### PART 5 – Location and Transportation (LT)



# **Location**

This part will discuss the importance of location and the transportation features of the building and their effects on the green building design.

The Location and Transportation credit category will be discussed under three major sections:

- Location
- Transportation
- Neighborhood Pattern and Design



The location of a green building project should first promote **smart growth**.

An example may be a residential project that is located very close to downtown, which also contains several public transportation options.

There are several factors to consider when choosing a proper project location.



### **Location**

Smart growth

<u>Suburban sprawl</u> has lots of consequences to the environment. First, the construction of a building on undeveloped land will destroy the <u>habitat</u> and <u>wildlife</u> in that location. Second, suburban sprawl will result in car dependency, which will further damage the environment with the <u>greenhouse gases</u> created.

In addition, the cities will need to provide infrastructure to the suburban areas, which will create additional consequences for the environment.





# **Location**

Smart growth

Principles of smart growth are:

- Protect undeveloped land (greenfield)
- Reuse/restore previously developed cities
- Reduce automobile use and promote public transportation
- Develop efficient rainwater management
- Reduce the heat island effect
- Reduce lighting pollution
- Provide stewardship of nature and the site's surroundings



Greenfield

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# **Location**

Smart growth

In order to promote smart growth and discourage suburban sprawl, the following strategies should be applied:

- Mix land use
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development toward existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage community and stakeholder collaboration ibn development decisions



#### **Location**

Smart growth



Mix land uses



#### **Location**

Smart growth



Compact building design



#### **Location**

Smart growth



Range of housing opportunities



### **Location**

Smart growth



Walkable neighborhoods



# **Location**

Smart growth



Farmland



Open space

![](_page_9_Picture_7.jpeg)

Natural beauty

![](_page_9_Picture_9.jpeg)

# **Location**

Smart growth

![](_page_10_Picture_3.jpeg)

Transportation choices

![](_page_10_Picture_5.jpeg)

### **Location**

Smart growth

To promote smart growth, some municipalities offer increased floor-to-area ratios (FAR).

![](_page_11_Figure_4.jpeg)

BIM Buding Information Modeling

#### **Location**

Smart growth

#### DETACHED, SEMI-DETACHED, ATTACHED & ZERO LOT LINE BUILDINGS

![](_page_12_Figure_4.jpeg)

![](_page_12_Picture_5.jpeg)

# **Location**

Protecting the habitat by choosing the right location

To protect the habitat, green buildings should not be developed inside **sensitive lands**; instead, **infill sites** should be preferred.

<u>Infill sites</u>, or infill developments, are sites that were either previously developed or were already being used for other purposes. Since infill sites have existing infrastructure and have public transportation options, locating the project at an infill site not create negative consequences.

![](_page_13_Picture_5.jpeg)

![](_page_13_Picture_6.jpeg)

# **Location**

# Protecting the habitat by choosing the right location

Below are the types of sensitive lands that should be avoided for development:

- Prime farmland
- Sites close to wetlands and water bodies (lakes, rivers, etc.)
- Public parkland
- Areas below floodplain
- Areas that are a part of the habitat or endangered species

![](_page_14_Picture_9.jpeg)

#### **Location**

Protecting the habitat by choosing the right location

![](_page_15_Picture_3.jpeg)

Farmland

![](_page_15_Picture_5.jpeg)

### **Location**

Protecting the habitat by choosing the right location

![](_page_16_Picture_3.jpeg)

![](_page_16_Picture_4.jpeg)

![](_page_16_Picture_5.jpeg)

#### **Location**

Protecting the habitat by choosing the right location

![](_page_17_Picture_3.jpeg)

Water bodies

![](_page_17_Picture_5.jpeg)

#### **Location**

Protecting the habitat by choosing the right location

![](_page_18_Picture_3.jpeg)

Public parklands

![](_page_18_Picture_5.jpeg)

#### **Location**

Protecting the habitat by choosing the right location

![](_page_19_Picture_3.jpeg)

Floodplains

![](_page_19_Picture_5.jpeg)

#### **Location**

Protecting the habitat by choosing the right location

![](_page_20_Picture_3.jpeg)

Habitat of endangered species

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# **Location**

*Protecting the habitat by choosing the right location* Locating the project on **brownfield sites** and remediating them before the start of construction can be another option.

Brownfield sites are previously developed sites that were contaminated with waste or pollution.

![](_page_21_Picture_4.jpeg)

Brownfield sites

![](_page_21_Picture_6.jpeg)

### **Transportation**

A project should reduce the consequences of transportation by ensuring access to <u>alternative</u> <u>modes</u> of transportation to reduce single-occupancy vehicle use; encouraging <u>walking and</u> <u>bicycling</u>; and actively promoting <u>alternative-fuel</u> vehicles by providing fueling facilities for green vehicles and/or reducing the parking rates for such vehicles.

If the project is in a <u>high-density area</u> or infill site, building occupants can walk to diverse uses and find different options for using public transit.

Project sites <u>without access</u> to public transportation can focus on local connectivity and may promote the use of <u>green vehicles</u> for commuting, provide incentives for <u>carpooling</u>, develop <u>diverse uses</u> that allow workers to walk to basic services, or facilitate the use of <u>alternative-fuel</u> vehicles such as plug-in hybrids.

<u>Alternative-fuel vehicles</u> do not rely on gasoline or diesel and are instead powered by electricity, hydrogen, ethanol, natural gas, or biofuel. The cars that are eligible to be green vehicles should have earned a **Green Score of 45** or more from the **American Council for an Energy-Efficient Economy (ACEEE).** 

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Utilizing a **compressed week** can be another strategy to reduce fossil fuel usage. Companies could also utilize **telecommuting** for a part of the workweek. **Carpooling** can also be rewarded, and **parking rates** could be more expensive.

#### **Transportation**

![](_page_23_Picture_2.jpeg)

#### **GREEN LIVING WITH CARPOOLING**

![](_page_23_Picture_4.jpeg)

Carpooling

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![](_page_23_Figure_6.jpeg)

Compressed workweek

### **Transportation**

LEED promotes minimizing the <u>parking spaces</u> inside buildings to the code minimums in order to discourage individual vehicle use.

If the development location is close to a <u>bicycle network</u>, providing bicycle racks and shower rooms helps building occupant use their bicycles to commute and engage in daily physical activity.

![](_page_24_Picture_4.jpeg)

Parking space inside building

Bicycle racks

![](_page_24_Picture_7.jpeg)

# Neighborhood Pattern and Design

A healthy neighborhood should contain wide sidewalks, benches, and bicycle networks.

Business centers, retail services, educational facilities, and other <u>diverse uses</u> should be close enough to minimize travel. <u>Public transportation</u> options should be easily accessible.

<u>Street layouts</u> should allow for easy connectivity, and if community gardens, <u>farmers markets</u>, and agricultural programs are established, a neighborhood could also be able to support access to <u>sustainable food</u>.

The strategies are also a part of a **compact development strategies**, which promote efficient neighborhoods and reduce greenhouse gas emissions.

![](_page_25_Picture_6.jpeg)

Wide sidewalks

![](_page_25_Picture_8.jpeg)

Community gardens

![](_page_25_Picture_10.jpeg)

# **Strategies to address location and transportation**

- Promote smart growth
- Develop in dense areas
- Reuse or renovate an existing building or develop an infill site
- Protect habitat by avoiding development on sensitive lands
- Choose brownfields for project development by first remediating the whole site
- Locate near existing infrastructure
- Choose locations with diverse use (examples of diverse use would be banks, restaurants, schools, retail shops, and more). Diverse use should be within walking distance of the project location in order to promote walkability and reduce car dependency
- Locate the project near public transit
- Limit the amount of parking spaces in the project
- Encourage walking by building occupants
- Promote bicycling by installing bicycle racks and shower rooms
- Encourage car-share programs
- Encourage carpooling and modify parking rates to discourage single-occupancy vehicle use
- Utilize a compressed workweek and/or telecommuting as much as possible
- Encourage green vehicle use by providing alternative fueling stations for green vehicles in the parking lot and allow for discounted parking rates

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- Design walkable streets and pedestrian amenities such as benches, trees, and shade in general for neighborhood development
- Use compact development strategies for neighborhood development

# Strategies to address location and transportation

- Promote connectivity in the neighborhood development
- Provide diverse land uses and diverse communities inside the neighborhood development
- Promote alternative transportation when developing neighbor hoods
- Support access to sustainable food when developing neighborhoods
- Support access to grocery stores when developing neighborhoods

![](_page_27_Picture_7.jpeg)