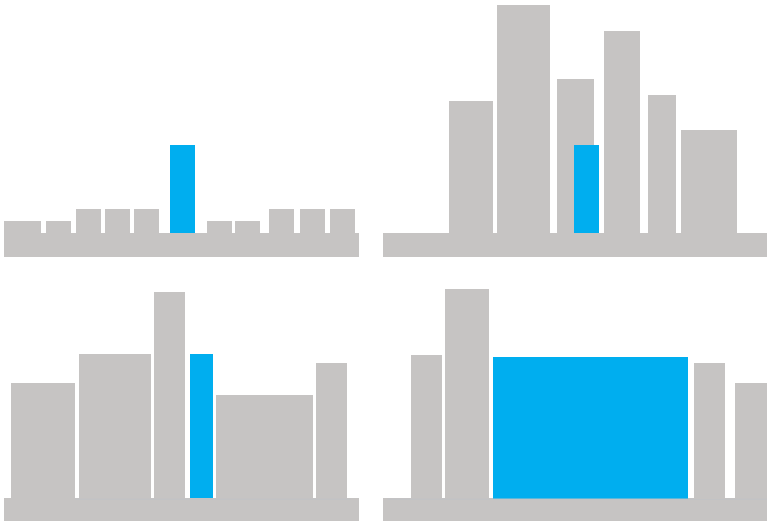
CTBUH | Criteria for the Defining and Measuring of Tall Buildings

What is a Tall Building?

There is no absolute definition of what constitutes a "tall building." It is a building that exhibits some element of "tallness" in one or more of the following categories:

a) Height Relative to Context

It is not just about height, but about the context in which it exists. Thus whereas a 14-story building may not be considered a tall building in a high-rise city such as Chicago or Hong Kong, in a provincial European city or a suburb this may be distinctly taller than the urban norm.

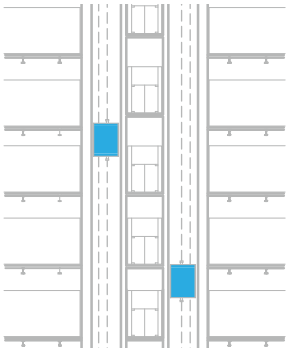


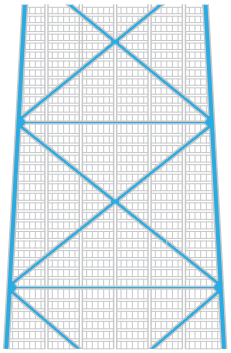
b) Proportion

Again, a tall building is not just about height but also about proportion. There are numerous buildings which are not particularly high, but are slender enough to give the appearance of a tall building, especially against low urban backgrounds. Conversely, there are numerous big/large footprint buildings which are quite tall but their size/floor area rules them out as being classed as a tall building.

c) Tall Building Technologies

If a building contains technologies which may be attributed as being a product of "tall" (e.g., specific vertical transport technologies, structural wind bracing as a product of height, etc.), then this building can be classed as a tall building.

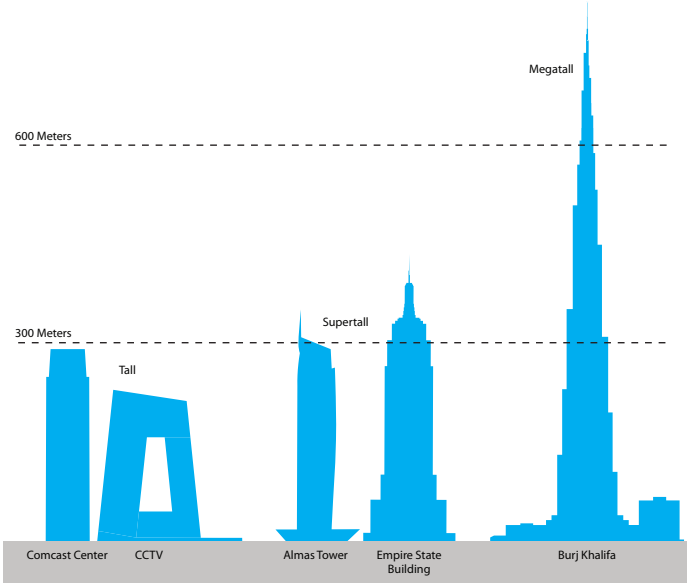




Although number of floors is a poor indicator of defining a tall building due to the changing floor to floor height between differing buildings and functions (e.g., office versus residential usage), a building of perhaps 14 or more stories – or over 50 meters (165 feet) in height – could perhaps be used as a threshold for considering it a "tall building."

What are Supertall and Megatall Buildings?

The CTBUH defines "supertall" as a building over 300 meters (984 feet) in height, and a "megatall" as a building over 600 meters (1,968 feet) in height. Although great heights are now being achieved with built tall buildings – in excess of 800 meters (2,600 feet) – as of July 2013 there are only 73 supertall and 2 megatall building completed and occupied globally. Thus the completion of a supertall building is still a significant milestone.



Council on Tall Buildings and Urban Habitat, S.R. Crown Hall, Illinois Institute of Technology, 3360 South State Street, Chicago, IL 60616-3793 USA
phone: 312-567-3347 fax: 312-567-3820 e-mail: info@ctbuh.org web: www.ctbuh.org

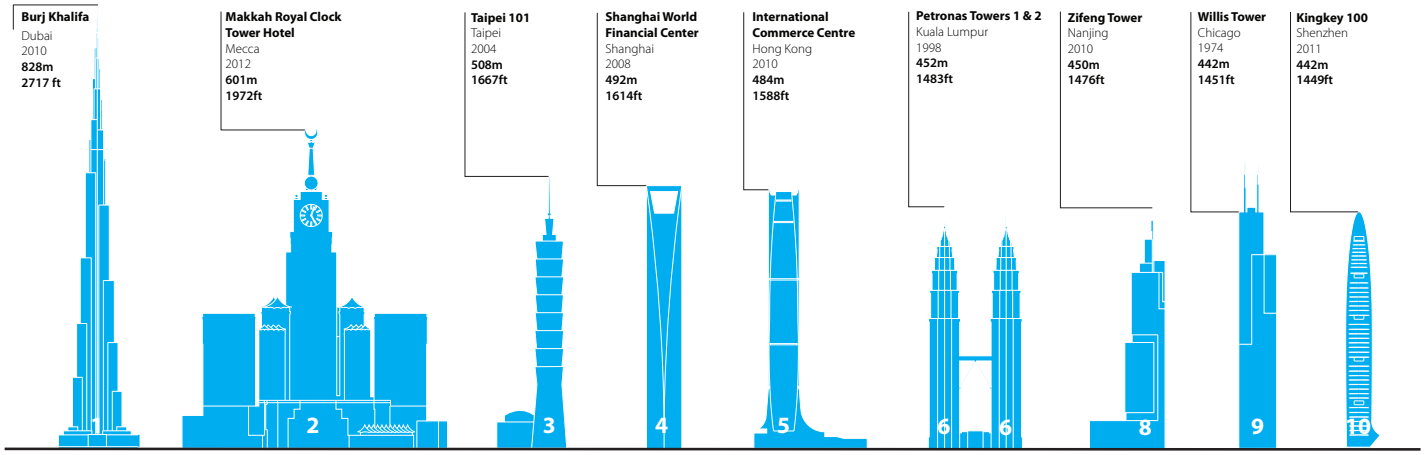
CTBUH | Criteria for the Defining and Measuring of Tall Buildings

How is the Height of a Tall Building Measured?

The CTBUH recognizes tall building height in three categories:

1. Height to Architectural Top:

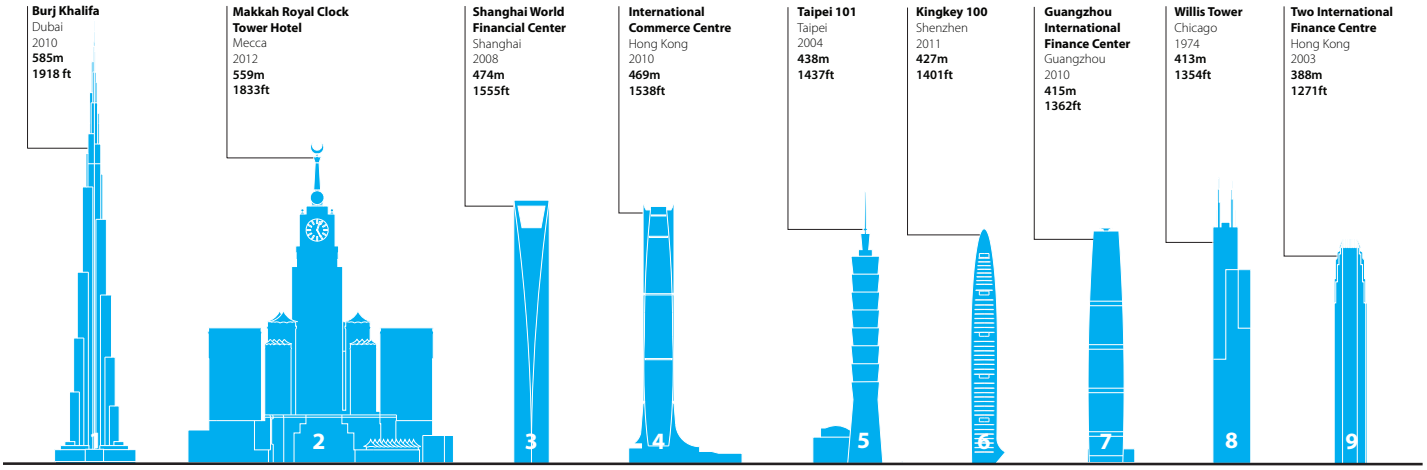
Height is measured from the level[1] of the lowest, significant,[2] open-air,[3] pedestrian[4] entrance to the architectural top of the building, including spires, but not including antennae, signage, flagpoles or other functional-technical equipment.[5] This measurement is the most widely utilized and is employed to define the Council on Tall Buildings and Urban Habitat (CTBUH) rankings of the "World's Tallest Buildings."



World's ten tallest buildings according to Height to Architectural Top (as of September 2013) *© Council on Tall Buildings and Urban Habitat*

2. Highest Occupied Floor:

Height is measured from the level[1] of the lowest, significant,[2] open-air,[3] pedestrian[4] entrance to the finished floor level of the highest occupied[6] floor within the building.

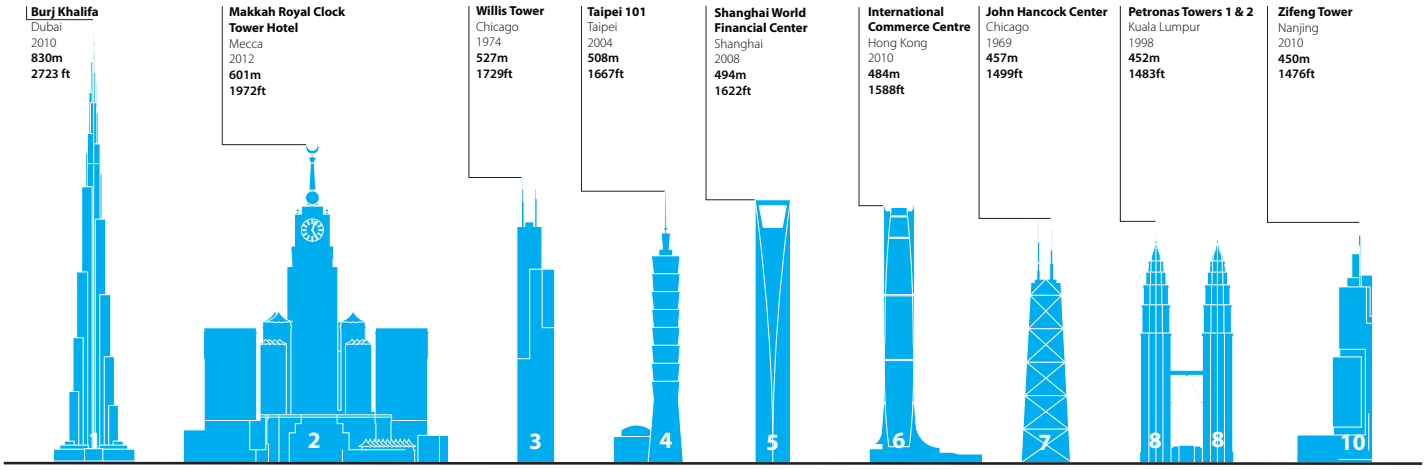


World's ten tallest buildings according to Highest Occupied Floor (as of September 2013) *© Council on Tall Buildings and Urban Habitat*

Council on Tall Buildings and Urban Habitat, S.R. Crown Hall, Illinois Institute of Technology, 3360 South State Street, Chicago, IL 60616-3793 USA
phone: 312-567-3347 fax: 312-567-3820 e-mail: info@ctbuh.org web: www.ctbuh.org

3. Height to Tip:

Height is measured from the level[1] of the lowest, significant,[2] open-air,[3] pedestrian[4] entrance to the highest point of the building, irrespective of material or function of the highest element (i.e., including antennae, flagpoles, signage and other functional-technical equipment).



World's ten tallest buildings according to Height to Tip (as of September 2013)

© Council on Tall Buildings and Urban Habitat

Footnotes:

[1]Level: finished floor level at threshold of the lowest entrance door.

[2]Significant: the entrance should be predominantly above existing or pre-existing grade and permit access to one or more primary uses in the building via elevators, as opposed to ground floor retail or other uses which solely relate/connect to the immediately adjacent external environment. Thus entrances via below-grade sunken plazas or similar are not generally recognized. Also note that access to car park and/or ancillary/support areas are not considered significant entrances.

[3]Open-air: the entrance must be located directly off of an external space at that level that is open to air.

[4]Pedestrian: refers to common building users or occupants and is intended to exclude service, ancillary, or similar areas.

[5]Functional-technical equipment: this is intended to recognize that functional-technical equipment is subject to removal/addition/change as per prevalent technologies, as is often seen in tall buildings (e.g., antennae, signage, wind turbines, etc. are periodically added, shortened, lengthened, removed and/or replaced).

[6]Highest occupied floor: this is intended to recognize conditioned space which is designed to be safely and legally occupied by residents, workers or other building users on a consistent basis. It does not include service or mechanical areas which experience occasional maintenance access, etc.

Number of Floors

The number of floors should include the ground floor level and be the number of main floors above ground, including any significant mezzanine floors and major mechanical plant floors. Mechanical mezzanines should not be included if they have a significantly smaller floor area than the major floors below. Similarly, mechanical penthouses or plant rooms protruding above the general roof area should not be counted. Note: CTBUH floor counts may differ from published accounts, as it is common in some regions of the world for certain floor levels not to be included (e.g., the level 4, 14, 24, etc. in Hong Kong).

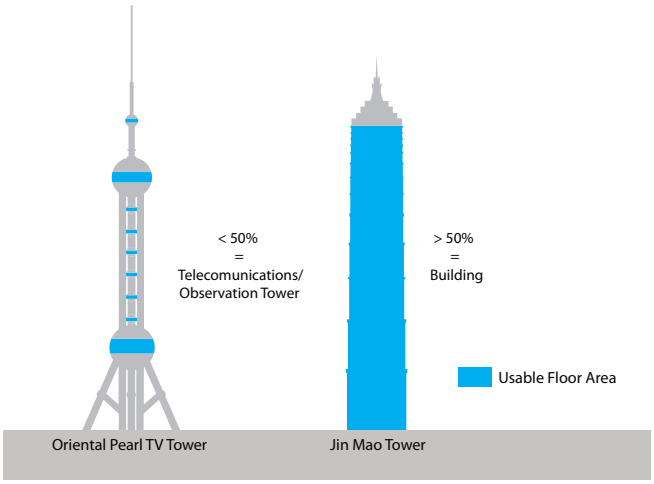
Height Calculator:

The CTBUH have developed a tall building height calculator to estimate the height of tall buildings when only the number of floors is known. To find out more about this calculator and how it was developed, see heightcalculator.ctbuh.org

CTBUH | Criteria for the Defining and Measuring of Tall Buildings

Building Usage

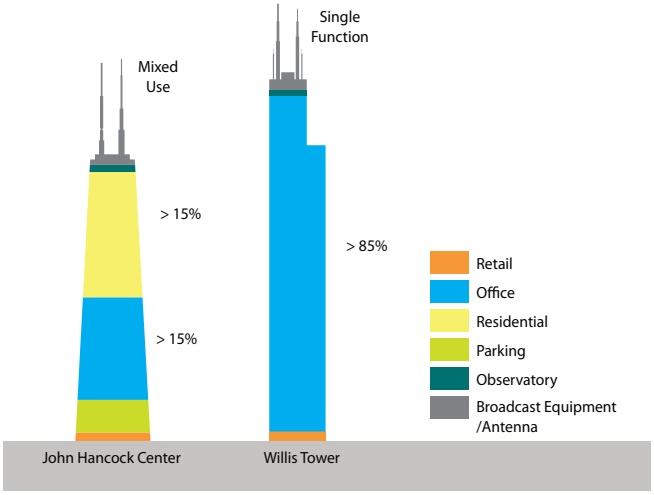
What is the difference between a tall building and a telecommunications/observation tower?
A tall "building" can be classed as such (as opposed to a telecommunications/observation tower) and is eligible for the "Tallest" lists if at least 50% of its height is occupied by usable floor area.



Single-Function and mixed-use buildings
A ***single-function*** tall building is defined as one where 85% or more of its total floor area is dedicated to a single usage

A mixed-use tall building contains two or more functions (or uses), where each of the functions occupy a significant proportion[7] of the tower's total space. Support areas such as car parks and mechanical plant space do not constitute mixed-use functions. Functions are denoted on CTBUH "Tallest" lists in descending order, e.g., "hotel/office" indicates hotel function above office function.

Footnote:
[7]This "significant proportion" can be judged as 15% or greater of either: (1) the total floor area, or (2) the total building height, in terms of number of floors occupied for the function. However, care should be taken in the case of supertall towers. For example a 20-story hotel function as part of a 150-story tower does not comply with the 15% rule, though this would clearly constitute mixed-use.



Building Status

When is a tall building considered to be "completed"?
A building is considered to be "Completed" (and officially added to the CTBUH Tallest Buildings lists) if it fulfills all of the following three criteria:
1) Topped out structurally and architecturally
2) Fully-clad
3) Open for business, or at least partially occupiable

When is a tall building considered to be "topped out" architecturally?
A building is considered to be "topped out" when it is under construction, and has reached its full height both structurally and architecturally (e.g., including its spires, parapets, etc).

When is a tall building considered to be "under construction"?
A tall building is considered to be "under construction" when site clearing has been completed and foundation/piling work has begun.

When is a tall building labeled as "on hold"?
A building is considered to be "on hold" when construction works had begun, but work on-site has been halted indefinitely, however there is still an intent to complete the construction to the original design at a future date.

Council on Tall Buildings and Urban Habitat, S.R. Crown Hall, Illinois Institute of Technology, 3360 South State Street, Chicago, IL 60616-3793 USA
phone: 312-567-3347 fax: 312-567-3820 e-mail: info@ctbuh.org web: www.ctbuh.org

CTBUH | Criteria for the Defining and Measuring of Tall Buildings

When is a tall building considered "never completed"?
A building is considered to be "never completed" when construction works had begun, but work on-site was halted and never resumed. The site may go on to accommodate a new building, different to the original design, that may or may not retain the original construction.

When is a tall building considered to be a "proposal"?
A building is considered to be "Proposed" (i.e., a real proposal) when it fulfills all of the following criteria:
1) Has a specific site with ownership interests within the building development team
2) Has a full professional design team progressing the design beyond the conceptual stage
3) Has obtained, or is in the process of obtaining, formal planning consent/legal permission for construction
4) Has a full intention to progress the building to construction and completion

Only buildings that have been announced publicly by the client and fulfill all the above criteria are included in the CTBUH "proposed" building listings. The source of the announcement must also be credible. Due to the changing nature of early stage designs and client information restrictions, some height data may be unconfirmed.

When is a tall building considered "demolished"?
A building is considered to be "demolished" after it has been destroyed by controlled end-of-life demolition, fire, natural catastrophe, war, terrorist attack, or through other means intended or unintended.

When is a tall building considered to be a "vision"?
A building is considered to be a "vision" when it either:
1) Is in the early stages of inception and does not yet fulfill the criteria under the "proposal" category, or
2) Was a proposal that never advanced to the construction stages, or
3) Was a theoretical proposition

Structural Material

A ***steel*** tall building is defined as one where the main vertical and lateral structural elements and floor systems are constructed from steel.

A ***concrete*** tall building is defined as one where the main vertical and lateral structural elements and floor systems are constructed from concrete.

A ***composite*** tall building utilizes a combination of both steel and concrete acting compositely in the main structural elements, thus including a steel building with a concrete core.

A ***mixed-structure*** tall building is any building that utilizes distinct steel and concrete systems above or below each other. There are two main types of mixed structural systems: a ***steel/concrete*** tall building indicates a steel structural system located above a concrete structural system, with the opposite true of a ***concrete/steel*** building.

Additional Notes:
1) If a tall building is of steel construction with a floor system of concrete planks on steel beams, it is considered a ***steel*** tall building.
2) If a tall building is of steel construction with a floor system of a concrete slab on steel beams, it is considered a ***steel*** tall building.
3) If a tall building has steel columns plus a floor system of concrete beams, it is considered a ***composite*** tall building.

Determination of Compliance to Criteria:

Due to the complex and diverse nature of tall building designs worldwide, some exceptions to this set of criteria may be appropriate depending on the particular building. The CTBUH Height Committee therefore reserves the right to examine and define such exceptions on a case by case basis.

To submit an individual building for evaluation or clarification, please complete the form at buildingsubmission.ctbuh.org and send to skyscrapercenter@ctbuh.org

Council on Tall Buildings and Urban Habitat, S.R. Crown Hall, Illinois Institute of Technology, 3360 South State Street, Chicago, IL 60616-3793 USA
phone: 312-567-3347 fax: 312-567-3820 e-mail: info@ctbuh.org web: www.ctbuh.org