  
721 Barton Springs Road  
Austin TX 78704-1145
- **OPTION 2 – Access to FTP/Project Management Site**  
Provide the URL, User Name, and Password your AEGB Representative is to use.  
Plans should be PDFs.
- **OPTION 3 – Electronic Plans and Specifications**  
Upload on the AEGB Online Rating System (ORS) the plans (in PDF format) and specifications.

### Required Verification

#### CONDITIONAL APPROVAL:

- 100% Design Development Plans and Specifications, if available
- 50% Construction Documents Plans and Specifications
- Building Permit Plans and Specifications
- As-Built Drawings, if available

## 2. Current Codes and Regulations

### Intent

To ensure quality buildings, and protect the health and safety of building occupants, our community, and the environment, through compliance with all current codes, and building-related environmental laws and regulations.

### Requirements (Residential and Non Residential Uses)

Meet current City of Austin Codes with local amendments (including but not limited to energy, building, mechanical, plumbing, electrical, and current drainage and water quality standards applicable in the project site watershed), and applicable building-related laws and regulations.

### Required Verification

#### CONDITIONAL APPROVAL:

- Schedule of applicable codes in Construction Documents. If following IECC 2015 Commercial Energy Code, indicate which “additional efficiency package” project is complying with.
- Energy Code Compliance documents (COMcheck™ or IECC 2015 Section 407 compliance report), if under the Commercial IECC.

### Resources

[City of Austin - Watershed Protection Ordinance](#)

[Watershed Ordinance Summary Map](#)

[City of Austin - Environmental Criteria Manual – Section 1.9.0](#)

[City of Austin – Building Code Local Amendments & Inspections](#)

[International Code Council Online Library](#) (Free online access to technical codes)

[TCEQ - Edwards Aquifer Recharge Zone Map](#)

[Labeled Products](#)

[ORNL and LBNL - Roof Savings Calculator](#)

[Greenroofs.com](#)

[U.S. Department of Energy - COMcheck™](#)

## 3. Transportation Alternatives - Bicycle Use

### Intent

To reduce pollution and development impact from automobile use and improve public health by encouraging bicycle use. Ensure safety of tenants and their property.

### Requirements (Residential and Non-Residential Uses)

Provide covered bicycle parking for 15% of residents and permanent building occupants and provide a safe path from property entrance to bike parking. Bicycle spaces shall be racks or lockers anchored so that they cannot be easily removed. Each space allocated for this kind of parking shall be a minimum of two (2) feet wide and six (6) feet long.

#### Calculate Occupant Count:

There is an Occupancy Calculator template available from the ORS that should be used for all credits that require an occupant count. Use this to get a preliminary count of projected occupant totals for residential and commercial uses on your projects. As the project progresses and speculative commercial uses [ie: retailers] are known, the occupant totals can be adjusted according to the retailers actual historical or projected data. Visitors and temporary occupants do not need to be included.

It is based upon the instructions below.

#### For Residential Uses: [Condos or Apartments]

The number of occupants/FTEs is based on the following:

- Efficiency = 1 occupant
- One-Bedroom = 1.5 occupants
- Two-Bedroom = 2 occupants
- Three-Bedroom = 2.5 occupants
- Each additional bedroom = 0.5 occupant per bedroom per unit
- Onsite staff. Amenity areas are exempt from occupancy count except for on-site staff, such as leasing and maintenance staff.

**Commercial Uses:**

Estimate number of FTEs in mixed use areas based on square footage and use

- Office: 275 sf per employee
- Retail: 500 sf per employee
- Medical: 275 sf per employee

**Notes:**

- Bike parking is not allowed below stairways per IBC 2012, 1009.9.4 Enclosures under exterior stairways: There shall be no enclosed usable space under exterior exit stairways unless the space is completely enclosed in 1-hour fire-resistance-rated construction. The open space under exterior stairways shall not be used for any purpose.
- Amenity areas are exempt from occupancy count except for on-site staff, such as leasing and maintenance staff.
- Occupant total is distinct from the occupant total calculated per IBC means of egress requirements
- Residential units that have their own garage are exempt.
- Residential units assigned private, locked storage that are a minimum of two (2) feet wide and six (6) feet long with sufficient clearance/room for maneuvering bike into closet, are exempt.
- Projects that meet the requirements of the Site Bicycle Storage measure meet this Basic Requirement.
- Senior or special needs housing projects are not exempt from this requirement, but can meet it by demonstrating how they meet the intent of this credit for residential uses (through a proposed combination of bicycle parking, tenant transportation services for activities such as shopping, Car2Go onsite, electric vehicle use such as golf cart transportation on property, and through programs to improve public health and help tenants lead a more active lifestyle, etc).

**Required Verification**

CONDITIONAL APPROVAL:

- Complete the AEGB Occupancy Calculator demonstrating total building occupancy and required quantity of securing areas (include in parking count schedule).
- Building and/or site plans indicating bicycle rack locations (include the capacity of each) cover device, and safe bicycle/pedestrian routes.
- Specifications of bicycle securing systems.

FINAL APPROVAL

- Verification of installed safe path and covered bicycle securing device.

**Strategies**

- Use the Occupant Calculator template available on the Online Rating System for all other credits that include occupancy count, such as AEGB water calculator.
- Place bicycle racks in gated locations or areas with high foot traffic and good visibility, such as near a building entrance or gathering place.
- If the development has multiple buildings or entrances, consider placing separate racks at each location to increase convenience.

**Resources**

- [City of Austin - Bicycle and Pedestrian Program](#)
- [Bicycle Route Map](#)
- [Bicycle Austin - Bicycle transportation issues in Austin](#)
- [Oregon Bicycle and Pedestrian Planning and Design Manual](#)

[World of Sports article "Disabled Individuals and Regular Physical Exercise"](#)

## 4. Building Energy Performance

### Intent

To outperform current minimum energy code requirements such that building energy demand and consumption are reduced, further lowering greenhouse gas emissions and building operating costs.

### Requirements (Residential and Non-residential Uses)

Select ONE of the following options:

- **Option A:** Meet all of the following prescriptive requirements for all building spaces:
  - Glazing: Maximum U value =0.35 AND maximum SHGC = 0.25
  - Exterior Wall R-Value: Minimum R-15+3 c.i. (wood frame) OR R-13+7.5 c.i.(steel frame). Continuous insulation required.
  - Roof Insulation: Minimum R-38 for “attic and other” OR R-25 c.i. for “insulation entirely above deck”.
  - Floor Insulation: Minimum R-30 for joist/framing OR R-8.3 c.i. for mass.
  - Interior Hardwired Lighting: Minimum 100% of all indoor lamps must be ENERGY STAR®-compliant, high-efficacy lamps\* AND overall lighting power density may not exceed 0.6 W/sqft.
  - Mechanical Systems: All split mechanical systems shall be rated at a minimum 15 SEER cooling efficiency AND be heat pumps where the heating source is electric.
  - Appliances: Refrigerators and dishwashers must meet current ENERGY STAR® specifications

\*Lighting required for safety, security or eye adaptation is excluded from the calculation.

**Exception:** Where windows are required to comply with the visible transmittance (VT) requirement outlined in section 3.2.2.E, Glazing on Building Facades, of the City of Austin’s Subchapter E, Design Standards and Mixed Use ordinance, the solar heat gain coefficient (SHGC) requirement shall not apply. Instead the window shall have a projection factor (PF)  $\geq 0.5$ .

OR

- **Option B:** Commercial Energy Code for buildings 5 or 6 stories  
Use a building performance model to demonstrate that the building exceeds the applicable City of Austin Energy Code with Amendments.
  - Demonstrate at a minimum a 4% improvement in the energy performance (site energy, BTU) of the proposed building compared to a baseline building that complies with ASHRAE 90.1-2013 Appendix G modified with City of Austin Amendments. Energy use exterior to the building (e.g., any exterior lighting, parking lighting, garage fans) shall be modeled but will be excluded from this calculation.AND
  - Buildings shall meet prescriptive code requirements of 2015 International Energy Conservation Code, Chapter 4 [CE] section C402.

OR

- **Option C:** Residential Energy Code for buildings 4 stories or less  
Use a building performance model to demonstrate that the building exceeds the applicable City of Austin Energy Code with Amendments.
  - Demonstrate at a minimum a 4% improvement in the energy performance (site energy, BTU) of the proposed building compared to a baseline building that complies with 2015 International Energy Conservation Code, Section R405 residential standard reference design (SRD) modified with City of Austin Amendments. Baseline building spaces under commercial jurisdiction (e.g., mixed use tenant finish-out, clubhouse, fitness, leasing office) shall comply

with ASHRAE 90.1-2013 Appendix G modified with City of Austin Amendments. Energy use exterior to the building (e.g., any exterior lighting, parking lighting, garage fans) shall be modeled but will be excluded from this calculation.

AND

- Buildings shall meet prescriptive code requirements of 2015 International Energy Conservation Code, Chapter 4 [RE] including section R402.

**Note:** Projects pursuing LEED, EnergyStar or other sustainable building ratings in parallel with an Austin Energy Green Building rating shall discuss with AEGB modeling options and obtain approval prior to submitting energy models.

### Required Verification

#### Option 1 - CONDITIONAL APPROVAL

- Complete Building Characteristic Form

#### Option 1 -FINAL APPROVAL

- Submittals documenting prescriptive measures incorporated into the building

#### Option 2 or 3 - CONDITIONAL APPROVAL

- Narrative describing the building envelope, systems, and energy saving measures incorporated into the building.
- Preliminary AEGB Energy Analysis Summary Form workbook, based on construction drawings.
- Modeling reports showing inputs and results for SRD/Baseline and Proposed building.

#### Option 2 or 3 -FINAL APPROVAL

- Product submittals, cut sheets, or other documentation (e.g. NFRC stickers) documenting installed envelope materials, mechanical and lighting systems.
- Final AEGB Energy Analysis Summary Form incorporating revisions based on “as-built” construction.
- Updated modeling reports based on “as-built” construction.

### Strategies

- Energy modeling provides opportunities for the design team to evaluate the economics of energy-saving strategies that inform design decisions. Austin Energy offers financial incentives for incorporating energy modeling in the design process from conceptual design through post-occupancy by participation in the *Integrated Modeling Incentive*. Ask your AEGB representative for details.
- Energy modeling software must meet the requirements outlined in ASHRAE 90.1 Appendix G. Qualifying programs include: Carrier HAP, Trane Trace, eQuest, DOE2, EnergyPlus, OpenStudio, or BEopt.

### References

[City of Austin Amendments to IECC: Ordinance #20160623-099](#)  
[ASHRAE Standards and Guidelines](#)  
[2015 IECC](#) (as published)  
[U.S. Department of Energy - Building Energy Software Tools Directory](#)  
[National Institute of Building Sciences - Whole Building Design Guide](#)  
[IRS Qualified Software for Calculating Commercial Building Tax Deductions](#)  
[E Source - Business Energy Advisor](#)  
[ENERGY STAR® Products](#)  
[Architecture 2030](#)  
[2030 Palette](#)

[Sefaira](#)  
[OpenStudio](#)  
[BEopt](#)

## 5. Mechanical Systems

### Intent

To ensure that mechanical systems are “right-sized,” because oversized equipment often runs below its rated efficiency, does not provide adequate humidity control, results in uneven cooling, and costs more to purchase and operate.

### Requirements

Systems meet ALL of the following requirements:

- Dwellings served by individual systems (DX and chilled water): Size condensing units as closely as possible to the total cooling requirement calculated using the Air Conditioning Contractors Association (ACCA) Manual J Residential Load Calculation Procedure and AEGB requirements. The installed unit’s capacity shall not exceed the load calculation by more than 0.5 tons.
- All installed air conditioning system components are matched according to AHRI (Air-Conditioning, Heating and Refrigeration Institute). For equipment types that are not listed with AHRI, equipment match shall be demonstrated using a Department of Energy approved methodology.
- Pre-program thermostats to ENERGY STAR® Cooling and Heating recommended schedule:

Factory Program Temperatures Recommended by ENERGY STAR® Cooling & Heating Schedule							
PERIOD		WEEKDAYS (5-DAY)		SATURDAY (1-DAY)		SUNDAY (1-DAY)	
		Start Time	Temp	Start Time	Temp	Start Time	Temp
COOL	MOR	6:00 am	78F	6:00 am	78F	6:00 am	78F
	DAY	8:00 am	85F	8:00 am	85F	8:00 am	85F
	EVE	5:00 pm	78F	5:00 pm	78F	5:00 pm	78F
	NHT	10:00 pm	82F	10:00 pm	82F	10:00 pm	82F
HEAT	MOR	6:00 am	70F	6:00 am	70F	6:00 am	70F
	DAY	8:00 am	62F	8:00 am	62F	8:00 am	62F
	EVE	5:00 pm	70F	5:00 pm	70F	5:00 pm	70F
	NHT	10:00 pm	62F	10:00 pm	62F	10:00 pm	62F

### Required Verification

#### CONDITIONAL APPROVAL

- Complete and accurate Manual J calculation for each dwelling unit type (see description below). Submit input and output reports
- Complete Manual S Compliance Chart
- Mechanical schedule demonstrating that installed systems will be sized per Manual J
- AHRI reference numbers or other documentation for equipment match

#### FINAL APPROVAL

- Final system cut sheets with extended data values and AHRI reference numbers
- Final mechanical schedule, if applicable
- Verification by site visit

### Strategies

- Perform load calculations according to AEGB guidelines. Use the Air Conditioning Contractors of America (ACCA) approved Manual J software (see ACCA website [www.acca.org/store/category.php?cid=18](http://www.acca.org/store/category.php?cid=18))
- Condensing units shall be sized per Manual S. See General Guidelines below.
- Manual J calculations, unit plans and mechanical schedule should be submitted at least two weeks prior to the date the project plans to receive Conditional Approval in order to accommodate reviews and responses.
- If dwelling loads or equipment change after Conditional Approval, re-submit revised Manual J, drawings and mechanical schedule for approval prior to submittal and installation of units to verify that units comply with requirement.
- Sizing chilled water systems according to Manual J load calculations may yield additional savings from right-sized pumps and chillers.

### General Guidelines

Separate calculations for each unit type are required. For multiple units at different orientations, submit the Manual J calculation for the typical unit with average load. The unit should be located on a middle floor. An additional Manual J can be run for the worst case scenario if the solar load will cause the sizing to increase to the next condenser size, but can only be applied to those worst case scenario dwellings. The worst case will typically occur on the top floor. Identify the unit type and location in the file name of the Manual J calculation.

### Specific Manual J Inputs

- Air infiltration rates of no greater than 0.22 air changes per hour (ACH) for summer; 0.41 ACH for winter must be used.
- Internal loads shall follow Building Science guidelines. One appliance will be equal to 600 BTUH. Allocate one appliance in laundry room and two in the kitchen for a total of 1800 BTUH. Add an additional 400 BTUH to each of no more than three bedrooms.
- Glazing and U value inputs shall follow what is specified in architectural drawings.
- Lighting heat gain is accounted for in appliance load, no additional load should be included for lighting allotment in Manual J.
- Utilize the Manual J calculated Sensible Heat Ratio.
- Outdoor design temperatures shall be per Austin Amendments to the 2015 IECC R302.1 Exterior design conditions (30°F Dry Bulb (DB) Winter; 100°F DB Summer, 74°F Wet Bulb (WB) Summer).
- Occupancy load shall be two people for the first bedroom and one person to each remaining bedroom. For certain circumstances, occupancy estimates can be based on ASHRAE recommendations.
- People load must be set at no greater than 230 BTUH sensible, 200 BTUH latent per person.

- Ventilation allotment shall be set at 15 cfm per person, use number of bedrooms as a proxy for occupancy. If separate fan from Air Handling Unit is utilized for ventilation, additional cfm can be claimed in load.
- No safety factor adjustment is allowed per Manual J. All swing factors shall be set to 1.
- Ductwork located in furrdowns or interstitial space should not be included in the load calculations. Only ductwork located outside the thermal envelope such as, a vented unconditioned attic should have a heat gain/loss.
- Walls separating conditioned space from interior unconditioned space, such as a garage, are specified as partition walls. Unlike exterior walls, partition walls do not have a solar load. Walls adjacent to breezeways or otherwise shaded must be entered as partitions.

### **Sizing Guidelines**

ACCA Manual S is the approved procedure for selecting cooling equipment. The same indoor and outdoor dry bulb and wet bulb temperatures should be used as were used in the Manual J calculation. Utilize outdoor 100°F DB, indoor 65°F WB and 80°F DB for extended data, with the airflow value of the indoor unit selected.

Indoor fan coil units may be sized greater than the exterior unit. For example, a 2 ton indoor unit paired with a 1.5 ton condensing unit is acceptable. Due to equipment sizing limitations, Direct Expansion (DX) systems sized at 1.5 tons are acceptable even if the difference between the Manual J calculation and sized equipment is more than half a ton. Units greater than 1.5 tons will only be allowed if the installed total capacity of the matched equipment does exceed the total Manual J calculation by more than half a ton. For example, if Manual J calculates a total load at 1.8 tons, and the matched equipment has a capacity of 1.9 tons, the condensing unit shall be sized at 2 tons but not 2.5 tons.

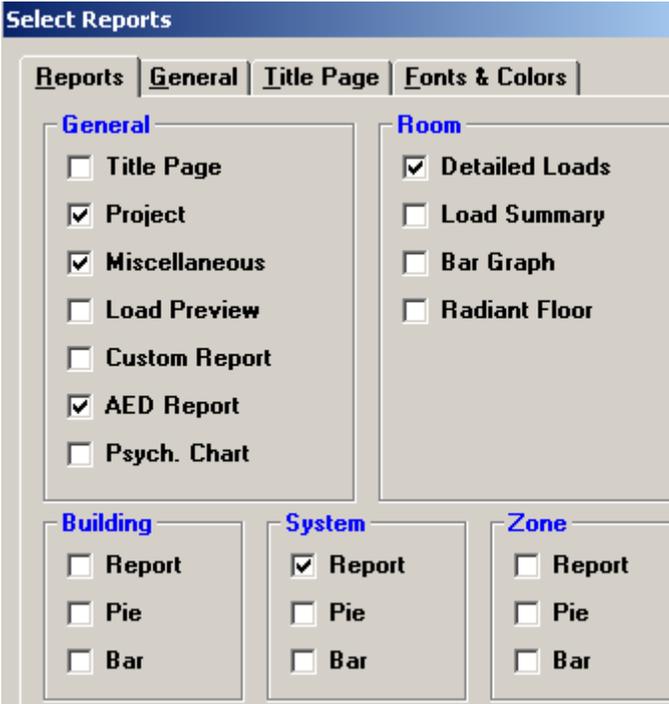
For chilled water systems, do not oversize by more than half a ton. For example, if the Manual J load calculation is 1.4 tons, a 1.5 ton indoor fan coil should be specified as opposed to 2 tons.

**Manual J Submittals:**

Provide the reports indicated below from the selected Manual J calculation program.

**Elite RHVAC**

The figure below shows the report selection screen in RHVAC with the required reports selected.

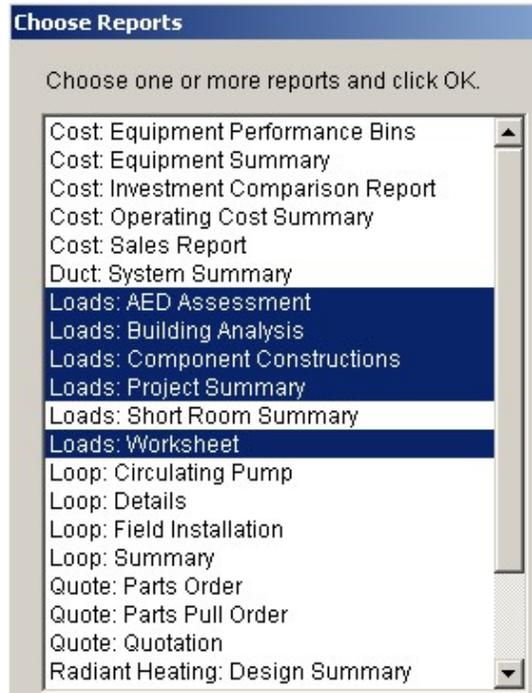


The RHVAC printouts will have the report titles listed below.

- Project Report
- Miscellaneous Report
- Adequate Exposure Diversity Test
- Detailed Room Loads
- System Summary Loads

**Wrightsoft Right-J**

The figure below shows the report selection screen in Right-J with the required reports highlighted.



The Right-J printouts will have the report titles listed below.

- AED Assessment
- Building Analysis
- Component Constructions
- Project Summary
- Right-J8 Worksheet

**The following language is from Manual J regarding right-sizing of systems:**

Air Conditioning Contractors of America, Manual J, 8th ed., Introduction pp. i – iii

- On undersizing heating and cooling equipment:  
The obvious problem with significantly undersized equipment is that it will not maintain the desired set-point temperature when a passing weather system imposes a design load on the heating and cooling equipment. However, slightly undersized cooling equipment – by a margin of 10% or less – may actually provide more comfort at a lower cost.

- On oversizing heating and cooling equipment:  
“Excessively oversized equipment causes short-cycles, marginalizes part-load temperature control, creates pockets of stagnate air (unless the blower operates continuously), degrades humidity control during the cooling season..., requires larger duct runs, increases the installed cost, increases the operating cost, increases the installed load on the utility system and causes unnecessary stress on the machinery.”
- On humidity control during the cooling season:  
“Sensible and latent cooling loads are imposed on dwellings located in climates that have a substantial amount of moisture in the air during the cooling season. When the summer design condition occurs, properly sized equipment will operate continuously or almost continuously, both loads will be completely neutralized, and the occupants will be comfortable.”  
  
“The total capacity (sensible plus latent) of the cooling equipment should not exceed the total load (sensible plus latent) by more than 15 percent for cooling-only applications and warm-climate heat pump applications...”
- On safety factors:  
“Manual J calculations should be aggressive, which means that the designer should take full advantage of legitimate opportunities to minimize the size of the estimated loads. In this regard, the practice of manipulating the outdoor design temperature, not taking full credit for efficient construction features, ignoring internal and external window shading devices and then applying an arbitrary “safety factor” is indefensible.

Research studies and the experience of knowledgeable system designers indicate that aggressive use of Manual J procedures provides an adequate factor of safety. No additional safety factors are required when load estimates are based on accurate information pertaining to envelope construction and duct system efficiency.”

**Resources:**

[Air Conditioning Contractors of America \(ACCA\) - Manual J Residential Load Calculation](#)  
[ACCA Approved Manual J Software](#)  
[Air-Conditioning, Heating and Refrigeration Institute](#)  
[Building Science Design Process for Sizing \(GM-0605\)](#)

## 6. Tenant Education

### Intent

To increase awareness of building's green features and encourage conservation by building occupants through education to extend the life of the landfill, save energy, water and other resources.

### Requirements

Notify and regularly educate building tenants on recycling and green practices through a formal and ongoing educational program, including information on the building's website. A tenant guide shall be provided to all residents at move-in and shall include at minimum, information on the building's green features, recycling program, alternative transportation options, pest management, pet etiquette (if pets allowed), hazardous waste disposal and green tips for conservation must be included in move-in packet information. Use double-sided print option to conserve paper or provide in electronic form (preferred).

Recycling information should provide at a minimum guidelines on what materials are and are not accepted, location of recycling, and contact information for additional questions.

### Required Verification

#### CONDITIONAL APPROVAL:

- Draft description of tenant educational program and draft copy of guidebook.

#### FINAL APPROVAL

- Final draft of tenant educational program and guidebook.
- Copy of any educational materials to be distributed to tenants.
- Visual verification of signage for recycling areas.

### Strategies

The City of Austin Solid Waste Services Department may have free recycling and waste reduction educational materials to help property owners and building managers educate their tenants.

### Resources

*Review the Sample Tenant Guidebook Template on the Online Rating System*  
[City of Austin Recycling Requirements for Austin Businesses](#)

## 7. Testing

### Intent

To detect issues such as excessive leakage in building assemblies, duct leakage, or poor air delivery, that may have negative consequences for occupant comfort and health, energy consumption, and building longevity.

### Requirements

For residential spaces, meet the AEGB testing requirements to ensure that mechanical systems are balanced and have minimal duct leakage, and that the building enclosure meets code stipulations for air-tightness.

- Coordinate site visits of mechanical rough-ins with AEGB for 100% of dwellings
- For 25% of dwellings, perform the following tests:

- Blower door- Dwelling units shall be tested and verified as having an air leakage rate of not exceeding 5 air changes (ACH) per house. Testing shall be conducted at a pressure of 0.2 inches w.g. or 50 Pascals.
- Bedroom pressure differential- Pressure difference between each bedroom and adjacent interior area (e.g., hallway) shall not exceed 5 Pascals.
- Air side testing:
  - Duct leakage- Duct tightness shall be verified by post construction test with total leakage less than or equal to 4 cubic feet per minute (CFM) per 100 ft<sup>2</sup> when tested at a pressure differential of 0.1 inches w.g. or 25 Pascals across the entire system.
  - Air balancing- Airflow at each supply register shall have a measured airflow within ±20% of design airflow. Documentation shall verify that actual total system airflow is within ±10%.
  - System static pressure- Total system static pressure with filters shall not exceed 0.6" water column on electric air handlers and 0.8" water column on gas furnaces.

Exception: Ductless systems are exempt from airside testing.

Dwelling sample shall be weighted based on quantity of unit type with at least one of each unit type. Testing shall occur on all floors and all buildings or sections of buildings.

An independent testing company certified by the City of Austin and hired by the owner or General Contractor (not the Mechanical Contractor) will prepare the Testing Plan and verify that mechanical systems are installed and tested to meet their design intent via the required testing below.

See reference below for:

- Installation Guidelines
- AEGB Site Visit Procedures

Though only 25% of units must be initially tested, any recurring problems must be addressed in all units likely to have the same issues. Testing shall be in accordance with the City of Austin Energy Code which includes amendments to the 2015 IECC Sections 402.4.1.2, 403.2.2, 403.2.4, 403.2.5, and 403.2.6.

Buildings under Commercial Energy Code (5 or 6 stories) are required to perform commissioning per City of Austin Amendments to 2015 IECC Section C408 System Commissioning.

**Required Submissions:**

- Specification: The project specifications shall include required testing. The testing requirements may also be included on the mechanical plans. Be sure to involve the testing company early and work with them to integrate testing appropriately into the construction schedule.
- Testing Plan: Prior to construction, a testing plan shall be submitted that describes what testing is to be done, the criteria for acceptable performance, and the management protocols for follow-up, particularly in the event that testing demonstrates that there may be problems across all or a subset of systems. Review the Sample Testing Plan in the AEGB Online Rating System.
- Final Testing Report: The Final Testing Report must include testing method, common problems encountered, solutions used to meet performance criteria, problems that were not solved, and lessons learned. Field and summary data must be submitted with the final report. Contact your AEGB representative for template forms for reporting testing data.

- **AEGB SITE VISIT PROCEDURES:**

Visual Check of Mechanical Rough-ins: 100% of Dwellings

- AEGB will conduct regular quality control site visits to verify the integrity of all return air plenums and final site visits at or near project completion.
- Plenum verifications should occur immediately before the mechanical inspection on each building. The project superintendent, or designee, is responsible for contacting their AEGB Representative to schedule a visual verification immediately prior to both rough and final inspections with the city inspector on each building.
- The superintendent, or designee, must walk through the units with the AEGB representative so that any problems can be addressed on the spot. The construction representative should carry necessary materials (caulk, mastic, etc.) to repair any unsealed areas of the air duct system (i.e. ducts, fan coil unit, and return air plenum).

- **INSTALLATION GUIDELINES FOR RESIDENTIAL SYSTEMS:**

In addition to all applicable codes and specifications, the following measures are required for new HVAC installations:

- All gaps, joints, seams, etc. between the supply and wallboard **MUST BE SEALED** with mastic.
- Use oriented polypropylene (OPP) or foil-backed butyl tape to seal the inner core of flex duct to metal collars, and to repair the flex duct jacket.
- When sealing joints in flex duct, insert the duct boot or coupling at least 2 inches into the duct end, attach the fitting to the flex duct's inner sleeve with a drawband clamp or #8 screws, seal the joint between the inner section of the duct and the fitting with duct tape and/or mastic, and seal the exterior vapor barrier sleeve with a drawband and tape.
- Provide return air openings of 1 square foot of net free area per ton of air conditioning. Return airflow must be sufficient to maintain proper Freon pressures and manufacturer's flow rate specifications.
- Seal all furrdown penetrations with mastic.
- If return air plenums are located in a ceiling furrdown, the following two guidelines apply:
  - Preferred method: Construct the furrdown at least 16" deep, or such that the sidewalls of the furrdown extend at least 1-1/2" below the bottom 2" x 4" nailer.  
OR  
Construct the sidewalls to the typical depth (14") and install the 2" x 4" nailer flush with the bottom of the sidewalls, and caulk the joint between the nailer and the bottom of the wall board along the entire perimeter of furrdown.
  - All gaps, joints, seams, etc. between wood framing and wallboard must have an air tight seal made with caulk, mastic, etc. This includes "knock-outs" between two sections of the return plenum and the return grill opening if located in the sidewall of the furrdown plenum.
- If the air handler is in a closet, the door must be weather-stripped, with door sweep and threshold.
- All seams between the air handler/furnace, the return plenum and the supply plenum must be sealed with mastic.
- Flex duct should be allowed to run straight out of any connection at least 12" before taking a turn.
- Limit flex duct length to no more than 25' per run, not to exceed the manufacturer's recommended limit.
- Hanger material should be at least 1.5" in width as to not crimp the ductwork.

Note that per code, building cavities SHALL NOT be used as ducts or plenums.

**Required Verification:**

CONDITIONAL APPROVAL:

- Testing Specification in construction documents
- Pre-construction Submittal: Testing Plan (Testing Plan shall not be prepared by Mechanical Contractor)

FINAL APPROVAL:

- Site visits by AEGB staff.
- Final Testing Report including testing data

**Strategies**

- Follow the Installation Guidelines listed above.
- Involve the testing agent early in the process. If 5 or 6 stories, where Commissioning is required per code, involve the Commissioning agent and the testing agent early to come up with a joint strategy.
- Hold an MEP construction meeting, where a strategy for mechanical, electrical, plumbing and fire installation is laid out for each major dwelling type.
- Perform a mock-up unit of the HVAC installation after ductwork is installed and before drywall is up. Your AEGB representative can do a site visit for the mock-up unit to help trades to understand what the representative will be looking for during site visits.

**Resources**

- [City of Austin Amendments to 2015 IECC](#)
- [Residential Batch Testing Forms](#)
- [Registered Energy Code Testing Companies](#)
- [City of Austin Commissioning Summary Template](#)
- [City of Austin Commissioning Acceptance Form](#)

## 8. Indoor Water Use Reduction

**Intent**

To reduce the environmental and economic impacts associated with water consumption, and lessen the burden on municipal water supply and treatment facilities by increasing water efficiency within the building.

**Requirements**

- Meet the following:
- Private Lavatory Faucet (max. 1.0 gpm)
- Public Lavatory Faucet (max. 0.5 gpm)
- Showerheads (max. 2.0 gpm) (no more than one showerhead installed per shower)
- Public or Private Kitchen Faucet (max. 1.8 gpm)
- Water Closet (max. 1.28 gpf)
- Urinals (max. 0.5 gpf)
- Either no dishwasher installed in each unit OR ENERGY STAR® Dishwasher
- Either no clothes washer is installed in each unit OR washer has a water factor that meets current DOE standards. The standard before January 1, 2018 is: 8.4 WF for top loading and 4.7 WF for front loading (non-compact) machines. The standard beginning January 1, 2018 is: 6.5 WF for top loading and 4.7 WF for front loading (non-compact) machines.

- All dwellings are individually metered (or sub-metered) for water and are billed individually for water usage.
- Complete both tabs of the Building Water Use Reduction Calculator

To calculate Occupant Count for the Building Water Use Reduction Calculator, use the Occupancy Calculator from the Online Rating System in Basic Requirement #3.

Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume of a dual flush toilet is defined as the composite, average flush volume of two reduced flushes and one full flush.

Metering: Central hot water systems are not exempt from metering or sub-metering.

### Required Verification

#### CONDITIONAL APPROVAL:

- Plumbing fixture schedule specifying flush and flow rates
- Appliance and fixture specifications for all water—using appliances and fixtures
- Plumbing plans showing meter locations
- Calculations from the AEGB Building Water Use Reduction Calculator

#### FINAL APPROVAL

- Installed fixture and water-using appliance submittals including water use
- On-site verification by AEGB staff
- Updated Building Water Use Reduction Calculator, if applicable, including actual dishwasher and clothes washer water consumption

### Strategies

- All developments can reduce indoor water usage by either installing the specified water fixtures (lavatory, showerheads and kitchen fixtures) and by installing low-water using ENERGY STAR® clothes washers.
- Low-flow plumbing fixtures including toilets, faucet aerators and showerheads as well as residential water-using appliances have been developed that save substantial amounts of water compared with conventional fixtures and appliances while providing the same utility.
- Sub-metering and charging residents for water instead of including it in rental rates results in an 18 to 39 percent drop in water use. (Source: Sub-metering, RUBS, and Water Conservation, Industrial Economics, Inc., June 1999).

### References

[City of Austin Water Conservation](#)

[City of Austin Ordinance No. 20100624-146](#)

[EPA WaterSense labeled products](#)

[ENERGY STAR® – Residential Dishwashers](#)

[The Consortium for Energy Efficiency \(CEE\) Residential Appliances](#)

[EPA WaterSense labeled High Efficiency Toilets and Faucets](#)

## 9. Outdoor Water Use Reduction

### Intent

To reduce the environmental and economic impacts associated with water consumption, and lessen the burden on municipal water supply and treatment facilities by minimizing potable water use for landscape irrigation.

### Requirements (Residential and Non-Residential Uses)

Complete the AEGB Irrigation Water Use Reduction Calculator. If topsoil is salvaged onsite it should comply with City of Austin Standard Specification 601S for best results.

Note: Projects with landscape area less than 1000 square feet are exempt from the Outdoor Water Use Reduction Basic Requirement. Food gardens may be excluded at the project team's discretion.

### Required Verification

#### CONDITIONAL APPROVAL:

- Landscape design drawings, plant list and planting details
- Irrigation plans indicating the type of irrigation system, calculations of the areas that will require irrigation, and any alternative water systems, as applicable.
- Drawings and narrative describing the captured rainwater system or the recycled site water system with the capacity of the system highlighted (if applicable)
- Draft AEGB Irrigation Water Use Reduction Calculator
- AEGB Rainwater & Condensate Calculator, if applicable

#### FINAL APPROVAL:

- Final AEGB Irrigation Water Use Reduction Calculator
- Final AEGB Rainwater & Condensate Calculator, if applicable.

### Strategies

Potable water used for irrigation can be reduced through a number of methods:

- Retain existing established plant material on a site to drastically reduce the amount of irrigation required to get new plant material healthily established in the site.
- Minimize use of manicured grass.
- Landscape design and plant material choices that are appropriate to the climate will reduce the amount of water required by depending more on the natural rain systems than the irrigation system.
- High-efficiency irrigation systems that include moisture sensors, clock times and weather database controllers are widely available. These "smart" technologies ensure that plant material is being watered only when required and eliminate the waste associated with over-watering.
- Reclaimed water, rainwater, and condensate collection systems can also be of use in reducing the amount of potable water used for irrigation. This water will not be potable but can be used with no or minimal further treatment for irrigation purposes.

### Resources

[Austin Water - Conservation Program](#)

[Austin Water - Xeriscape Plant List](#)

[Austin Watershed Protection Department – Grow Green](#)

[The Irrigation Association](#)

[Texas Water Development Board - Guide to Rainwater Harvesting](#)

[Texas A&M - Rainwater Harvesting \(including calculator\)](#)

[Texas A&M - Texas Evapotranspiration Data](#)  
[U.S. EPA - The WaterSense Water Budget Tool](#)  
[Rainwater Harvesting Information and Resources](#)

## 10. Low VOC Interior Paints and Coatings

### Intent

To reduce the quantity of indoor air contaminants that are damaging to air quality and to the environment and to protect occupant health and comfort of installers and building occupants.

### Requirements (Residential and Non-Residential Uses)

- **All paints, primers, and anti-corrosive coatings** applied on-site to the building interior must not exceed the VOC limit of Green Seal Environmental Standard GS-11, Edition 3.1, 2013, Section 3.4.

Paint Type	VOC Limit(g/L)
Non-flat Topcoat	100
Flat Topcoat	50
Primer or Undercoat	100
Anti-corrosive coating	250

\* The calculation of VOC shall exclude water and colorants added at the point-of-sale.

- **Coatings** applied on-site to the building interior must not exceed the currently effective VOC limits of South Coast Air Quality Management District (SCAQMD) Rule 1113 for clear wood finishes, floor coatings, stains, sealers and shellacs, and all other applicable coatings.

Note: If a specialty product does not have a low VOC option, the project must complete a VOC Budget to account for use of any non-compliant products.

### Required Verification

#### CONDITIONAL APPROVAL:

- Specification identifying applicable VOC limits of all interior paints and coatings applied on site.

#### FINAL APPROVAL:

- Verification that all paints and coatings meet VOC limits. Verification may include product cut sheets, MSDS, or manufacturer letter.
- Tabulation of products using the AEGB Low Emitting Materials Form

### Strategies

If a specialty product does not have a low VOC option, contact your AEGB representative for approval prior to application.

### References

[Green Seal GS-11 Paints and Coatings, Edition 3.1, July 12, 2013](#)  
[South Coast Air Quality Management District - Rule 1113 Architectural Coatings](#)

## 11. Filtration for Indoor Air Quality

### Intent

To provide proper air filtration because it plays an important role in keeping the coils and heat exchangers clean. This helps the HVAC system to work more efficiently, as well as prolong the life of the system. Air filters also help maintain good indoor air quality resulting in improved occupant health.

### Requirements (Residential and Non-Residential Uses)

Filters installed in ventilation systems shall have a minimum efficiency reporting value (MERV\*) rating of 7 or greater.

Note: Ductless systems, such as PTACs and mini-splits, which utilize reusable manufacturer-provided filters, are exempt.

\*MERV is the industry standard rating for air filters that measures their ability to trap particles. The higher the rating, the more efficient the air filter is at trapping particles. A MERV rating of 7 will capture particles as small as 3 microns.

### Required Verification

#### CONDITIONAL APPROVAL:

- Product Specifications

#### FINAL APPROVAL:

- On site verification by AEGB Staff.

### Strategies

Review Resources for possible strategies.

### References

[EPA's Indoor Air Quality](#)

## 12. Storage and Collection of Recyclables

### Intent

To reduce waste generated by building occupants and building operations extending the life of the landfill and saving energy and resources through the recycling process.

### Requirements (Both Residential and Non-Residential Uses)

- Comply with the requirements of the Austin Resource Recovery Universal Recycling Ordinance (URO) (Austin Ordinance No. 20140612-010) regardless of size or type of project.
- Provide appropriately sized, easily-accessible, clearly-marked area(s) dedicated to the separation, storage and collection of the following materials:
  - Paper
  - Cardboard
  - Glass containers
  - Aluminum cans
  - #1 & #2 plastic containers and bottles
  - Bulbs and Batteries (safe storage and recycling of batteries and fluorescent lamps if project is over 100,000 square feet).

- Per the URO, appropriate signage and on-going education about recycling must be provided for all building occupants.
- Recycling must be as convenient as disposal of trash (e.g., trash chute rooms must include a recycling option in the form of either a recycling shoot or recycling containers, or valet recycling collection is offered).

Note: Multifamily properties have a minimum weekly recycling capacity of 6.4 gallons per unit, the equivalent of one 96-gallon cart per 15 units or one cubic yard of dumpster recycling per 32 units.

#### **Required Verification**

##### CONDITIONAL APPROVAL

- Provide a brief narrative of the onsite collection and recycling process.
- Site and floor plans indicating location of trash and recycling collection area(s), including trash rooms and trash chutes.
- For projects >100,000 SF: Provide a site plan indicating collection area for fluorescent bulbs and batteries as well as a narrative describing how these materials will be safely recycled.

##### FINAL APPROVAL

- Complete the online Austin Resource Recovery Plan form and submit confirmation email from ARR
- On-site verification by AEGB staff of labeled recycling containers, and labeled recycling centers.

#### **Strategies**

- Check with City of Austin Code Compliance for a current list of registered garbage and recycling providers.
- The City of Austin, Austin Resource Recovery may have free educational materials, such as stickers and posters to help apartment managers educate their tenants.
- Include information about the recycling program (location, materials accepted, contact information for questions, etc.) in the move-in packet. This can be included in the tenant guidebook.

#### **References**

[Austin Code Compliance – Private Waste & Recycling Hauler Licensing](#)  
[Austin Resource Recovery - Recycling Plan Form](#)  
[City of Austin - Universal Recycling Ordinance \(Amended 04/25/2013\)](#)

## **13. Construction Waste Management**

#### **Intent**

To reduce construction and demolition materials destined for the landfill or incineration facilities by reusing or recycling material, thus furthering the City of Austin's Zero Waste Goals, extending the life of the landfills, and saving energy, resources and costs.

#### **Requirement (Residential and Non-Residential Uses)**

Divert non-hazardous construction and demolition materials, excluding excavated soil, stone, and land clearing debris, from landfills and incinerators. Diverted material must include at least four material streams (i.e. concrete, metal, wood, gypsum wallboard, paper and cardboard, plastic). Maintain tracking

and report weights of material hauled and processed for recycling/salvage and sent to landfill for all material generated during demolition and construction activity associated with the project.

Acceptable strategies include any combination of the following options:

**Option 1:** Divert at least 50% (by weight) of non-hazardous construction and demolition materials, excluding excavated soil, stone, and land clearing debris, from landfill and incineration.

OR

**Option 2:** Recycle and/or salvage non-hazardous construction and demolition materials by sending the project's total commingled waste materials to a mixed-recovery processing facility that has:

- Registered as a Qualified Processor with Austin Resource Recovery as defined in City of Austin Code Chapter 15-6, Article 9 – Construction and Demolition Materials Diversion Program

OR

- Received Recycling Certification Institute's Certification of Real Rates (CORR) or equivalent *qualified third-party verification* of facility-average recycling rates.

#### Definitions:

*Zero Waste* means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to the land, water or air that are a threat to planetary, human animal or plant health.

*Qualified third-party verification* organizations who certify facility average recycling rates include these minimum program requirements:

- The certification organization follows guidelines for environmental claims and third-party oversight, including ISO/IEC Guide 65 or ISO 17065 and relevant portions of the ISO 14000 family of standards.
- The certification organization continually monitors "certified" facilities to ensure that the facilities are operating legally and meeting the minimum program requirements for facility certification and recycling rates.
- Data submitted by the facilities to the certification organization in support of the recycling rate is audited. The audit includes, at a minimum: the evaluation of recyclables sales records, verification of facility sales into commodity markets, monitoring off-site movement of materials, and a review of the facilities' customers weight tags information.
- Facilities submit data to the certification organization that supports the recycling rate, such as a mass balance recycling rate (tons in /tons out) for a twelve month period, or quarterly sorts completed and verified by an independent third party.
- Breakdown of materials (by type and weight), including analysis of supporting data relating to amounts (in tons) and types of materials received and processed by the facility.
- At a minimum, the third-party certifying organization conducts an on-site visit of the Facility for the first year certification, with subsequent site visits occurring at least once every two (2) years, unless additional visits are deemed necessary by the certification organization. The site visit will examine:
  - How materials enter, are measured, deposited, processed/sorted and exit facility.
  - Conduct interviews with key personnel.
  - Confirm equipment types and capacity.
  - Observe and verify load/materials sorting and accuracy.

- Verify use and accuracy of scales, including calibration frequency.
- Recycling rates shall adhere to these requirements:
  - Measurements must be based on weight (not volume), using scales.
  - Recycling rates must be available on a website and viewable by the general public.
- Facility recycling data submitted to certification program will be analyzed for recycling rates using a mass balance formula or quarterly sorts completed and verified by an independent third party entity.
- Final recycling rate will:
  - Include separate recycling rates by material type.
  - Isolate material diverted for alternative daily cover.
  - Isolate material diverted for waste to energy or incineration end-markets.

### Required Verification

#### CONDITIONAL APPROVAL

- Specifications for Construction Waste Management in the contract documents
- Construction Waste Management Plan submitted prior to construction. Plan must address at minimum:
  - Anticipated waste streams
  - Four materials to be diverted from landfill/incinerator
  - Hauler, processor, and landfill/recycler location for each material stream

#### FINAL APPROVAL

- AEGB Construction Waste Calculator. An updated calculator must be provided to AEGB quarterly reflecting the project's current status.
- Weight tickets for all of the waste recycled, salvaged, or sent to the landfill/incineration, as requested

### Strategies

- Employ building materials that are highly recyclable and a construction sequence conducive to maximizing recycling. If the building site has an existing structure, design for reuse of the building or the materials on site.
- If you are considering utilizing a co-mingled construction waste recycling service provider, collect and compare the facility's diversion rates and techniques. Be aware your project's waste may be combined with that of other projects and/or a historic diversion rate for the facility may be used, which may not be your actual diversion rate. On-site separation may be preferable.
- To convert pounds to tons, one ton equals 2,000 pounds.
- The AEGB Construction Waste Calculator contains a volume to weight calculator for converting cubic yards of various materials to pounds.
- Rejected loads due to contamination must be counted as landfill waste instead of recycling even though the intention was to recycle.
- Do not include hazardous materials, i.e. lead and asbestos, or soil and stone removed from site in either total materials removed from site or recycled/landfilled total.

**References**

[U.S. Zero Waste Business Council](#)

[U.S. EPA - Sustainable Management of Construction and Demolition Materials](#)

[Construction Industry Compliance Assistance Center](#)

[Austin Resource Recovery – Construction Material Reuse and Recycling](#)

[Austin Resource Recovery - Solid Waste Services and Waste Reduction Program](#)

[Austin Resource Recovery - Private Waste & Recycling Hauler Licensing](#)

[Austin Materials Marketplace](#)

[Construction and Demolition Recycling Ordinance \(Ord. #20151119-098\)](#)

[Recycling Certification Institute](#)

# TEAM

## Achieving Sustainability Goals through Integrated Design

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### 1. Integrated Project Design

1 point

#### Intent

High performance buildings require integrated design. Set sustainability goals early in the design process to implement the necessary strategies and ultimately achieve a sustainable building. An integrated design offers opportunities for synergies that can reduce costs in the project as a whole.

#### Requirements

- Design phase- Hold design charrette during planning phase of project, set sustainability goals, identify how/where each goal will be achieved and documented, and who is responsible.
- Construction phase:
  - Hold a pre-construction meeting to review sustainability goals and requirements with all sub-contractors involved. This meeting should include discussing required documentation from submittals.
  - Hold an MEP construction meeting, where a strategy for mechanical, electrical, plumbing and fire installation is laid out for each major dwelling type.

#### Required Verification

##### CONDITIONAL APPROVAL

- Meeting minutes from charrette that include; names and roles of all participants, narrative summary of overall green development goals, strategies for achieving those goals, and identification of which team members will be responsible for implementation.

##### FINAL APPROVAL

- Meeting minutes from Pre-construction meeting.
- Meeting minutes from MEP construction meeting

#### References

[Southface Online Training Course – Holding Design Charrettes](#)

[Enterprise Community Green Charrette Toolkit](#)

[Whole Building Design Guide – Design Charrettes](#)

[National Renewable Energy Laboratory – Handbook for Planning and Conducting Charrettes for High-performance Projects](#)

# SITE

## Sustainability through Responsible Site Selection and Development

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### 1. Site Selection

2-6 points

#### Intent

To reduce the impact of population growth in Central Texas, preserve our natural resources, and enhance livability through careful site selection that utilizes existing infrastructure and supports the Imagine Austin Comprehensive Plan.

#### 1.a Environmental Sensitivity (2 points)

##### Requirements

- Project site is not in the Drinking Water Protected Zone, which includes the Barton Springs Zone, Barton Creek Watershed, Edwards Aquifer Recharge and Contributing Zone, and Balcones Canyon Land.

AND

- Project site is not a Greenfield.

#### 1.b Desired Development (2 points)

##### Requirements

Project site is located within the Urban Watershed Desired Development Zone.

#### 1.c Density (2 points)

##### Requirements

Project site is located within one of the defined centers or corridors as defined by the Imagine Austin Comprehensive Plan (IACP) Growth Concept Map.

#### Required Verification

##### CONDITIONAL APPROVAL

- GEO Profile print-out identifying project site location and Watershed Classification from the Watershed Development Map GIS Viewer, including site address
- Pre-construction site description, preferably an Environmental Site Assessment report

#### Definitions

Greenfields are sites not previously developed or graded, beyond that of agriculture or forestry use, and remains in a natural state.

#### Strategies

- Avoid building on undeveloped lands and in environmentally sensitive areas.
- Select a site within the Urban Watershed Desired Development zone and/or the defined centers or corridors as defined by the Imagine Austin Comprehensive Plan Growth Concept Map.

#### References

[City of Austin - Watershed Development Map GIS Viewer:](#)

Open development web map via the web address above. Add the project address into the search bar at the top and click "GO." At the right open the "Development Resources" folder and click on the "Desired Development Zone" box. This will show the drinking water protected zones in yellow and the desired development zones in green.

[City of Austin - Watershed Ordinance Map](#)

[City of Austin - Urban Planning and Design](#)

[City of Austin - Imagine Austin Comprehensive Plan](#)

## 2. Diverse and Walkable Communities

1 point

### Intent

To promote livable, walkable, and bikeable communities, efficient transportation, connectivity, safe pedestrian access, and community-oriented business growth. To protect land and wildlife habitat by encouraging development in areas with existing infrastructure.

### Requirements (Residential and Non-residential Uses)

Building(s) connects with neighboring properties with pedestrian and/or bicycle only paths (shading is preferred) that are separate or protected from vehicular traffic.

Any of the building's functional entrances are located within ½ mile walking distance of at least 10 Basic Services:

Basic Services include, but are not limited to:

1) Bank, 2) Place of Worship, 3) Convenience Grocery, 4) Daycare, 5) Cleaners, 6) Fire Station, 7) Beauty, 8) Hardware, 9) Laundry, 10) Library, 11) Medical / Dental, 12) Senior Care Facility, 13) Park, 14) Pharmacy, 15) Post Office, 16) Restaurant, 17) School, 18) Supermarket, 19) Entertainment Venue, 20) Community Center, 21) Fitness Center, 22) Museum, 23) Retail Store.

Basic services must be accessible via a safe route intended for use by pedestrians that does not require crossing a road more than 5 lanes wide or 35 miles per hour, without a safe pedestrian crosswalk.

Note: Multiples of each service type are accepted.

### Required Verification

#### CONDITIONAL APPROVAL

- Vicinity plan identifying Basic Services, the pedestrian path route and distance to a functional entrance of the project.

### References

[City of Austin - Imagine Austin Comprehensive Plan.](#)

[City of Austin - Subchapter E: Design Standards and Mixed Use](#)

[WalkScore® Maps](#)

*(Identifies basic services and walk distances for a given address)*

[Oregon Bicycle and Pedestrian Planning and Design Manual](#)

[City of Portland, Oregon - 20-Minute Neighborhoods](#)

### 3. Brownfield Redevelopment

1 point

#### Intent

To revitalize communities, utilize existing infrastructures, ease development pressure on undeveloped, open land, and improve and protect the environment by redeveloping Brownfield sites.

#### Requirements

Develop on a site defined as a Brownfield and requiring remediation by a local, state or federal authority (whichever has jurisdiction). Remediation site of contamination using established technologies that have minimal disruption on the site's natural features above and below ground.

#### Required Verification

##### CONDITIONAL APPROVAL

- Provide documentation of the Brownfield classification and verification that remediation efforts occurred by an authority with jurisdiction, after the time of site purchase.

#### Definitions

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

#### Strategies

- Rehabilitate and build on Brownfield sites.

#### Resources

[City of Austin Brownfields Revitalization Office](#)

[Texas Commission on Environmental Quality - Brownfields Site Assessment Program](#)

[U.S. EPA - Preliminary Remediation Goals](#)

[U.S. EPA - Sustainable Redevelopment of Brownfields Program](#)

[U.S. EPA - CERCLA 104 \(k\) information](#)

[2011 CERCLA Priority List of Hazardous Substances](#)

### 4. Site Specific Design

1 point

#### Intent

To reduce the impact of the structures on the environment through an early assessment of site conditions that informs sustainable design decisions.

#### Requirements

Assess site conditions prior to design in order to evaluate sustainable options and design decisions about the building's relationship to the specific site and local environment. Complete and document a site-specific study and incorporate study findings into the building design.

Complete a site survey to evaluate the following conditions:

- Local Climate
- Topography
- Soils
- Hydrology
- Vegetation
- Local habitat
- Human Use

- o Cultural or Historic Significance
- o Site Acoustics

**Required Verification**

CONDITIONAL APPROVAL

- Narrative description of the project’s site-specific design analysis, and individual study reports.
- Demonstrate how the site features influenced the design; or provide reasons for not addressing any of the findings of the analysis.

**References**

- [U.S. DOE-EERE – Whole Building Design Approach](#)
- [City of Austin - Watershed Development Map GIS Viewer](#)
- [City of Austin - Historic Preservation Office list of historic landmarks](#)
- [Sun Path Chart](#)
- [Texas Historical Commission Atlas of historical sites](#)
- [Austin Weather Data](#)
- [Texas Climate Data](#)

**5. Public Transportation**

**1-3 points**

**Intent**

To reduce pollution and development impact from automobile use.

**Requirements**

- **Option 1 (1-3 points)**  
 Locate any functional entry of the project within 1/4 mile walking distance of existing or planned bus stops, or within 1/2 mile walking distance of existing or planned bus rapid transit stops, or rail stations. Planned stops and stations may count if they are funded by the date of the certificate of occupancy (CO) and are anticipated to be complete within 24 months of that date. The transit service in aggregate must meet the weekday and weekend trip minimums listed in Table 1.

**Table 1: Minimum aggregate daily transit service (bus, rapid transit or rail) and associated points**

Weekday Trips	Weekend Trips	Points
72	40	1
144	108	2
360	216	3

Both weekday and weekend trip minimums must be met.

Count trips as follows:

- o Trips are counted only if they are a part of a route with service in opposite directions.
- o Trips in opposite directions are counted separately.
- o Trips of a route that stops more than once within the required walking distance may be counted only once.
- o If the inbound or outbound stops are beyond the walking distance, calculate the average walking distance.
- o Projects must have service every day.

OR

- **Option 2 (1 point)**

Locate any functional entry of the project within 1/4 mile walking distance of existing or planned bus stops serving at least two (2) bus routes, or within 1/2 mile walking distance of existing or planned bus rapid transit stops, or rail stations. Planned stops and stations may count if they are funded by the date of the certificate of occupancy (CO) and are anticipated to be complete within 24 months of that date.

**Required Verification**

CONDITIONAL APPROVAL

- Vicinity plan identifying public transportation stop(s) with the walking distance from the building's entry indicated
- Option 1: Weekday and weekend trip counts for all stops and routes servicing the site

**Strategies**

Select a site near public transportation options.

**Resources**

[Capital Metro – Trip Planner](#)

[City of Austin – Transit Oriented Development Districts](#)

[City of Austin – Transit Oriented Development District locations](#)

[Imagine Austin](#)

## 6. Bicycle Storage

**1 point**

**Intent**

To reduce pollution and development impact from automobile use and improve public health by encouraging bicycle use and reduce the reliance on automobiles. To ensure high-security bicycle storage for tenants and their property.

**Requirements**

Provide Class 1 high-security bicycle parking for 15% of residents and permanent building occupants and provide a safe path from property entrance to bike parking. Provide Class 3 bicycle parking for visitors at a rate of one parking space per 20 dwelling units, but no fewer than 4 spaces. Projects meeting this credit also meet Basic Requirement #3.

Provide bicycle maintenance/tuning area.

As defined in the Transportation Criteria Manual:

Class I - highest security - a completely enclosed parking space which protects the bicycle from inclement weather and designed so that an unauthorized person cannot remove a bicycle from it. Examples of Class I parking include bike lockers for one or two bikes, or locked storage rooms, bike check-in systems under control of an attendant, and bike storage facilities in a parking garage under constant personal or electronic surveillance.

**Required Verification**

CONDITIONAL APPROVAL

- AEGB occupancy calculator to demonstrate total building occupancy and required quantity of securing areas (include in parking count schedule).
- Building and/or site plans indicating bicycle parking locations and capacities and safe bicycle/pedestrian routes.
- Specifications of bicycle securing systems.

FINAL APPROVAL

- Verification of installed path and covered bicycle securing device.

**Strategies**

Refer to Basic Requirement #3 for occupant calculations.

Unused space in parking garages can often be used for storage rooms.

Providing high-security bicycle parking can reduce the need for vehicle parking spaces and the need to own a vehicle.

Constant personal or electronic surveillance must be within 100 feet of parking/storage area.

**References**

- [City of Austin - Transportation Criteria Manual](#)
- [City of Austin - Bicycle and Pedestrian Program](#)
- [City of Austin - Bicycle Route Map](#)
- [BicycleAustin - Bicycle transportation issues in Austin](#)
- [Oregon Bicycle and Pedestrian Planning and Design Manual](#)

**7. Parking Capacity**

**1 point**

**Intent**

To reduce pollution and development impact from automobile use.

**Requirements (Residential and Non-residential Uses)**

Provide parking reductions that are a 20% reduction beyond the minimums defined in LDC 25-6 Appendix-A.

If no new parking is provided in the proposed building the project must demonstrate that parking is provided alternatively. For new construction, quantify and show where the alternative parking will be provided. For an existing building, show where the alternative parking will be provided.

Use Classification	Minimum Off-Street Parking Requirement
Residential Uses Condominium and Multifamily	Efficiency dwelling unit : 1 space 1 bedroom dwelling unit: 1.5 spaces. Dwelling unit larger than 1 bedroom: 1.5 spaces plus 0.5 space for each additional bedroom

City of Austin Land Development Code Ch 25-6, Appendix A: Tables of Off-street Parking and Loading Requirements (partial listing). For non-residential and additional residential uses see Appendix A in References below. Note: Off-street parking may be subject to multipliers based on project location (central business district, for example).

### Required Verification

#### CONDITIONAL APPROVAL

- Schedule associated with the site plan showing the number of parking spaces required and number provided.
- Narrative and calculations for any alternative parking arrangements.
- Shared parking analysis approved by COA/PDRD for site development permit

#### FINAL APPROVAL

- Confirm number of parking spaces installed.

### Strategies

Be sure to check if any parking multipliers apply to your project based on location or investigate other opportunities available (i.e. car sharing programs, etc).

### References

[City of Austin - Land Development Code Ch 25-6-471, Off-street parking and loading](#)

[City of Austin - Parking Enterprise Division](#)

## 8. Electrical Vehicle Charging Stations

1 point

### Intent

To reduce greenhouse gas emissions, air pollution, and other environmental and health impacts that are associated with automobile use.

### Requirements

Install electric vehicle charging station(s) per the requirements and participate in the Austin Energy “Plug-in-EVerywhere” rebate program, if available. Electric Vehicle charging station installation must follow the TDLR Guidelines for Electrical Vehicle Charging Stations. All parking spaces associated with charging stations should be designated with “EV Parking Only” signage.

- **OPTION 1**  
Install a bank of Level 1 outlets, for at least 6% of the total parking spaces.
- **OPTION 2**  
Install Level 2, communicating or non-communicating, electric vehicle charging stations, for at least 3% of the total parking spaces.
- **OPTION 3**  
Install at least one DC Fast Charging electric vehicle charging station.

### Required Verification

#### FINAL APPROVAL

- Plans that identify the location of the Electric Vehicle charging station(s). DC fast requires an approved site plan.
- EV Charging station specifications.

**Definitions**

For EV charging station definitions, see U.S. Department of Energy [Energy Efficiency and Renewable Energy – Alternative Fuels Data Center](#)

**References**

- [Austin Energy Plug-in Partners](#)
- [U.S. Dept. of Energy-EERE: Alternative Fuels Data Center](#)
- [U.S. Dept. of Energy-EERE: Fuel Economy](#)
- [International Energy Agency - Hybrid & Electric Vehicles Charging Equipment Chargepoint Mobile App](#)
- [Texas Department of Licensing and Regulation – Guidelines for Electric Vehicle Charging Stations](#)

**9. Protect and Restore Habitat**

**1 point**

**Intent**

To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

**Requirements**

- Preserve and protect 40% of all portions of the site identified as greenfield area from all development and construction activity.

And

- Restore 20% of all portions of the site identified as previously developed with native or adapted vegetation.

**Required Verification**

CONDITIONAL APPROVAL

- Site plan indicating project boundary, tree protection, and area calculations demonstrating that at least 40% of all greenfield areas are preserved and protected.
- Landscaping plan, including plant list and area calculations, demonstrating that at least 20% of the previously developed areas are vegetated with native or adapted plants.

Green roof areas may be included in the restored area calculations if the plants meet the definition of native/adapted. Wetlands or naturally designed ponds may be included in restored area calculations.

**Definitions**

Greenfield is defined as a parcel of land that is not previously developed or graded, except for agricultural and forestry uses, and remains in a natural state.

Previously developed area is land that previously contained buildings, roadways, parking lots or was graded or altered by direct human activities.

Native or adapted species are plants that are indigenous to Central Texas or adapted to the local climate, and are not considered invasive species or noxious weeds.

**References**

[Austin Watershed Protection Department – Grow Green](#)

**10. Beneficial Open Space**

**1 point**

**Intent**

To create beneficial exterior open space and provide for interaction with the outdoor environment, which will include opportunities for social interaction, recreation and/or physical activities.

**Requirements**

Beneficial Open Space must be exterior space incorporating appropriate shading that is physically or visually accessible and must include shaded, outdoor seating that is accessible to all building occupants for 10% or more of the building's occupants as well as one of the following to qualify:

- Communal site elements that accommodate outdoor dining, meetings, classes or other social activities.
- Pedestrian oriented hardscape; including but not limited to: sidewalks and trails.
- Recreational-oriented areas such as playgrounds, pools, amenity decks, athletic courts or fields.
- Garden space that provides passive recreation opportunities or is dedicated to food growing
- A "Protected or Restored Habitat" that provides elements of human interaction through trail access, viewing platforms or an interpretive signage component.
- Vegetated roofs

**Required Verification**

CONDITIONAL APPROVAL

- Site or landscape plan with calculations of total site area and contributing beneficial open space.

**References**

[City of Austin – Grow Green Native and Adaptive Plant Listings](#)

**11. Heat Island Reduction**

**1 point**

**Intent**

To minimize the effects of heat island on microclimate, wildlife, and human habitat, and improve air quality.

**Requirements**

Comply with either of the following options:

- **OPTION 1**  
Provide any combination of the following strategies for 50% of the site hardscape:

- Paving materials or shade structures with a three-year aged solar reflectance (SR) value of at least 0.28. If three-year aged value information is not available, use materials with an initial SR of at least 0.33 (both gray and white concrete mixes will meet this threshold).
  - New or existing plants that provide shade over hardscape within 10 years of building occupancy
  - -Shade structures covered by energy generation systems, such as solar thermal collectors, and photovoltaic
- **OPTION 2**  
Locate at least 50% of on-site parking spaces underground or in structured parking with a concrete top deck surface, or roof material with a three-year aged SRI of at least 32. If three-year aged value information is not available, use materials with an initial SRI of at least 39 at installation. Parking garages with vegetated roofs or covered by energy generation systems also meet this requirement.

#### Required Verification

##### CONDITIONAL APPROVAL

- Option 1: Site plan with calculations of site hardscape and areas of hardscape meeting one of the qualifying strategies
- Option 2: Building plans and sections identifying structured parking and roof plan indicating qualifying roofing SRI value.

#### References

[Lawrence Berkeley National Laboratory – Cool Materials and Shade Trees](#)

[U.S. EPA – Heat Island Effect](#)

[American Concrete Pavement Association “Albedo: A Measure of Pavement Surface Reflectance”](#)

[Austin Watershed Protection Department – Grow Green](#)

## 12. Light Pollution Reduction

1 point

#### Intent

To preserve nocturnal environments, and increase night sky access by reducing the adverse effects of excessive artificial light outdoors.

#### Requirements

Meet the UPLIGHT and LIGHT TRESPASS requirements given below for the site's Lighting Zone as defined by Illuminating Engineering Society and International Dark Sky Association (IES/IDA) Model Lighting Ordinance (MLO) User Guide (See definitions section for Lighting Zone descriptions).

**UPLIGHT**

- **OPTION 1 - BUG Rating Method**

The Uplight (U) Rating, as defined in IESNA TM-15-11 Addendum A, of all exterior luminaires must not exceed the values in Table 1.

**Table 1**

	LZ0	LZ1	LZ2	LZ3	LZ4
<b>Maximum Uplighting</b>	U0	U1	U2	U3	U4

Lighting in LZ 3 and LZ 4, used solely for uplighting structures, building facades, or landscaping and is automatically turned off from midnight until 6 a.m. may be exempt from the uplight requirements.

OR

- **OPTION 2 - Calculation Method**

The percentage of total exterior fixture lumens emitted above the horizontal -- i.e, greater than 90 degrees from nadir (straight down) -- must not exceed the values in Table 2.

**Table 2**

	LZ0	LZ1	LZ2	LZ3	LZ4
<b>Maximum Lumen Percentage Emitted Above Horizontal</b>	0%	0%	1.5%	3%	6%

**LIGHT TRESPASS**

Meet the requirements of either Option 1 or Option 2 at the property line. For property lines that abut public walkways, bikeways, plazas, and parking lots, the property line may be considered to be 5 feet beyond the actual property line for the purpose of determining compliance. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance.

- **OPTION 1 - BUG Rating Method**

The Backlight (B), and Glare (G) Ratings, as defined in IESNA TM-15-11 Addendum A, of all exterior luminaires must not exceed the values in Table 3.

**Table 3**

	LZ0	LZ1	LZ2	LZ3	LZ4
	<b>Backlight Ratings</b>				
>2 mounting heights from property line	B1	B3	B4	B5	B5
1 to 2 mounting heights from property line	B1	B2	B3	B4	B4
0.5 to 1 mounting height to property line	B0	B1	B2	B3	B3
<0.5 mounting height to property line	B0	B0	B0	B1	B2
	<b>Glare Ratings</b>				
Building-mounted >2 mounting heights from property line	G0	G1	G2	G3	G4
Building-mounted 1 to 2 mounting heights from property line	G0	G0	G1	G1	G2
Building-mounted <0.5 mounting height to property line	G0	G0	G0	G1	G1
Building-mounted <0.5 mounting height to property line	G0	G0	G0	G0	G1
All other luminaires	G0	G1	G2	G3	G4

Orient all luminaires less than two mounting heights from the lighting boundary such that the backlight points toward the nearest lighting boundary line.

OR

- **OPTION 2 - Calculation Method**

The vertical illuminance must not exceed the values in Table 4.

**Table 4**

	LZ0	LZ1	LZ2	LZ3	LZ4
<b>Vertical Illuminance at property line</b>	0.05 fc	0.05 fc	0.10 fc	0.20 fc	0.60 fc

## Required Verification

### FINAL APPROVAL

- Exterior lighting plan and fixture schedule  
Uplight and Light Trespass Option 1: tabulation of luminaires with associated BUG ratings and mounting heights from property line
- Product submittals including zonal lumen distribution with BUG Rating for each luminaire  
Uplight and Light Trespass Option 2:
  - Photometric study of Light Trespass Calculation points may be no more than 5 feet apart.
  - Vertical illuminances must be calculated on vertical planes running parallel to the lighting boundary, with the normal to each plane oriented toward the property and perpendicular to the lighting boundary, extending from grade level to 33 feet above the height of the highest luminaire.
- Product submittals including ISO footcandle chart and photometric data

## Definitions

- LZ 0: No ambient lighting  
Areas where the natural environment will be seriously and adversely affected by lighting. Impacts include disturbing the biological cycles of flora and fauna and/or detracting from human enjoyment and appreciation of the natural environment. Human activity is subordinate in importance to nature. The vision of human residents and users is adapted to the darkness, and they expect to see little or no lighting. When not needed, lighting should be extinguished. LZ-0 typically includes undeveloped areas of open space, wilderness parks and preserves, areas near astronomical observatories, or any other area where the protection of a dark environment is critical.
- LZ 1: Low ambient lighting  
Areas where lighting might adversely affect flora and fauna or disturb the character of the area. The vision of human residents and users is adapted to low light levels. Lighting may be used for safety and convenience but it is not necessarily uniform or continuous. After curfew, most lighting should be extinguished or reduced as activity levels decline. LZ-1 typically includes single and two family residential communities, rural town centers, business parks, and other commercial or industrial/storage areas typically with limited nighttime activity.
- LZ 2: Moderate ambient lighting  
Areas of human activity where the vision of human residents and users is adapted to moderate light levels. Lighting may typically be used for safety and convenience but it is not necessarily uniform or continuous. After curfew, lighting may be extinguished or reduced as activity levels decline. LZ-2 typically includes multifamily residential uses, institutional residential uses, schools, churches, hospitals, hotels/motels, commercial and/or businesses areas with evening activities embedded in predominately residential areas, neighborhood serving recreational and playing fields and/or mixed use development with a predominance of residential uses.
- LZ 3: Moderately high ambient lighting  
Areas of human activity where the vision of human residents and users is adapted to moderately high light levels. Lighting is generally desired for safety, security and/or convenience and it is often uniform and/or continuous. After curfew, lighting may be extinguished or reduced in most areas as activity levels decline. LZ-3 typically includes commercial corridors, high intensity suburban commercial areas, town centers, mixed use areas, industrial uses and shipping and rail yards with high night time activity, high use recreational and playing fields, regional shopping malls, car dealerships, gas stations, and other nighttime active exterior retail areas.
- LZ 4: High ambient lighting  
Areas of human activity where the vision of human residents and users is adapted to high light levels. Lighting is generally considered necessary for safety, security and/or convenience and it is mostly uniform and/or continuous. After curfew, lighting may be extinguished or reduced in some areas as activity levels decline. LZ-4 may be used for extremely unusual installations such as high density

entertainment districts, and heavy industrial uses. (NOTE: Austin currently does not contain areas meeting the LZ4 definition)

**Resources**

[Illuminating Engineering Society and International Dark Sky Association \(IES/IDA\) Model Lighting Ordinance \(MLO\) User Guide](#)  
[Addendum A for IESNA TM-15-11: Backlight, Uplight, and Glare \(BUG\) Ratings: International Dark-Sky Association](#)

**13. Integrated Pest Management**

**1 point**

**Intent**

To preserve the site’s ecological integrity, enhance biodiversity, and protect wildlife, public health and safety through the use of native and adapted plants, physical barriers, and least toxic pest control.

**Requirements**

Develop and implement an Integrated Pest Management (IPM) Plan and program addressing interior and exterior pest management.

- The IPM plan should address the following:
  - IPM program description and scope
  - Responsible party for implementing and operating the IPM Plan
  - Description of pest management strategies including pest identification, monitoring and inspection, evaluation of pest control need, and non-toxic pest control measures (structural, such as mesh barriers and framing borate treatment, biological or other nonchemical options) approved for use on-site
  - When non-toxic options are unreasonable or have been exhausted, define a list of “least toxic” chemical pesticides approved for use on-site. Pesticides that meet the [San Francisco Integrated Pest Management Program's Tier 3 hazard criteria](#) are considered “least toxic”
  - Notification procedure for building occupants when pesticides considered toxic are to be applied on site
  - An appropriate staffing plan including training procedures for maintenance personnel in approved pest management strategies
  - For projects using a third party pest management vendor:
    - Vendor’s pest management contract(s) must include requirements to meet IPM Plan requirements.
    - Vendor’s existing IPM Policy or Program may be used if it meets credit requirements.

**Required Verification**

CONDITIONAL APPROVAL

- Project-specific Integrated Pest Management Plan that addresses indoor and outdoor pest control

FINAL APPROVAL

- IPM contract, if using a third party pest management contractor

### **Strategies**

- IPM takes advantage of all appropriate pest management options. For a good example of handouts for tenants, staff and contractors, see the link below for the Massachusetts IPM Kit for Building Managers.
- The City of Austin & Texas AgriLife Extension's Grow Green fact sheets serve as the most current guide to earth-wise landscaping information for the Austin area and are useful for many of IPM pests, however be sure to research and include other indoor pests, like bed bugs, rodents, etc.

### **Resources**

[City of Austin - Integrated Pest Management \[starting point for exterior IPM Plan\]](#)

[Austin Watershed Protection Department – Grow Green](#)

[Austin Watershed Protection Department – Grow Green Fact Sheets](#)

[The IPM Institute of North America](#)

[U.S. EPA: Pesticides: Controlling Pests](#)

[Massachusetts Integrated Pest Management](#)

[San Francisco Integrated Pest Management Program's Tier 3 hazard criteria](#)

# ENERGY

## Saving Energy, Reducing Emissions, Using Clean Energy

### 1. Building Energy Efficiency

1-12 points

**Intent**

To outperform current minimum energy code requirements such that building energy demand and consumption are reduced, further lowering greenhouse gas emissions and building operating costs.

#### 1.a Building Energy Efficiency Performance Option

**Requirements**

Table 1

Points for energy performance percentage improvements												
<b>Points</b>	1	2	3	4	5	6	7	8	9	10	11	12
<b>Percent Savings</b>	4	6	8	10	12	14	16	18	20	22	24	26

**Commercial Energy Code (5 or 6 stories)**

- Demonstrate at a minimum a 4% improvement in the energy performance (site energy, BTU) of the proposed building compared to a baseline building that complies with ASHRAE 90.1-2013 Appendix G modified with City of Austin Amendments.

AND

- Buildings shall meet prescriptive code requirements of 2015 International Energy Conservation Code, Chapter 4 [CE] including section C402.1.4 U-factor alternative taking into consideration structural framing factor.

**Residential Energy Code (4 stories or less)**

- Demonstrate at a minimum a 4% improvement in the energy performance (site energy, BTU) of the proposed building compared to a baseline building that complies with 2015 International Energy Conservation Code, Section R405 residential standard reference design (SRD) modified with City of Austin Amendments. Baseline building spaces under commercial jurisdiction (e.g., mixed use tenant finish-out, clubhouse, fitness, leasing office) shall comply with ASHRAE 90.1-2013 Appendix G modified with City of Austin Amendments.

AND

- Buildings shall meet prescriptive code requirements of 2015 International Energy Conservation Code, Chapter 4 [RE] including section R402.1.4 U-factor alternative taking into consideration structural framing factor.

Projects pursuing LEED, EnergyStar or other sustainable building ratings in parallel with an Austin Energy Green Building rating shall discuss with AEGB modeling options and obtain approval prior to submitting energy models.

### Required Verification

#### CONDITIONAL APPROVAL

- Narrative describing the building envelope, systems, and energy saving measures incorporated into the building
- Preliminary AEGB Energy Analysis Summary Form workbook, based on construction drawings
- Modeling reports showing inputs and results for SRD/Baseline and Proposed buildings
- Construction documents justifying energy modeling inputs

#### FINAL APPROVAL

- Product specifications, cut sheets, or other documentation (e.g. NFRC stickers) documenting installed envelope materials, mechanical and lighting systems, and appliances
- Final AEGB Energy Analysis Summary Form incorporating revisions based on “as-built” construction
- Updated modeling reports based on “as-built” construction.

### Strategies

- Energy modeling provides opportunities for the design team to evaluate the economics of energy-saving strategies that inform design decisions. Austin Energy offers financial incentives for incorporating energy modeling in the design process from conceptual design through post-occupancy by participation in the *Integrated Modeling Incentive*. Ask your AEGB representative for details.
- Energy modeling software must meet the requirements outlined in ASHRAE 90.1 Appendix G. Qualifying programs include: Carrier HAP, Trane Trace, OpenStudio, BEopt, eQuest, DOE2, EnergyPlus.

### Resources

[2015 IECC with City of Austin Amendments: Ordinance #20160623-099](#)  
[ASHRAE Standards and Guidelines](#)  
[2015 IECC](#)  
[National Institute of Building Sciences - Whole Building Design Guide](#)  
[IRS Qualified Software for Calculating Commercial Building Tax Deductions](#)  
[E Source - Business Energy Advisor](#)  
[Architecture 2030](#)  
[2030 Palette](#)  
[Sefaira](#)  
[OpenStudio](#)  
[BEopt](#)

## 1.b. Building Energy Efficiency Prescriptive Options

1-10 points

### 1. b.1. Cooling Equipment Efficiency (1-2 points)

#### Requirements

All cooling equipment meets one of the following:

- 16 SEER (1 point)
- 17 SEER (2 points)

#### Required Verification

##### CONDITIONAL APPROVAL

- Specifications

##### FINAL APPROVAL

- HVAC submittals indicating installed system in each location

### 1. b.2 Heating System Efficiency (1 point)

#### Requirements

All heating equipment meets one of the following:

- Sealed combustion gas furnace
- ENERGY STAR® labeled heat pump

#### Required Verification

##### CONDITIONAL APPROVAL

- Specifications

##### FINAL APPROVAL

- Product Submittals

### 1. b.3 Water Heaters (1 point)

#### Requirements

All water heaters meet one of the following:

- Hybrid/Heat pump water heaters
- Gas water heater
- Gas Instantaneous Tankless Water Heaters
- Solar Water Heaters
- Central Gas Boilers

#### Required Verification

##### CONDITIONAL APPROVAL

- Specifications

##### FINAL APPROVAL

- Product Submittals

### 1.b.4 Ceiling Fans (1 point)

#### Requirements

Install ENERGY STAR® ceiling fans in all main rooms and bedrooms (not required in walled dining rooms/kitchens).

#### Required Verification

##### CONDITIONAL APPROVAL

- Lighting schedule with ENERGY STAR® fixtures labeled
- Specifications

##### FINAL APPROVAL

- Product submittals

#### Strategies

- In the summer, accompany the ceiling fan use with a two degree rise in thermostat temperature, will save energy by running the air conditioning unit less, but will make occupants feel just as cool.
- In the winter, by reversing the fan to clockwise, the hot air that has risen to the top of the room will be better distributed. Low speed is recommended to avoid drafts.

### 1.b.5 Interior Lighting (1-3 points)

#### Requirements

Choose one of the following:

- Option A: 100% of all indoor lamps are ENERGY STAR®-compliant high efficacy lamps (**1 point**).
- Option B: 20% of all indoor fixtures are LED (**2 points**)
- Option C: 50% of all indoor fixtures are LED (**3 points**)

#### Required Verification

##### CONDITIONAL APPROVAL

- Lighting schedule demonstrating 100% ENERGY STAR® Lamps

##### FINAL APPROVAL

- Product submittals
- On-site verification by AEGB staff

#### Strategies

For LED fixtures, select dimmers recommended by the fixture manufacturer to avoid early lamp burnout.

## 1.b.6 Exterior Lighting (2 points)

### Requirements

100% of parking lighting is LED

#### Required Verification

##### CONDITIONAL APPROVAL

- Lighting schedule demonstrating LED for parking areas

##### FINAL APPROVAL

- Product submittals
- On-site verification by AEGB staff

### Strategies

LEDs can accommodate bi-level controls to offer additional energy savings.

### References

[ENERGY STAR® Products](#)

## 2. High Efficiency Clothes Washers

2 points

### Intent

ENERGY STAR® appliances use less energy, save money and help protect the environment. Energy efficient choices can save families about a third on their energy bills, with similar savings of greenhouse gas emissions, without sacrificing features, style or comfort.

### Requirements

Choose one of the following:

- Option 1: Install in every dwelling unit:
  - ENERGY STAR® or CEE labeled clothes washer
- Option 2: If project is not providing clothes washers in unit, provide ENERGY STAR® or CEE labeled clothes washers in the central laundry.

#### Required Verification

##### CONDITIONAL APPROVAL

- Product specifications documenting that clothes washers are to be ENERGY STAR® or CEE labeled]
- Plans showing location(s) of central laundry facility for Option 2

##### FINAL APPROVAL

- Product submittals with ENERGY STAR® and/or CEE label highlighted.
- On-site verification by AEGB staff that washers are installed.

### References

[ENERGY STAR® Products](#)

[CEE Qualified Washers](#)

### 3. Variable Capacity Systems

2 points

#### Intent

To encourage the use of HVAC systems that most effectively handle the wide range of loads that occurs in dwelling units over the course of a typical day. While standard DX systems run at a fixed speed, cycling off and on to meet the load, variable capacity systems can adjust their compressor speed to expend only the amount of energy required to address the partial load conditions at any given moment. Since this type of system runs at low energy levels for longer periods, it provides precise and stable temperature and humidity control.

#### Requirements

For dwelling units sized less than 1.5 tons per Manual J, install Variable Capacity Systems.

#### Required Verification

##### CONDITIONAL APPROVAL

- Mechanical schedule demonstrating variable speed capacity for units sized less than 1.5 tons per Manual J and number of systems for the site.

##### FINAL APPROVAL

- Mechanical submittals identifying product utilized

#### Strategies

See sizing requirements for Manual J.

#### References

[Air Conditioning Contractors of America \(ACCA\)- Manual J Residential Load Calculation](#)  
[ACCA Approved Manual J Software](#)  
[Air-Conditioning, Heating and Refrigeration Institute](#)  
[Building Science Design Process for Sizing](#)

### 4. District Cooling

1 point

#### Intent

To increase demand for district cooling systems that make energy generation and distribution systems more efficient, increase system reliability, and reduce environmental impacts and greenhouse gas emissions.

#### Requirements

Tie into a district thermal energy system.

#### Required Verification

##### CONDITIONAL APPROVAL

- Construction documents demonstrating the tie from the building into the thermal energy loop

##### FINAL APPROVAL

- Copy of the contract with the thermal energy provider.

#### Strategies

- Contact Austin Energy District Cooling early for assistance in determining how district cooling can meet your needs.

### References

[Austin Energy District Energy Services, On-Site Energy Resources](#)

## 5. Green Energy

**2 points**

### Intent

To reduce the environmental impact (greenhouse gas emissions) associated with fossil fuel energy through the use of grid-source renewable energy technologies.

### Requirements

- **OPTION 1**  
Subscribe to Austin Energy's GreenChoice® program for a minimum one-year and 100% renewable energy contract for the non-dwelling annual electricity use (house meter).

OR

- **OPTION 2**  
Obtain at a minimum a two-year contract for Texas RECs or other national RECs that are Green-e Energy certified for the non-dwelling annual electricity use (house meter).

### Required Verification

#### CONDITIONAL APPROVAL

#### Option 1:

- Letter of intent to pursue Austin Energy GreenChoice®
- Commercial Agreement with Austin Energy GreenChoice®

#### Option 2:

- Calculations indicating the amount of energy to be purchased.
- RECs Contract including name of REC vendor and value of RECs purchased (kWh) and total annual electricity consumption (kWh)

### Strategies

- To calculate the non-dwelling annual electricity use, choose one of these methods:
  - Calculate the non-dwelling annual electricity use as per the mandatory provisions of ASHRAE Standard 90.1-2010 with errata.
  - If an energy model was not performed, sum the square footage of all non-dwelling spaces (e.g., hallways, clubhouse, fitness, office) excluding tenant finish-out and exterior lighting spaces (e.g., parking lot, garage). Estimate the annual electricity use by multiplying by 13.5 kWh/ft<sup>2</sup>-year.\*

\*Source: Lodging median electricity intensity factor, CBECS 2003, Table C14.

**Resources**

- [GreenChoice® - Austin Energy Renewable Power Program](#)
- [EPA's Green Power Partnership - Guide to Purchasing Green Power](#)
- [Green-e - Certified Renewable Energy for your Home or Organization](#)
- [Commercial Buildings Energy Consumption Survey \(CBECS\)](#)

**6. On-Site Renewable Energy**

**1 - 4 points**

**Intent**

To reduce the environmental and economic impacts associated with fossil fuel energy by increasing on-site energy generation through the use of renewable energy technologies (such as photovoltaic panels, solar thermal, and wind turbines).

**Requirements**

Use on-site renewable energy generation to offset building electricity consumption. Points are achieved according to the system size in Table 1.

Table 1: Renewable Energy Generation Points

Renewable Energy Offset				
Points	1	2	3	4
<b>PV System</b>	10 kW	15 kW	20 kW	> 25 kW

Note: PV and Solar Thermal systems must meet the performance requirements of the Austin Energy Photovoltaics Solar Rebate and Solar Water Heater Programs.

**Required Verification**

CONDITIONAL APPROVAL

- Calculations indicating amount of energy to be generated by on-site renewable energy technology (kWh and kW AC). PV Watts is acceptable documentation.

FINAL APPROVAL

- Documentation verifying participation in the Austin Energy PV Solar Rebate and/or Solar Water Heating Programs.

**Strategies**

- Coordinate early with Austin Energy staff to assure that your project meets these requirements. Rebates are available through Austin Energy Power Saver™ Program
- Most participating installers (link below) will have information on federal incentives for renewable energy technologies.

**Resources**

- [Austin Energy Solar Photovoltaics - Commercial and Multifamily Rebates](#)
- [Austin Energy Solar Water Heater Program Guidelines](#)
- [Austin Energy participating installers](#)
- [DSIRE \(Database of State Incentives for Renewables and Efficiency\) - Texas Incentives/Policies for Renewables & Efficiency](#)

## 7. Additional Commissioning

1-3 points

### Intent

To meet the owner's project requirements for energy, water, indoor environmental quality, and durability through comprehensive verification of the design, installation, and performance of energy using building systems and thermal envelope.

### Requirements

- **Option 1 - Comprehensive Commissioning (1 point)**

Designate a Commissioning Authority (CxA) with documented commissioning experience on at least two other building projects with similar scope of work to complete the following commissioning activities in addition to the tasks required under the Building Systems Commissioning Basic Requirement:

- Conduct a review of the design documents prior to 50% Construction Documents but early enough for the CxA's review to be incorporated into the design
- Review contractor submittals
- Verify seasonal testing
- Provide re-commissioning services through the warranty period
- Develop a continuous commissioning plan

AND/OR

- **Option 2 - Thermal Envelope Commissioning (2 points)**

Designate a Commissioning Authority to verify that the building's thermal envelope performs according to the owner's project requirements and shall complete the following commissioning activities in accordance with ASHRAE Guideline 0-2005 and the National Institute of Building Sciences (NIBS) Guideline 3-2012, Building Enclosure Commissioning Process:

- Review contractor submittals
- Verify seasonal testing
- Provide re-commissioning services through the warranty period
- Develop a continuous commissioning plan

### Required Verification

CONDITIONAL APPROVAL

- CxA's Review Report of Design Documents that was provided to the design team
- Final Commissioning Report verifying that the energy systems and if applicable, the building's thermal envelope, operate according to the owner's project requirements
- Continuous Commissioning Plan

### Resources

[Portland Energy Conservation, Inc. – Model Commissioning Plans & Guide Specifications](#)  
[Energy Design Resources - Building Commissioning](#)  
[ASHRAE Guideline 0-2005 "The Commissioning Process"](#)  
[AIA Best Practices - "Building Enclosure Commissioning: An Introduction"](#)  
[WBDG – NIBS Guideline 3-2012 "Building Enclosure Commissioning Process"](#)

# WATER

## Water Conservation, Rainwater Harvesting, Improved Water Quality

### 1. Outdoor Water Use Reduction

1-3 points

**Intent**

To reduce the environmental and economic impacts associated with water consumption, and lessen the burden on municipal water supply and treatment facilities by minimizing potable water use for landscape irrigation.

**Requirements**

Choose one of the options below:

- **OPTION 1 – No Irrigation Required (3 points)**  
Demonstrate that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period.

OR

- **OPTION 2 – Reduce or Eliminate Irrigation (1-3 points)**  
Reduce the project’s potable landscape irrigation water demand by at least 50% from the calculated baseline for the site’s peak watering month as calculated in the AEGB Irrigation Calculator. Points are achieved according to Table 1.

Table 1

Irrigation Water Use Reduction Points			
Points	1	2	3
Percentage water use reduction	50%	75%	100%

The project’s landscape area must be greater than the smaller of 1,000 square feet, or 5% of the total site area, to be eligible for points under this measure. Food gardens may be excluded at the project team’s discretion.

**Required Verification**

CONDITIONAL APPROVAL

- Irrigation plans indicating the type of irrigation system, calculations of the areas that will require irrigation, and any alternative water systems, as applicable
- Landscape plans indicating landscape location and species
- Design narrative describing the following components, as applicable: landscape design, irrigation system, auxiliary water system with the capacity of the system highlighted, and description of why a permanent landscape irrigation system is not necessary
- AEGB Irrigation Calculator
- AEGB Rainwater & Condensate Calculator, if applicable

**Strategies**

Potable water used for irrigation can be reduced through a number of methods.

- o Retaining existing established plant material on a site will drastically reduce the amount of irrigation required to get new plant material healthily established in the site.
- o Minimizing use of manicured grass.
- o Landscape design and plant material choices that are appropriate to the climate will reduce the amount of water required by depending more on the natural rain cycles than the irrigation system.
- o High-efficiency irrigation systems that include moisture sensors, clock timers and weather data-base controllers are widely available. These “smart” technologies ensure that plant material is being watered only when required and eliminate the waste associated with over-watering.
- o Stormwater, rainwater, and condensate collection systems can also be of use in reducing the amount of potable water used for irrigation. This water will not be potable but can be used with no or minimal further treatment for irrigation purposes.

**References**

[Austin Water Conservation Program](#)  
[Austin Water Xeriscape Plant List](#)  
[Austin Watershed Protection Department – Grow Green](#)  
[The Irrigation Association](#)  
[Texas Water Development Board - Guide to Rainwater Harvesting](#)  
[Texas A&M - Rainwater Harvesting \(including calculator\)](#)  
[Texas A&M - Texas Evapotranspiration Data](#)  
[UP EPA - The WaterSense Water Budget Tool](#)

**2. Building Water Use Reduction**

**1- 4 points**

**Intent**

To reduce the environmental and economic impacts associated with water consumption, and lessen the burden on municipal water supply and treatment facilities by increasing water efficiency within the building.

**Requirements (Residential and Non-Residential Uses)**

Demonstrate a reduction in building water use of flush and flow fixtures over the baseline by at least 20% using the AEGB Building Water Use Reduction calculator.

Table 1

Building Water Use Reduction				
Points	1	2	3	4
Percentage Water Use Reduction	20%	25%	30%	35%

To calculate Occupant Count for the Building Water Use Reduction Calculator, use results from the Occupancy Template/calculator from Basic Requirement #3.

The baseline flush and flow rates for standard plumbing fixtures are established by the current ASME/ANSI Standards and City of Austin Ordinance.

Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume of a dual flush toilet is defined as the composite, average flush volume of two reduced flushes and one full flush.

### Required Verification

#### CONDITIONAL APPROVAL

- Draft of AEGB Building Water Use Reduction Calculator
- Provide calculations from the AEGB Rainwater and Condensate Calculator if auxiliary water is used. The calculator should be updated to reflect any changes throughout the project.
- Plumbing fixture schedule specifying flush and flow rates.
- Specifications of all applicable plumbing fixtures.

#### FINAL APPROVAL

- Updated AEGB Building Water Use Reduction Calculator
- Plumbing fixture submittals with flush and flow rates highlighted
- On-site verification by AEGB staff

### Strategies

- Faucet aerators or flow restrictors can be used to further decrease water consumption.
- Rainwater and condensate collection systems can also be of use in reducing the amount of potable water used.

### References

[Austin Water Utility Conservation, City of Austin - Toilet listings and rainwater harvesting](#)  
[EPA WaterSense labeled High Efficiency Toilets and Faucets](#)  
[Texas Guide to Rainwater Harvesting](#)

## 3. Water Efficient Appliances

1-2 points

### Intent

To reduce the environmental and economic impacts associated with water consumption, and lessen the burden on municipal water supply and treatment facilities by increasing appliance water use efficiency.

### Requirements (Residential and Non-residential Uses)

Complete AEGB Building Water Use Reduction Calculator and pick an option below:

- Option 1  
Provide ENERGY STAR® clothes washers in 100% of residential units or demonstrate a minimum of 25% appliance water savings below the baseline (1 point).
- Option 2  
The development does not include clothes washer hook-ups in dwellings and provides a Central Laundry, or demonstrate a minimum of 40% appliance water savings below the baseline (2 points).

### Required Verification

#### CONDITIONAL APPROVAL

- Plans showing dwellings without laundry hook-ups and, if applicable, location of centralized laundry facility
- Specifications for all water-using appliances
- AEGB Building Water Use Reduction Calculator

#### FINAL APPROVAL

- Submittals for all water-using appliances
- On-site verification by AEGB staff

### Strategies

If central laundry facilities are planned, check to see which washers are available for a rebate from the City of Austin.

### References

- [ENERGY STAR® Appliances](#)
- [CEE - Dishwashers](#)
- [CEE – Clothes washers](#)
- [Clothes Washer Water Factors](#)

## 4. Stormwater Management

1 – 2 points

### Intent

To mitigate the impact of development on natural hydrology and ecosystems through green water quality controls for rainwater management.

### Requirements

- **Stormwater Quality (1 point)**  
Use green water quality controls as outlined in ECM 1.6.7 to treat 50% of the Water Quality Volume (WQV).
- **Stormwater Quantity (1 point)**  
Manage a volume of stormwater equal to 50% of the WQV by infiltration on site.

Note: Calculate WQV as defined in the City of Austin Environmental Criteria Manual (ECM 1.6.2A).

### Required Verification

#### CONDITIONAL APPROVAL

- Calculations of total stormwater runoff as provided in the City of Austin Drainage Criteria Manual, and calculations of the WQV as provided in the ECM 1.6.2A
- Drainage Plan showing the stormwater management controls
- Narrative describing contribution of each Best Management Practice (BMP)

### References

- [City of Austin, Environmental Criteria Manual 1.6.2A and 1.6.7](#)
- [City of Austin, Drainage Criteria Manual](#)
- [City of Austin, Watershed Protection – Stormwater Management Program](#)
- [Texas Water Development Board, Innovative Water Technologies](#)
- [LCRA Watershed Ordinance and Best Management Practices](#)



# INDOOR ENVIRONMENTAL QUALITY

## Enhance Occupant Comfort, Health, and Productivity

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### 1. Indoor Chemical & Pollutant Sources

1 point

#### Intent

To support the health, comfort and productivity of building occupants by preventing prolonged exposure to potentially hazardous particulates and chemicals used, generated or stored inside buildings.

#### Requirements

- Identify and isolate pollution point sources, which may include: janitorial closets/rooms, chemical storage, laboratories, large copy rooms or print shops.
- For each space identified as a pollution point source:
  - Provide ventilation directly to the outside of the building
  - Construct a full-height, deck-to-deck partition or a hard lid ceiling enclosure between the space and adjacent occupied spaces
  - Operate the space at a negative pressure relative to surrounding areas under all operating

#### Required Verification

##### CONDITIONAL APPROVAL

- Building plans locating janitorial and chemical storage rooms, laboratories, large copy rooms, print shops, and any other spaces that will be a point source of indoor chemical or particulate pollution.
- Partition schedule, reflected ceiling plan and details indicating the construction type of walls and ceilings in the target spaces.
- Mechanical construction documents demonstrating ventilation and pressure requirements.

##### FINAL APPROVAL

- On-site verification of installed partitions and ventilation systems.

conditions, and verify through commissioning

#### Strategies

Review references for possible strategies

#### References

[EPA - Indoor Air Quality in Large Buildings](#)

[EPA – “Office Equipment: Design, Indoor Air Emissions, and Pollution Prevention Opportunities”](#)

### 2. Green Housekeeping

1 point

#### Intent

Reduce the impact of housekeeping and cleaning products on the environment, building occupants, and maintenance personnel.

#### Requirements

- Develop and implement a housekeeping program, supported by a green cleaning policy that addresses the following:
  - Housekeeping program description and scope.
  - Responsible Party for implementing and operating the housekeeping program.

- o Sustainable purchasing policies for cleaning materials and products, floor finishes and strippers, disposable janitorial paper products, and trash bags. Include a list of approved products and references to required standards described in Tables 1 through 5.
- o An appropriate staffing plan including training procedures for maintenance personnel in the hazards, use, maintenance, and disposal and recycling of cleaning chemicals, dispensing equipment and packaging.
- o For projects using third party housekeeping vendor:
  - Vendor’s housekeeping contract(s) must include requirements to meet Green Housekeeping policy requirements. Vendor’s existing Green Housekeeping Policy or Program may be used if it meets credit requirements.
  - All cleaning products and janitorial products used by vendor must meet requirements described in Tables 1 through 5.
- o Tenant Education Plan: Include information about how tenants will be educated about green housekeeping program. Include information in the Tenant Guidebook, which notifies tenants that they reside in an Austin Energy Green Rated Building. It shall include a narrative about how this building participates in Green Housekeeping methods and what is maintained by the building owner or site manager, as well as tips for residents.

**Table 1: Cleaning Products**

Cleaning Product Type	Standard
Bathroom, glass, carpet, general cleaning	<a href="#">Green Seal (GS-37)</a>
Cleaning and degreasing compounds	<a href="#">UL 2792</a>
Hard surface cleaners	<a href="#">UL 2759</a>
Carpet and upholstery care	<a href="#">UL 2795</a>
Floor care	<a href="#">Green Seal (GS-40)</a>
Hard floor care	<a href="#">UL 2777</a>
Cleaning products	<a href="#">US EPA Safer Choice</a>

**Table 2: Disinfectants, Metal Polish and Other (not addressed elsewhere)**

Product Type	Standard
Digestion additives for cleaning and odor control	<a href="#">UL 2798</a>
Drain or grease traps additives	<a href="#">UL 2791</a>
Odor control additives	<a href="#">UL 2796</a>
Odor removal and other	<a href="#">US EPA Safer Choice</a>
Other	<a href="#">California Code of Regulations</a> (maximum allowable VOC levels)

**Table 3: Disposable Janitorial Paper Products**

Janitorial Paper Product Type	Standard
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Janitorial paper	<a href="#">EPA Comprehensive Procurement Guidelines</a> Or <a href="#">FSC</a> or <a href="#">SFI</a> Certification Or Made from rapidly renewable sources or tree-free fibers
Napkins, hand towels, and sanitary paper	<a href="#">Green Seal (GS-01)</a> or <a href="#">UL 175</a>

**Table 4: Disposable Janitorial Plastic Products**

Product Type	Standard
Plastic trash bags	<a href="#">EPA Comprehensive Procurement Guidelines</a> Or <a href="#">California Integrated Waste Management Certification</a>

**Table 5: Hand Soaps and Sanitizers**

Product Type	Standard or Requirement
Antimicrobial agents	<u>Prohibited</u> except as a preservative and where required by health codes and other regulations (e.g., food service and health care)
Industrial and institutional hand cleaners	<a href="#">Green Seal (GS-41)</a>
Hand cleaners and hand soaps	<a href="#">UL 2784</a>
Hand sanitizers	<a href="#">UL 2783</a>
Hand soaps and sanitizers	<a href="#">US EPA Safer Choice</a>

**Required Verification**

CONDITIONAL APPROVAL

- Green Cleaning Policy addressing all measure requirements.

FINAL APPROVAL

- Verification of contract with third party housekeeping vendor, if applicable.
- Final draft of tenant guidebook section.

## References

[Green Seal Standards \(GS-14\)](#)  
[EPA - Safer Choice](#)  
[ISSA - Guide to Green Cleaning Products](#)  
[California Air Resources Board – California Code of Regulations, Article 2- Regulation for Reducing Emissions from Consumer Products](#)  
[EPA - Comprehensive Procurement Guidelines](#)  
[Forest Stewardship Council \(FSC\)](#)  
[Sustainable Forest Initiative \(SFI\)](#)  
[CalRecycle Recycled-Content Trash Bag Program](#)  
[UL Environment Sustainability Standards](#)

## 3. Daylighting

1 point

### Intent

To promote a healthy, productive and comfortable indoor environment by providing a connection to the outdoors; and to reduce environmental and economic impacts associated with energy use by integrating daylighting systems, electric lighting systems and controls.

### Requirements

For all luminaires in daylight zones, install and commission controls capable of automatically reducing the lighting power in response to available daylight by either:

- Continuous dimming using dimming ballasts and daylight-sensing automatic controls that is capable of reducing the power of general lighting in the daylight zone continuously to less than 35% of rated power at maximum light output.
- Stepped dimming using multi-level switching and daylight-sensing controls that are capable of reducing light power automatically. The system shall provide a minimum of two control steps such that at least one step is between 50 and 70% of design lighting power, and another step that is no greater than 35% of design power.

Luminaires in residential dwelling and sleeping units are excluded.

### Required Verification

#### CONDITIONAL APPROVAL

- Electrical lighting plans with daylight zones marked, luminaires in those zones, specification of photo-sensing control, and indication of which luminaires are controlled by which controls.
- Narrative highlighting the methods used to provide sufficient daylighting for the tasks, and identifying the light levels that will activate dimming controls.

#### FINAL APPROVAL

- Commissioning documentation indicating that the daylight controls have been commissioned.

### Definitions

Daylight zones are defined as the areas adjacent to vertical fenestration or under skylights that receives daylight through the fenestration. Dimensions of daylight zones are as follows (unless detailed analysis is provided):

- Adjacent to vertical fenestration: The daylight zone depth is assumed to extend 15 feet into the space from the plane of the window, or to the nearest ceiling height partition, whichever is less. The daylight zone width is assumed to be the width of the window plus 2 feet on each side, or the window width plus the distance to an opaque partition, or the window width plus one-half the distance to adjacent skylight or vertical fenestration, whichever is least.

- Under skylights: The horizontal dimension of the daylight zone under a skylight in each direction is equal to the skylight dimension in that direction plus either the floor-to-ceiling height or the dimension to a ceiling height opaque partition, whichever is less.

#### References

[U.S. Department of Energy EERE - Daylighting Design Guide](#)  
[Whole Building Design Guide - Daylighting](#)  
[Whole Building Design Guide - Electric Lighting Controls](#)

## 4. Views to Outside

1 point

#### Intent

To create a healthy, productive, and comfortable indoor environment for building occupants by providing a connection to the outdoor environment.

#### Requirements (Residential and Non-residential Uses)

Glazing systems and interior partitions allow for a minimum of 90% of regularly occupied spaces a view of vision glazing (between 2'-6" and 7'-6" from finished floor height) and a view of the outdoors.

#### Required Verification

##### CONDITIONAL APPROVAL

- Calculations indicating that areas with uninterrupted views to the outside encompass 90% of regularly occupied space (not including copy rooms, storage areas, mechanical, laundry, bathrooms, corridors and other support areas).

##### FINAL APPROVAL

- On-site verification by AEGB staff.

#### Strategies

Review references for possible strategies.

#### References

[U.S. Department of Energy EERE - Daylighting Design Guide](#)  
[Whole Building Design Guide - Daylighting](#)  
[Whole Building Design Guide - Electric Lighting Controls](#)

## 5. Low-Emitting Materials

1-5 points

#### Intent

To reduce the quantity of indoor air contaminants that are damaging to air quality and to the environment, and to protect the health and comfort of installers and building occupants.

#### Requirements

Meet the requirements for the low-emitting materials categories as given in the sections below. One point is awarded for each category, up to a maximum of five points.

**5a. Interior Sealants and Adhesives (1 point)**

All sealants and adhesives applied on-site to building interior must not exceed the currently effective VOC limits of South Coast Air Quality Management District (SCAQMD) Rule 1168. If a specialty product does not have a low VOC option, contact your AEGB representative for approval prior to application.

**5b. Composite Wood and Agrifiber Products (1 point)**

All installed composite wood and agrifiber products must meet one of the options below:

- o OPTION 1: Do not contain any added formaldehyde resins, including urea formaldehyde, phenol formaldehyde, and urea-extended phenol formaldehyde  
OR
- o OPTION 2: Meet emission requirements for ultra-low-emitting formaldehyde (ULEF) resins as defined in California Air Resources Board Airborne Toxic Control Measure (ATCM) to Reduce Formaldehyde Emissions from Composite Wood Products

Composite wood and agrifiber products include: particleboard, medium density fiberboard (MDF), wheatboard, strawboard, panel substrates, door cores, and plywood.

**5c. Insulation (1 point)**

All installed insulation must contain no added formaldehyde resins, including urea formaldehyde, phenol formaldehyde, and urea-extended phenol formaldehyde.

**5d. Ceiling and Wall Systems (1 point)**

All gypsum board, acoustical ceiling systems, and wall coverings installed in the building interior must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1–2010, using the applicable exposure scenario.

**5e. Exterior Applied Products (1 point)**

All paints, primers, and anti-corrosive coatings applied on-site to the building exterior must not exceed the VOC limit of Green Seal standard GS-11 Edition 3.1, 2013, Section 3.4. All coatings, adhesives, and sealants applied on-site to the building exterior must not exceed the currently effective VOC limits of South Coast Air Quality Management District (SCAQMD) Rule 1113 and Rule 1168. If a specialty product does not have a low VOC option, contact your AEGB representative for approval prior to application.

Paint Type	VOC Limit(g/L)
Non-flat Topcoat	100
Flat Topcoat	50
Primer or Undercoat	100
Anti-corrosive coating	250

\* The calculation of VOC shall exclude water and colorants added at the point-of-sale.

### Required Verification

#### CONDITIONAL APPROVAL

- Project specifications identifying applicable VOC limits, certification, testing, composition, and/or emissions criteria as established in measure requirements for all products and materials within the scope of options pursued by the project

#### FINAL APPROVAL

- Verification that installed products and materials meet VOC limits, certification, testing, composition and/or emissions criteria, as requested. Verification may include product cut sheets, MSDS, manufacturer letter, and approved third party certifications.
- Tabulation of products using the AEGB Low Emitting Materials Form.

### Reference

[South Coast Air Quality Management District - Rule 1168 Adhesive and Sealant Applications](#)  
[South Coast Air Quality Management District - Rule 1113 Architectural Coatings](#)  
[Carpet & Rug Institute - Green Label Plus approved products](#)  
[FloorScore® - Certified resilient flooring products](#)  
[California Air Resources Board Airborne Toxic Control Measure \(ATCM\) to Reduce Formaldehyde Emissions from Composite Wood Products](#)  
[CDPH Standard Method for the Testing and Evaluation of VOC Emissions from Indoor Sources Using Environmental Chambers v1.1 – February 2010](#)  
[Green Seal GS-11 Paints and Coatings, Edition 3.1, July 12, 2013](#)  
[SCS Indoor Advantage & Indoor Advantage Gold](#)  
[GREENGUARD Certification Product Guide](#)  
[CHPS High Performance Product Database](#)  
[Healthy Building Network – “Alternative Resin Binders for Particleboard, Medium Density Fiberboard \(MDF\), and Wheatboard”](#)  
[GreenSeal - “Particleboard and Medium Density Fiberboard”](#)

## 6. Flooring Systems

1-2 points

### Intent

To reduce the quantity of indoor air contaminants that are damaging to air quality and to the environment, and to protect the health and comfort of installers and building occupants.

### Requirements

For bedroom and living space floor systems, install at least one flooring system for 1 point or all flooring systems installed meet the requirements for 2 points. All adhesives and sealants must meet the requirements of IEQ #5. All coatings must meet the requirements if BR #10.

Flooring systems options listed below:

- All carpet must be Green Label Plus certified. All carpet cushions must be Green Label certified. All carpet adhesives must have VOC content of 50 g/L or less.
- All vinyl, linoleum, laminate flooring, and rubber flooring must be FloorScore® certified.
- Real wood flooring installed
- All engineered wood, bamboo and cork flooring must contain no added formaldehyde resins.
- Concrete, and/or ceramic tile

### Required Verification

#### CONDITIONAL APPROVAL

- Specification for flooring systems.

#### FINAL APPROVAL

- Approved submittals for carpets with Green Label Plus certification, carpet cushions with Green Label certification, and hard surface flooring with FloorScore® certification.
- Tabulation of products using the AEGB Low Emitting Materials Form.

### References

[Green Label Plus Approved Products - Carpet & Rug Institute](#)  
[Certified hard flooring products – FloorScore®:](#)

## 7. Humidity and Control

1-2 points

### Intent

To regulate indoor humidity at the source to help prevent mold and mildew growth and improve thermal comfort.

### Requirements

- **Option 1** - Humidity is controlled by BOTH the following measures **(1 point)**  
Exhaust fans are vented to the outside for 100% of dwellings in the following locations:
  - above cooktop/stove
  - any room with a tub or shower, and any bathroom (with shower or tub) fan connected to a timer or humidistat.
- **Option 2** - Install a thermostat w/hygrometer in each unit **(1 point)**.

Note: It is not sufficient to rely on natural ventilation for this credit.

### Required Verification

#### CONDITIONAL APPROVAL

- Plans showing locations of exhaust fans to the outside
- Exhaust fan and thermostat specifications

#### FINAL APPROVAL

- On-site verification by AEGB staff on final inspection

## 8. Outdoor Pollutant Control

1 point

### Intent

To support the health and comfort of building occupants by minimizing exposure to potentially hazardous particulates and chemical pollutants.

### Requirements (Residential and Non-residential Uses)

Option 1: NO SMOKING

- Prohibit smoking in the building and on the entire property, including within residential units. The prohibition must be communicated in building rental or lease agreements, or condo or coop association covenants and restrictions. Make provisions for enforcement.
- Install appropriate signage to clearly designate smoking is not permitted on the property. Signage must be posted within 10 feet (3 meters) of all building entrances indicating the no-smoking policy.
- Install permanent entryway systems (grills, grates, mats), a minimum 6 feet long (10 feet recommended), in the primary direction of travel to capture dirt from entryways directly connected to the outdoors.

In addition to tobacco smoke, evaluate and design to mitigate the impact of any other outdoor air pollutant sources as applicable to the project site.

#### Option 2: DESIGNATED SMOKING AREAS

- Non-residential uses:
  - Prohibit smoking inside and outside the building except in designated smoking areas located outside and at least 30 feet from all building entrances, outdoor air intakes, and operable windows. Air intakes shall meet the minimum separation distance requirements of ASHRAE 62.1-2004, Table 5-1.
  - Install appropriate signage to clearly designate where smoking is permitted and not permitted. Signage must be posted within 10 feet (3 meters) of all building entrances indicating the no-smoking policy.

In addition to tobacco smoke, evaluate and design to mitigate the impact of any other outdoor air pollutant sources as applicable to the project site.

- Residential Uses:
  - Common Areas
    - Prohibit smoking inside all common areas of the building. The prohibition must be communicated in building rental or lease agreements, or condo or coop association covenants and restrictions. Make provisions for enforcement.
    - Entrances, operable windows, balconies, and fresh air intakes shall be located a minimum 30 feet away from designated smoking areas and air intakes shall meet the minimum separation distance requirements of ASHRAE STD. 62.1-2004, Table 5-1.
    - Install appropriate signage to clearly designate where smoking is permitted and not permitted. Signage must be posted within 10 feet (3 meters) of all building entrances indicating the no-smoking policy.

#### Residential Units

- Each unit must be compartmentalized to prevent excessive leakage between units.
- Weather-strip all exterior doors and operable windows in the residential units to minimize leakage from outdoors.
- Weather-strip all doors leading from residential units into common hallways.
- Minimize uncontrolled pathways for the transfer of smoke and other indoor air pollutants between residential units by sealing penetrations in the walls, ceilings, and floors and by sealing vertical chases (including utility chases, garbage chutes, mail drops, and elevator shafts) adjacent to the units.
- Demonstrate a maximum leakage of 0.23 cubic feet per minute per square foot at 50 Pa of enclosure (i.e., all surfaces enclosing the apartment, including exterior and party walls, floors, and ceilings).

In addition to tobacco smoke, evaluate and design to mitigate the impact of any other outdoor air pollutant sources as applicable to the project site.

#### Building Entrances

- Install permanent entryway systems (grills, grates, mats), a minimum 6 feet long (10 feet recommended), in the primary direction of travel to capture dirt from entryways directly connected to the outdoors.

### Required Verification

#### CONDITIONAL APPROVAL

- Building and/or site plans indicating the location and signage of the smoking areas, and the 30 foot radius around all entrances, operable windows and air intakes.
- Testing reports for residential unit leak testing
- Entrance plans, details and cut sheets describing the entryway system.
- Mechanical designer should provide a narrative identifying outdoor air pollutant sources in accordance with ASHRAE STD. 62.1-2004, Sections 4.1, 4.2, and 4.3.
- Narrative of design strategies to mitigate air borne contaminants from the outdoors, and supporting documentation for the implementation of these strategies as applicable.

#### FINAL APPROVAL

- On-site verification by AEGB staff of filters, entryway systems and designated smoking areas and/or copy of smoke-free housing policy, if applicable.

### Strategies

- Design entryway systems to include permanently installed grates, grilles, or slotted systems that allow for cleaning underneath.
- Roll-out mats are only acceptable when maintained on a weekly basis by a contracted service organization.

### References

[City of Austin Smoking in Public Places Ordinance No. 050303-05](#)

[Live Tobacco Free Austin](#)

[US EPA - IAQ Design Tools for Schools, Controlling Pollutants and Sources](#)

[US EPA - I-BEAM Text Modules, Fundamentals of IAQ in Buildings](#)

## 9. Construction Indoor Air Quality

1 point

### Intent

To prevent the introduction of potentially hazardous contaminants into the building during construction; and to protect the comfort and well-being of construction workers and building occupants.

### Requirements (Residential and Non-residential Uses)

Develop and implement a Construction Indoor Air Quality Management Plan that meets or exceeds the recommended control measures of the Sheet Metal and Air Conditioning National Contractor's Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction. The plan should include each of these key areas of IAQ protection: Scheduling, Source Control, HVAC Protection, Pathway Interruption, and Housekeeping.

If permanently installed air handlers are used during construction, filtration media with a minimum MERV of 8 shall be used at each return grille. Replace all media filters immediately prior to occupancy with a minimum of MERV 7.

### **Required Verification**

#### CONDITIONAL APPROVAL

- Construction IAQ Management Plan

#### FINAL APPROVAL

- Photographs of on-site construction IAQ measures, such as duct protection and on-site storage of absorptive materials
- Cut sheets of filtration media used during construction with MERV values highlighted.
- On-site verification by AEGB staff, as schedule permits

### **Strategies**

Review references for possible strategies.

### **References**

[IAQ Guidelines for Occupied Buildings Under Construction - Sheet Metal and Air Conditioning National Contractor's Association:](#)

# MATERIALS & RESOURCES

## Sustainable Material Choices, Use and Disposal

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### 1. Additional Construction Waste Management

1 point

#### Intent

To reduce construction and demolition materials destined for the landfill or incineration facilities by reusing or recycling material, thus furthering the City of Austin's Zero Waste Goals, extending the life of the landfills, and saving energy, resources and costs

#### Requirement (Residential and Non-Residential Uses)

Divert non-hazardous construction and demolition materials, excluding excavated soil, stone, and land clearing debris, from landfills and incinerators. Diverted material must include at least four material streams (i.e. concrete, metal, wood, gypsum wallboard, paper and cardboard, plastic). Maintain tracking and report weights of material for recycling/salvage and sent to landfill for all material generated during demolition and construction activity associated with the project.

Acceptable strategies include any combination of the following options:

**Option 1:** Divert at least 75% (by weight) of non-hazardous construction and demolition materials, excluding excavated soil, stone, and land clearing debris, from landfill and incineration.

OR

**Option 2:** Recycle and/or salvage non-hazardous construction and demolition materials by sending the project's total commingled waste materials to a mixed-recovery processing facility that has:

- Registered as a Qualified Processor with Austin Resource Recovery as defined in City of Austin Code Chapter 15-6, Article 9 – Construction and Demolition Materials Diversion Program

OR

- Received Recycling Certification Institute's Certification of Real Rates (CORR) or equivalent *qualified third-party verification* of recycling rates.

#### Definitions:

*Zero Waste* means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to the land, water or air that are a threat to planetary, human animal or plant health.

*Qualified third-party verification* organizations who certify facility average recycling rates include these minimum program requirements:

- The certification organization follows guidelines for environmental claims and third-party oversight, including ISO/IEC Guide 65 or ISO 17065 and relevant portions of the ISO 14000 family of standards.

- The certification organization continually monitors “certified” facilities to ensure that the facilities are operating legally and meeting the minimum program requirements for facility certification and recycling rates.
- Data submitted by the facilities to the certification organization in support of the recycling rate is audited. The audit includes, at a minimum: the evaluation of recyclables sales records, verification of facility sales into commodity markets, monitoring off-site movement of materials, and a review of the facilities’ customers weight tags information.
- Facilities submit data to the certification organization that supports the recycling rate, such as a mass balance recycling rate (tons in /tons out) for a twelve month period, or quarterly sorts completed and verified by an independent third party.
- Breakdown of materials (by type and weight), including analysis of supporting data relating to amounts (in tons) and types of materials received and processed by the facility.
- At a minimum, the third-party certifying organization conducts an on-site visit of the Facility for the first year certification, with subsequent site visits occurring at least once every two (2) years, unless additional visits are deemed necessary by the certification organization. The site visit will examine:
  - How materials enter, are measured, deposited, processed/sorted and exit facility.
  - Conduct interviews with key personnel.
  - Confirm equipment types and capacity.
  - Observe and verify load/materials sorting and accuracy.
  - Verify use and accuracy of scales, including calibration frequency.
- Recycling rates shall adhere to these requirements:
  - Measurements must be based on weight (not volume), using scales.
  - Recycling rates must be available on a website and viewable by the general public.
- Facility recycling data submitted to certification program will be analyzed for recycling rates using a mass balance formula or quarterly sorts completed and verified by an independent third party entity.
- Final recycling rate will:
  - Include separate recycling rates by material type
  - Isolate material diverted for alternative daily cover
  - Isolate material diverted for waste to energy or incineration end-markets

### Required Verification

#### CONDITIONAL APPROVAL

- Specifications for Construction Waste Management in the contract documents
- Construction Waste Management Plan submitted prior to construction. Plan must address at minimum:
  - Anticipated waste streams
  - Four materials to be diverted from landfill/incineration
  - Hauler, processor, and landfill/recycler location for each material stream

#### FINAL APPROVAL

- AEGB Construction Waste Calculator. An updated calculator must be provided to AEGB quarterly reflecting the projects’ current status.
- Weight tickets for all of the waste recycled, salvaged, or sent to the landfill, as requested

### Strategies

- Employ building materials that are highly recyclable and a construction sequence conducive to maximizing recycling. If the building site has an existing structure, design for reuse of the building or the materials on site.

- If you are considering utilizing a co-mingled construction waste recycling service provider, collect and compare the facility’s diversion rates and techniques. Be aware your project’s waste may be combined with that of other projects and/or a historic diversion rate for the facility may be used, which may not be your actual diversion rate. On-site separation may be preferable.
- To ensure you have the inputs required for the AEGB Construction Waste Calculator, weight tickets or recycling reports should list:
  - Date
  - Hauler or subcontract hauler and processor
  - Destination (landfill or recycler)
  - Amount of each material recycled, salvaged or reused (sheetrock, wood, concrete, cardboard, plastics, etc.)
  - Amount of materials not recycled, such as rejected loads of contaminated recycling and dump
- To convert pounds to tons, one ton equals 2,000 pounds.
- Rejected loads due to contamination must be counted as landfill waste instead of recycling even though the intention was to recycle.
- Do not include hazardous materials, i.e. lead and asbestos, or soil and stone removed from site in either total materials removed from site or recycled/landfilled total.

**References**

[U.S. Zero Waste Business Council](#)  
[U.S. EPA - Sustainable Management of Construction and Demolition Materials](#)  
[Construction Industry Compliance Assistance Center](#)  
[Austin Resource Recovery – Construction Material Reuse and Recycling](#)  
[Austin Resource Recovery - Solid Waste Services and Waste Reduction Program](#)  
[Austin Resource Recovery - Private Waste & Recycling Hauler Licensing](#)  
[Austin Materials Marketplace](#)  
[Construction and Demolition Recycling Ordinance \(Ord. #20151119-098\)](#)  
[Recycling Certification Institute](#)

**2. Building Material Use Reduction**

**1 - 3 points**

**Intent**

To extend the life cycle of the existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials, manufacturing, and transport.

**Requirements**

- **Option 1 – Existing Building Reuse (1- 3 points)**  
 Retain existing non-hazardous building envelope (including exterior skin and framing, excluding window assemblies and non-structural roofing material), structure (including structural floor and roof decking), and interior non-structural elements (walls, doors, floor coverings and ceiling surfaces). Points will be achieved according to Table 1.

Table 1

Points for Existing Building Reuse			
Points	1	2	3
Percentage of Building Surface Area	20%	40%	60%

- **Option 2 - Cradle to Cradle Certified Products (2 points)**

Install Cradle-to-Cradle v2 or v3 Silver or higher certified materials or products representing 2.5% of total building materials cost (excluding MEP), or 5 unique Cradle-to-Cradle v2 or v3 Silver or higher certified products (all divisions). Furniture may be included at the discretion of the project team.

**Required Verification**

CONDITIONAL APPROVAL

Option 1

- Plans and elevations indicating pre-construction existing building shell and structure, building interior elements and intended area to be preserved.
- Calculations from the AEGB Building Reuse Calculator.

Option 2

- Specifications identifying products with Cradle-to-Cradle v2 or v3 Silver, or higher certification

FINAL APPROVAL

Option 2

- Cut sheets or submittals of Cradle-to-Cradle certified products installed on project.
- Calculations from the AEGB Building Materials Calculator, or list of 5 Cradle-to-Cradle certified products.

**References**

[Building Reuse Case Studies - Smart Growth Network](#)

[AIA Guide to Building Life Cycle Assessment in Practice](#)

[Athena Sustainable Materials Institute - Athena Impact Estimator for Buildings](#)

(Free LCA software for building assembly Life Cycle Assessment)

[Cradle-to-Cradle - Certified Products Database](#)

[U.S. Department of the Interior – The Secretary of the Interior’s Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings](#)

[U.S. Department of the Interior – The Secretary of the Interior’s Standards for Rehabilitation](#)

[U.S. General Services Administration – Historic Buildings Preservation Technical Resources](#)

### 3. High Performance Envelope

**1 point**

**Intent**

Use long-lasting alternatives to wood in exterior walls to decrease dependence on forest products or use multifunctional 3-in-1 products which reduce materials used to ensure that insulation systems are continuous, minimize opportunities for thermal transfer, and reduce air infiltration through the exterior walls.

**Requirements (Residential and Non-residential Uses)**

Exterior walls (minimum of 50% of surface area) are constructed of material other than stick frame construction (e.g. Structural Insulated Panels (SIP), Insulated Concrete Forms (ICF), and Autoclaved Aerated Concrete (AAC)). Or reduce materials consumed by using three-in-one sheathing products (insulative, structural, and weather barrier).

**Required Verification**

CONDITIONAL APPROVAL

- Plans and specifications including insulating value (R-value) of materials

FINAL APPROVAL

- On-site verification by AEGB staff

### Strategies

Review references for possible strategies.

### References

[Structural Insulated Panel Association](#)

[Insulating Concrete Form Association](#)

[Home Innovation Research Labs-Autoclaved Aerated Concrete](#)

## 4. Durable Floor Materials

1-2 points

### Intent

Floors constructed of durable, long-lasting materials, will not need replacement as often as non-durable products, thus reducing landfilled materials and future costs and time associated with flooring repair and removal between residents. Durable floors also help maintain good indoor air quality.

### Requirements (Residential and Non-residential Uses)

Floor is durable material (e.g. concrete, stone, brick, and ceramic tile) for a minimum of

- 50% of all flooring (1 point)
- 100% of all flooring (2 points)

Other flooring materials accepted as durable: wood, linoleum, strand bamboo, and manufactured wood.

### Required Verification

#### CONDITIONAL APPROVAL

- Plans with description of flooring area
- Floor area calculation matrix including the sum of all flooring materials.

#### FINAL APPROVAL

- On-site verification by AEGB staff

### Strategies

Avoid using flooring materials not considered durable, such as carpet, vinyl sheet or plank, VCT, rubber, and bamboo (except strand bamboo).

## 5. Sustainably Sourced Materials

1 - 6 points

### Intent

To reduce the environmental burdens of materials and products acquired to construct buildings and to upgrade building services and help support the State economy.

### Requirements

#### 5a. Performance Option (1-6 points):

Use at least 25% (dollar value) permanently installed materials and products that meet at least one of the criteria below.

- Salvaged or refurbished materials.
- Building materials contain recycled content (the sum of post-consumer recycled content plus one-half of the pre-consumer content).
- Building materials and products are extracted and/or manufactured (final assembly) regionally within Texas.

Points will be achieved according to Table 1.

Table 1

Points for Sustainably Sourced Material						
Points	1	2	3	4	5	6
Percentage of Sustainably Sourced Material	25%	35%	45%	55%	65%	75%

Mechanical, electrical and plumbing components as well as specialty items should not be included in the calculations. Furniture may be included at the discretion of the project team.

**5b. Prescriptive Option (1-3 points)**

One point will be awarded for each of the following, up to three points:

- o Texas Sourced – A minimum of 2 of these items are extracted and/or manufactured in Texas: gypsum board, insulation, cabinets, doors, studs, or flooring (1 point)
- o Recycled Content – A minimum of 2 of these items contain recycled content of at least 20% (the sum of post-consumer recycled content plus one-half of the post-industrial content): gypsum board, insulation, cabinets, counters, doors, sheathing, flooring, windows, siding, roofing (1 point)
- o Salvaged Materials – Use salvaged materials for 25% of flooring or cabinets (1 point)

**Required Verification**

CONDITIONAL APPROVAL

- Specifications identifying sustainably-sourced material goals
- For performance option, calculations from the AEGB Building Materials Calculator.
- Narrative identifying the source of salvaged materials and calculation of replacement costs.
- Verification of individual material’s sustainably sourced criteria, as requested.

**References**

- [Building Materials Reuse Association - Salvaged Building Materials Business Directory](#)
- [Austin Habitat for Humanity - ReStore Salvaged Building Materials Outlet](#)
- [PlanetReuse – Salvaged Material Broker and Online Marketplace](#)
- [EPA Comprehensive Procurement Guidelines](#)
- [California Integrated Waste Management Board - Recycled Content Resources](#)
- [Austin Resource Recovery – Austin Materials Marketplace](#)

**6. Certified Wood**

**1-2 points**

**Intent**

To encourage environmentally responsible forest management.

**Requirements (Residential and Non-residential Uses)**

- **Option 1 (2 points)**  
At least 10% (by dollar value) of new wood-based materials are certified in accordance with the Forest Stewardship Council (FSC) guidelines for wood building components.

OR

- **Option 2 (1 point)**  
Minimum of 1 of these items are FSC certified
  - Cabinets
  - Doors
  - Wood flooring
  - Trim

#### Required Verification

##### CONDITIONAL APPROVAL

- Specifications include 1) Submittals to include certified wood content and 2) Individual material sections include certified wood requirement (as appropriate)

##### FINAL APPROVAL

- Submittals with FSC CoC Certification information and quantity highlighted
- Calculations from the AEGB Certified Wood Calculator

#### Strategies

Include contract language for contractors to provide FSC chain of custody information in submittals.

#### References

[FSC Certified Products Database](#)  
[Forest Stewardship Council](#)

## 7. PVCs and Phthalates

**1 points**

#### Intent

To promote well-being by reducing human exposure to polyvinyl chloride (PVC) materials containing phthalate plasticizers.

#### Requirements (Residential and Non-residential Uses)

- Use materials and products that do not contain PVC or Phthalates for five (5) of the following categories (as applicable):
  - Flooring Systems (including carpet)
  - Wall Coverings (Including wall base)
  - Window Treatments
  - Roofing Systems
  - Windows and Doors
  - Exterior Siding
  - Furniture
  - Irrigation System
  - Interior Electrical Systems
  - Interior Sanitary Waste Piping and Ventilation
  - Interior Domestic Water
  - Building and Site Stormwater Piping

### **Required Verification**

#### CONDITIONAL APPROVAL

- Specifications stating which materials will not be made with PVC
- List of alternative materials that are PVC and phthalate free, if applicable.

#### FINAL APPROVAL

- Cut sheet submittals or manufacturer documentation demonstrating no PVC
- Final site visit verifying that non-PVC materials are installed

### **Strategies**

- Review Perkins and Will Precautionary List for product alternatives.
- Obtain documentation from manufacturer in design phase assuring that products do not contain PVC

### **References**

[Perkins+Will Precautionary List](#)

[“Endocrine Disrupting Chemicals,” Muncke, Jane, Journal of Steroid Biochemistry and Molecular Biology, 2010](#)

[Health Care Without Harm, “Green Building: Alternatives to Polyvinyl Chloride \(PVC\) Building Materials in Health Care”](#)

# EDUCATION & EQUITY

## Environmental Awareness and Social Justice

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### 1. Housing Affordability

1-3 points

#### Intent

Assure that housing for people with lower incomes is achieving the energy and water efficiency, improved indoor air quality, reduced utility bills, and other benefits of green building. The provision of housing that is affordable to own or rent and affordable to operate is imperative to a sustainable community. Projects that include dwelling units that are affordable to households with incomes at or below 80% MFI (home ownership, i.e. condominiums) or 60% MFI (apartment homes) may be able to receive points for housing affordability under this credit. Projects that include dwelling units that are affordable to households with incomes at or below 30% MFI may be able to receive additional credit.

#### Requirements

Prior to Conditional Approval, projects must submit the Housing and Transportation Affordability Data Sheet that includes a narrative describing the population expected to reside in the development, the transportation options most amenable to this population, housing and transportation data for both the project and the census block in which the project is located, and a narrative that describes project implications from this brief analysis. Census block data can be found at [www.htaindex.cnt.org/](http://www.htaindex.cnt.org/) by zooming in on the project location.

The City of Austin's SMART Housing program promotes mixed-income housing by allowing fee waivers for projects that provide varying levels of affordable housing for a five year timeframe for multifamily buildings. SMART Housing then monitors rental and mortgage rates for applicable units to assure that the affordability levels are being met. In addition to SMART housing, other funding mechanisms through banks and state and local funding agreements require that certain levels of affordability are provided over a specified number of years and can provide an assurance that housing costs will meet affordability criteria.

Provide affordable dwelling units as part of a SMART Housing or financing agreement through which affordability will be verified over the specified time period.

- Document that at least 20% of dwelling units will be affordable to homeowners living at or below 80% MFI for a period of at least 5 years; OR 20% of dwelling units will be affordable to renting households living at or below 60% MFI for a period of at least 5 years **(1 point)**

OR

- Document that at least 20% of dwelling units will be affordable to homeowners living at or below 80% MFI for a period of at least 15 years; OR 20% of dwelling units will be affordable to renting households living at or below 60% MFI for a period of at least 15 years **(2 points)**

OR

- Document that at least 20% of apartment (rental) dwelling units will be affordable to people living at or below 30% MFI for a period of at least 15 years (The 2009 Austin Comprehensive Market Study has shown that the most substantial housing need in Austin is for rental properties that are available to households at 30% MFI or less) **(3 points)**

### Required Verification

#### CONDITIONAL APPROVAL

- Completed Housing and Transportation Affordability Data Sheet
- Signed SMART Housing letter or financing agreement verifying the MFI levels and that these affordability criteria will be verified through a financing or other agency for the required time period (at least 5 or 15 years)

#### FINAL APPROVAL

- A pro-forma from the developer showing the projected rents/sales price

### Strategies:

The H + T Affordability Data Sheet is intended to provide a snapshot of affordability levels for both housing and transportation in the community immediately surrounding the project. Similar to the Site Characteristics Study required for Site credit 3, the data sheet should be completed as early in the project as possible in case findings could impact decision making regarding housing and transportation affordability.

### References

[LEED for Neighborhood Developments Pilot, June 2007, NPD Credit 4: Affordable rental housing](#)  
[Austin Comprehensive Market Study including affordability analysis](#)

## 2. Access to Information

1 point

### Intent

To improve access to the internet to all residents in multifamily buildings. Access to information via the internet is an integral part of assuring an equitable living environment. Today the internet is used to gain employment, search for housing, pay bills, and can potentially be used to manage our home energy use. In addition, internet service can be a substantial expenditure for people with low disposable incomes. Providing internet access to residents in multifamily buildings as internet lounges on site can improve quality of life for residents. In addition, as we move to smart grid capabilities, people may have opportunities to manage and reduce their energy use, and energy bill, via the internet.

### Requirements

Meet the following criteria:

- Provide an extended-hour computer lounge with free internet access for all residents. The lounge shall have 1 computer with high speed internet access for every 20 residents. Examples of extended hours are 8 a.m.-9 p.m. Monday-Friday, and 12 p.m.-8 p.m. Saturday-Sunday.

### Required Verification

#### CONDITIONAL APPROVAL

- Show lounge and computer stations on plans

#### FINAL APPROVAL

- Submit internet account agreement/contract
- Verification on final site visit.

### 3. Car-free Living

1 point

#### Intent

Housing and transportation together account for 40-70% of the average household income. Having a variety of transportation options can increase affordability by allowing reduced auto dependence and improve environmental quality by reducing the number of single-occupancy vehicles. Access to public transportation sufficient enough to allow for car-free living, i.e. public transportation to jobs, schools, stores and services, can substantially reduce a household's transportation cost burden.

#### Requirements

Development achieves at least one point under Site credit #5, Public Transportation, and offers additional public transportation options such as a ride share or car share program, or a van pool that offers rides at least twice per week to a supermarket, shopping center, or other popular destination.

#### Required Verification

##### FINAL APPROVAL

- Submit a copy of the contract demonstrating the transportation option will be available to tenants.

#### References

[Capital Metro System Map: Capital Metro](#)

### 4. Accessibility

1 point

#### Intent

Accessibility is an integral part of designing and constructing better buildings that serve occupants' needs over the life of the building without requiring future costly and resource-intensive renovations. Accessibility allows persons with temporary or permanent disabilities a wide range of housing options, as well as the ability to visit and mingle with neighbors, and to allow visitors easy access to the building. Accessibility reduces the need and cost for disabled persons to make requests for reasonable modifications and allows residents to "age in place" – that is, to be able to stay in their home as they grow older or as their mobility abilities change. Improved accessibility also results in improved accommodations for residents and guests who are temporarily disabled due to illness or injury.

#### Requirements (Residential Uses Only)

Site meets ALL of the following:

- 100% of units have blocking in at least one bath wall.
- Door handle levers installed on 100% of units.
- Faucet controls at all sinks and lavatories in 100% of all units shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist.

Blocking in the walls must be verified before sheetrock is installed. Grab bars do not have to be installed until resident or future resident requests installation.

The blocking for conventional bathtubs should be placed 32"-38" above the floor on the longest tub wall and should be 6" high by 24" wide. For location of blocking for conventional bathtubs and other shower/tub types, follow the Fair Housing Act design manual. Scrap pieces of wood can be used for blocking and projects are encouraged to put blocking in additional walls.

Lever door handles should be installed on the interior and exterior of main entrances, as well as all bedrooms, offices, bathrooms, closets, garages and rear/patio doors (sliding doors excluded).

Lever-operated, push-type, and electronically controlled mechanisms are examples of acceptable designs.

**Required Verification**

CONDITIONAL APPROVAL

- Plan notes include location of blocking.

FINAL APPROVAL

- On-site verification of blocking and lever handles by AEGB staff.

**Strategies**

- Use scrap lumber for blocking in the bathroom walls if building is stick frame.
- Specify low-pile carpeting or non-slip flooring.

**References**

- [City of Austin S.M.A.R.T. Multi-Family Accessibility Standards](#)
- [Americans with Disabilities Act](#)
- [Fair Housing Act \(FHA\) design manual](#)
- [Federal Disability Information Resource](#)
- [Disability Law Resource](#)
- [United States Access Board](#)
- [Institute for Human Centered Design](#)

**5. Construction Worker Equity**

**1 point**

**Intent**

To create and promote safe and reliable jobs with fair compensation, while promoting sustainable development in Texas.

**Requirements**

Abide by a Code of Conduct in construction contracting outlined in the Better Builder program that upholds sustainable workforce standards, and ensures that construction workers have safe, living wage jobs, and become a Better Builder with the Workers Defense Project.

For more information on the Workers Defense Project, contact:

- Business Liaison
- Workers Defense Project
- E-mail: [info@workersdefense.org](mailto:info@workersdefense.org)
- Phone: (512) 391-2305

**Required Verification**

CONDITIONAL APPROVAL

- Verification of the signed agreement with the Workers Defense Project

FINAL APPROVAL

- Verification from the WDP that the project completed construction in good standing.

**Strategies**

Collaborate with the Workers Defense Project to develop a culture of construction site safety, proper training, and living wages from the top down.

The Premier Standards

- Ensuring that workers are given proper safety equipment and safety trainings
- Ensuring that workers are fairly and competitively compensated
- Provide workers' compensation insurance in case of injury
- Working with local community groups to promote local job creation and workforce training.

**References**

[Workers Defense Project "Build a Better Texas: Construction Working Conditions in the Lone Star State"](#)  
[Workers Defense Project "Building Austin, Building Injustice Working Conditions in Austin's Construction Industry"](#)  
[Premier Community Builders – Building a Better Austin](#)

**6. Educational Outreach**

**2 points**

**Intent**

To use the building as an educational tool to highlight the green building strategies implemented in the project.

**Requirements**

Provide at least 2 of the following Educational Services:

- A comprehensive signage program installed in the building and site to educate the occupants and visitors on the project's green features and the benefits of green building. Educational elements may include windows to view energy saving mechanical equipment and signage calling attention to water conserving plumbing fixtures or landscape features.
- A case study that educates design professionals and the public on the green building strategies implemented in the project. AEGB's template may be used to assist with developing your case study. The case study may be published on the AEGB website, at the discretion of AEGB, and with the permission of the project owner.
- An educational outreach program to educate the community on sustainable design, construction, and operations using the project as an example. This program may include regular guided tours of the facility, community workshops, or public presentations.

**Required Verification**

CONDITIONAL APPROVAL

- Narrative describing the signage program, design drawings of the educational displays and locations within the building and site.
- Narrative describing the educational outreach program including the content and means of implementation.

FINAL APPROVAL

- Case Study using the AEGB Study Form or similar format.

**References**

[AEGB Case Study Database](#)

# INNOVATION

## Creative, New Sustainable Solutions

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### Intent

To develop sustainable solutions that demonstrate a comprehensive approach and quantifiable sustainability benefits beyond the requirements of measures defined in this program.

### Requirements (Residential and/or Non-residential Uses)

Submit a proposal of the innovation measure to Austin Energy Green Building for approval. The proposal must include:

- the intent of the measure
- requirements for compliance
- documentation to demonstrate compliance, and
- the design approach (strategies) that will be used to meet the requirements.

### Required Verification

#### CONDITIONAL APPROVAL

- Narrative detailing the proposed design approach, the sustainability benefits, the requirements, and the project's compliance with the proposed measure.

#### FINAL APPROVAL

- Submit required documentation or calculations verifying compliance with proposed measure, if necessary.

### Strategies

- Early in the design process, for example as part of a charrette or integrated team meeting, encourage discussion of potential sustainability measures, i.e. measures that could improve the environmental or equity impacts from the project
- Talk to your AEGB representative about sustainability ideas your team comes up with to see what could qualify as innovation credits
- For new technologies, talk to product manufacturers about getting cost reductions for bulk purchases or inclusion in case studies
- Look for design and technologies that are emerging in the building industry or otherwise not yet covered in the AEGB Multifamily rating tool:

### Example Innovation Credits

- A current credit is exceeded to the next increment or level:
  - Ex: Construction Waste Management: Recycle and/or salvage at least 90% (by weight) of non-hazardous construction and demolition waste, excluding excavated soil and stone. 1 point.
  - Ex: Heat Island Reduction: High-albedo paving materials with an aged [Solar Reflective Index (SRI) of 32 or above] on 100% of non-roof impervious surfaces. 1 point
  - Ex: On-Site Renewable Energy: Solar panels provided for each residential unit. 1-4 points.

- Team comes proposes an innovative credit: Propose your own innovative measure that is not covered by existing measures within the Online worksheet to meet the requirements above. Some example Innovation measures are provided on the Online Tool.
  - Ex: Provide onsite Composting and Gardens for tenant use and educate tenants on proper composting and gardening techniques in a tenant guidebook. Or provide a composting collection service for tenants using a private hauler. 1 Point.
  - Ex: Green Energy: Residential units signed up for Green Choice. 1 point.

# APPENDIX – General Green Building Resources

## General Resources

- **AIA Guide to Building Life Cycle Assessment in Practice:**
  - [www.aia.org/practicing/akr/AIAB089185](http://www.aia.org/practicing/akr/AIAB089185)
- **Austin Environmental Directory, Paul Robbins, editor. 2013 edition:**
  - A sourcebook for environmental issues, products, services, and organizations in the Austin area
  - [www.environmentaldirectory.info](http://www.environmentaldirectory.info)
- **BuildingGreen, LLC:**
  - BuildingGreen publishes accurate, unbiased, and timely green design information through many publications, including [Environmental Building News](#), the [GreenSpec directory](#) of green products, and the [BuildingGreen Suite](#) of online tools
  - [www.buildinggreen.com](http://www.buildinggreen.com)
- **Business Energy Advisor, FPL and ESource:**
  - The Business Energy Advisor provides detailed information on energy consumption for 10 market sectors, O & M best practices, and buyer's guides for energy efficient technologies.
  - <https://bizenergyadvisor.com/>
- **Congress for New Urbanism:**
  - Promotes the efficient use of infrastructure and the preservation of habitat and farmland
  - [www.cnu.org](http://www.cnu.org)
- **Energy Design Resources:**
  - Energy Design Resources offers a valuable palette of energy design tools and resources that help make it easier to design and build energy-efficient commercial and industrial buildings in California. The goal of this effort is to educate architects, engineers, lighting designers, and developers about techniques and technologies that contribute to energy efficient nonresidential new construction.
  - [www.energydesignresources.com](http://www.energydesignresources.com)
- **Energy Improvement and Extension Act of 2008 Summary:**
  - Includes energy efficiency tax incentives for: commercial buildings, combined heat and power systems (CHP) and for plug-in hybrid purchases
  - [www.eia.gov](http://www.eia.gov)
  - [http://www.eia.gov/oiaf/aeo/otheranalysis/aeo\\_2009analysispapers/eiea.html](http://www.eia.gov/oiaf/aeo/otheranalysis/aeo_2009analysispapers/eiea.html)
- **ENERGY STAR®-Products search:**
  - <https://www.energystar.gov/products>
- **Environmental Building News and GreenSpec® Guide:**
  - [www.buildinggreen.com](http://www.buildinggreen.com)
  - [www.buildinggreen.com/green-products](http://www.buildinggreen.com/green-products)
- **Green Building Pages:**
  - Building materials database and design tool:
  - [www.greenbuildingpages.com](http://www.greenbuildingpages.com)
- **Green Building Resource Guide:**
  - [www.greenguide.com](http://www.greenguide.com)
- **Healthy Building Network:**
  - Advocates healthier building materials

- [www.healthybuilding.net](http://www.healthybuilding.net)
- **IRS publications:**
  - *Energy Savings Modeling and Inspection Guidelines for Commercial Building Federal Tax Deductions, 2<sup>nd</sup> edition, May 2007.*
  - [www.nrel.gov/docs/fy07osti/40467.pdf](http://www.nrel.gov/docs/fy07osti/40467.pdf)
  - Notice 2006-52: Deduction for Energy Efficient Commercial Buildings:
  - [www.irs.gov/pub/irs-drop/n-06-52.pdf](http://www.irs.gov/pub/irs-drop/n-06-52.pdf)
- **Lawrence Berkeley National Laboratory, The Cost-Effectiveness of Commercial-Buildings Commissioning:**
  - [evanmills.lbl.gov/pubs/pdf/ncbc\\_mills\\_6apr05.pdf](http://evanmills.lbl.gov/pubs/pdf/ncbc_mills_6apr05.pdf)
- **National Institute of Building Sciences – Whole Building Design Guide:**
  - [www.wbdg.org/design/sustainable.php](http://www.wbdg.org/design/sustainable.php)
- **Natural Resources Defense Council:**
  - Protects wildlife and ensures a safe and healthy environment
  - [www.nrdc.org](http://www.nrdc.org)
- **New Buildings Institute:**
  - [newbuildings.org](http://newbuildings.org)
- **Rocky Mountain Institute:**
  - [www.rmi.org/](http://www.rmi.org/)
- **Smart Growth Network:**
  - [www.smartgrowth.org](http://www.smartgrowth.org)
- **Sustainable Sources (fka Sustainable Building Sourcebook):**
  - <http://sustainablesources.com/>
- **Urban Land Institute (ULI):**
  - Non-profit organization that promotes responsible use of land
  - [www.uli.org](http://www.uli.org)
- **U.S. Department of Energy, Building Technologies Office Buildings Database:**
  - Case studies of various building types around the world with information on green building features, financial analysis, and lessons learned
  - <https://buildingdata.energy.gov/>
- **U.S. EPA- Sustainable Management of Construction and Demolition Materials:**
  - [www.epa.gov/smm/sustainable-management-construction-and-demolition-materials](http://www.epa.gov/smm/sustainable-management-construction-and-demolition-materials)
- **U.S. EPA-Watersense:**
  - [www3.epa.gov/watersense/water\\_budget/](http://www3.epa.gov/watersense/water_budget/)
- **U.S. Green Building Council:**
  - [www.usgbc.org](http://www.usgbc.org)

#### Texas Organizations and Resources

- **Austin EcoNetwork:**
  - [www.austineconetwork.com](http://www.austineconetwork.com)
- **Austin Energy, Multifamily and Commercial Programs and Rebates:**
  - <https://powersaver.austinenergy.com/wps/portal/psp/multifamily!/ut/p/a1/>
  - <https://powersaver.austinenergy.com/wps/portal/psp/commercial!/ut/p/a1/>
- **Austin Energy Green Building:**
  - [www.greenbuilding.austinenergy.com](http://www.greenbuilding.austinenergy.com)

- **Austin Resource Recovery:**
  - Solid Waste Services and Waste Reduction Program
  - [www.austintexas.gov/department/austin-resource-recovery/programs](http://www.austintexas.gov/department/austin-resource-recovery/programs)
- **Austin Water Utility, Commercial Programs and Rebates, and Water Efficient Equipment and Design:**
  - [www.austintexas.gov/department/water-conservation](http://www.austintexas.gov/department/water-conservation)
  - [www.infohouse.p2ric.org/ref/50/49006.pdf](http://www.infohouse.p2ric.org/ref/50/49006.pdf)
- **Capital Metro – Austin Public Transit:**
  - [www.capmetro.org](http://www.capmetro.org)
- **Center for Maximum Potential Building Systems:**
  - [www.cmpbs.org](http://www.cmpbs.org)
- **City of Austin – Imagine Austin:**
  - [austintexas.gov/imagineaustin](http://austintexas.gov/imagineaustin)
- **City of Austin – Office of Sustainability:**
  - [austintexas.gov/department/sustainability](http://austintexas.gov/department/sustainability)
- **Design~Build~Live:**
  - [www.designbuildlive.org](http://www.designbuildlive.org)
- **Lady Bird Johnson Wildflower Center:**
  - [www.wildflower.org](http://www.wildflower.org)
- **Save Our Springs Alliance:**
  - [www.sosalliance.org](http://www.sosalliance.org)
- **Solar Austin – advocacy group:**
  - [www.solaraustin.org](http://www.solaraustin.org)
- **Texas Commission on Environmental Quality:**
  - [www.tceq.state.tx.us](http://www.tceq.state.tx.us)
- **TREIA (Texas Renewable Energy Industries Association):**
  - [www.treia.org](http://www.treia.org)
- **TXSES (Texas Solar Energy Society):**
  - <http://txses.org/>
- **Urban Land Institute (ULI) Austin:**
  - Non-profit organization that promotes responsible use of land
  - [www.austin.uli.org](http://www.austin.uli.org)
- **U.S. Green Building Council, Central Texas – Balcones Chapter:**
  - [usgbc-centraltexas.org](http://usgbc-centraltexas.org)
- **Workers Defense Project – Premier Community Builders Program:**
  - <http://www.betterbuilder.org/>