



HOUSTON LAND BANK

REVITALIZING HARRISBURG BLVD.

Sustainable and Regenerative Design Guidelines for Affordable Housing



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April 24, 2025

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Building

Place & Resilient Development

- Contribute towards the creation of walkable, pedestrian-oriented communities.
- Provide places for occupants to gather and connect with the community. Advocacy in the community to facilitate the uptake of human-powered and public transportation.
- Minimize impervious surface parking to no more than 20% of the Project Area and ensure that any surface parking area larger than 20m X 30M is separated with planted areas.

Water

- Potable water must not be used for irrigation purposes.
- Reduce indoor potable water use to less <25.07 gallons per person per day.
 - High efficiency fixtures (see table below) will bring per capita water use to 25.07 gallons per day.

END USE	Gallons per person per day	Proposed Flow Rate (gpm, gpf or gpc)	Uses (or cycles) per day (x) duration if applicable
Toilets	6.46	1.28	5.05
Kitchen Faucet	7.50	1.5	5.00
Lav Faucet	2.50	0.5	5.00
Showers + Bath	7.69	1.25	6.15
Dishwasher	0.30	3	0.10
Laundry (Common)	0.62	11.7	0.056
Total indoor use (daily per capita)	25.07		

Energy

- High-performance windows and wall systems in multifamily and single family buildings significantly improve energy efficiency, reduce heat loss, and enhance comfort for residents.
- Improved Thermal Performance, building systems should incorporate features like double or triple-pane glass, Low-E coatings, argon gas fills, and thermally broken frames to minimize heat transfer.
 - Benefits: High-performance windows and walls reduce heat loss in winter and heat gain in summer, leading to lower energy bills and more consistent indoor temperatures.
- Better insulation and noise reduction improve the overall living experience for residents.

Operational Carbon

- Be “zero ready” which means pre-wiring for the future installation of renewable energy systems and electric vehicle charging.
 - Benefits: Affordable housing projects often struggle with up-front cash outlays for PV. Although pre-wiring will be an additional cost, it allows the Owner the flexibility to raise money in later years to add solar to the building without the burden of costly retrofits to the building’s electrical infrastructure.
- Include plans to install rooftop solar panels (Photovoltaic panels),
 - Benefits: Pay back within 5-10 years, providing free energy for 30-50 years. Strategies for affordable housing can include community solar programs, Power Purchase Agreements (PPAs), and/or government grants to reduce energy costs and increase access to solar energy.
- Use smart building technologies to optimize energy usage, monitor air quality, and manage water efficiently.
 - Benefits: Smart buildings automate various functions, such as HVAC, lighting, and security, based on real-time data and user preferences. This automation can lead to increased energy efficiency and reduced maintenance costs.

Embodied Carbon

- Achieve twenty percent or higher reduction in the embodied carbon of primary materials (foundation, structure and enclosure) compared to an equivalent baseline.
- Select interior materials and finishes with a lower than industry average carbon footprint for product categories for which embodied carbon data is readily available.
 - Benefits: Exercise in seeking to streamline and reduce the use of materials and thereby lower the overall costs to the project.

Materials

- Implement an Affordable Housing Materials Transparency Letter to Manufacturers.
 - Example: [ILFI Materials For Affordable Housing](#) Appendix E.
- Avoid substances prevalent in the building industry that pose serious risks to human health and the environment.
 - Use an Affordable Housing Materials List to help affordable housing project teams to more quickly and easily identify appropriate Red List Free products to use.
 - Example: [ILFI Materials For Affordable Housing](#)
- Use of FSC certified wood.
 - Benefits: FSC wood has been shown to sequester 30% more carbon than traditional forestry.
- Use Interior building products with low or non-emission of volatile organic compounds (VOCs). (e.g., Paint, wallcoverings, floors, etc).
- Waste Management, Reduction and Recycling:
 - Divert construction waste material from the landfill. (Recommended 80% or more)
- Expanding and innovate recycling opportunities for all residents and businesses.
- Increase the types of materials that can be recycled and reduce contamination.
- Enhance multi-family recycling efforts and private sector source reduction and recycling efforts.

Air quality and Ventilation

- Prioritizing indoor air quality and ventilation. Comply with the current version of ASHRAE 62.
- Provide direct exhaust for the kitchen, bathroom, and janitorial areas.
- Post-construction Indoor air quality testing.
 - Benefits: A one-time IAQ test ensures that post-construction and move-into the building meets a certain level of indoor air quality, related to a variety of contaminants. Do not exceed Indoor Air Quality (IAQ) thresholds.

IAQ maximum allowable concentrations.

If the IAQ testing reveals concentrations of any substances exceeding the limits listed below, the project team must put in place an action plan to reduce exposure to requirement levels and retest to show compliance:

Formaldehyde: less than 50 ppb (parts per billion).

PM2.5: less than 12 micrograms per cubic meter.

PM10: less than 30 micrograms per cubic meter.

Total Volatile Organic Compounds (TVOCs): less than 500 micrograms per cubic meter.

4-Phenylcyclohexane: less than 3 micrograms per cubic meter.

Carbon monoxide: less than 9 ppm.

Ozone: less than 51 ppb.

Carbon dioxide: less than 750 ppm.

Nitrogen dioxide: less than 0.053 ppm over a 24-hour period.

Community

Equity

- Plazas, seating, or park space should be equally accessible to all members of the public regardless of background, age, and socioeconomic class.
- Safeguard access for those with physical disabilities through designs meeting either the principles of universal design (United States Access Board), the Americans with Disabilities Act (ADA), and the Architectural Barriers Act (ABA) Accessibility Guidelines.
- Contractors shall consider the grant of subcontracts to women and minority bidders.

Sustainability Beyond the Built Environment

- Promote sustainable practices and sustainable education in everyday life of the project, such as using reusable water bottles and shopping bags, and choosing green restaurants, etc.
- Encourage a more vegetable-based diet to reduce greenhouse gas emissions from meat and dairy farming.

Affordable Housing Sustainable Takeaways

1. Integrate sustainable design requirements into all project development and construction phases, such as in the project specifications.

Example: [ILFI Sample 018113-SUSTAINABLE DESIGN REQUIREMENTS](#)

2. Sustainability strategies improve quality of life while reducing the cost of living for residents.
3. Health is an important priority for affordable housing residents and developers.
4. Project teams should look for healthy materials. Materials selection and designing for good indoor air quality are critical often overlooked factors in healthy environments.
5. Materials vetting should focus on the most impactful materials and interior finishes.
6. Lowering embodied carbon and increasing energy efficiency often reduce scope and project cost.
7. Energy reduction (-Net Positive-) can be achieved on many affordable housing projects and is within reach for all.
8. Achieving operational energy reduction (or becoming -Net Positive Energy-) for very low-density and single-family affordable housing is easily achievable.
9. -Low- and mid-rise buildings Energy use reduction can be achieved using cost-efficient energy reduction strategies.
10. During construction phases include construction waste management requirements.
11. Sustainable pathways for affordable housing can streamline the process and can create impact across a developer's portfolio.
12. Project team should encourage pride, engagement in place and community for an equitable environment.