Height Master Plan
For Washington, DC

Case Study Research

How Building Height is Managed in Other World Cities & Best Practices in Planning for Building Heights in Relation to Historic Resources
How Building Height is Managed in Other World Cities

The following case studies are intended to inform the ongoing public discourse on the height of buildings in Washington DC. They provide context to the local discussion by summarizing the regulatory approaches taken by other world cities and the motivations behind them. The studies also describe the relevant evolution of those regulations and offer lessons learned that may benefit the dialogue.

These specific cities were selected because of their status as either a National Capital, a center of cultural identity, an economic engine or combination thereof. The cities studied include:

- London, UK
- Paris, France
- Barcelona, Spain
- Vancouver, Canada
- San Francisco, USA
Summary Considerations for Washington, DC

Summary Observations
Each of the studied cities regulates height differently based upon its own unique physical features, cultural assets, economic priorities, and governance structures:

**London** building heights are managed through layers of policy controls, character conservation areas, and signature view corridors. Clusters of the tallest buildings are most often found in the gaps between protected viewsheds and development approvals require significant attention to design quality.

**Paris** building heights are managed by the City Council and often based on directives from the federal government. A collective desire to preserve the human scaled character of the historic core has pushed vertical development to the outer gateways of the city.

**Barcelona** building heights vary by individual Districts under a city-wide cap established by the City Council. The cap relates to the height of a significant church which is also related to the height of a prominent topographic feature.

**Vancouver** has identified three dimensional view corridors to the surrounding mountains which must be preserved. The City has also developed guidelines for taller buildings that encourage a human scaled streetscape experience.

**San Francisco** building height regulations are primarily administered though the zoning code. Taller buildings are encouraged in areas where transit access is highest. Height limits also guide development adjacent to significant open spaces.

Common Themes
Despite the differing details between these regulations, there are common themes present in their approaches, histories and preceding motivations:

- Building height regulations, and their resulting limits, evolve over time due to changing needs of the city; dramatic changes in allowable building height over time can alter the character of cities.
- In many cases, building height regulations are developed as a reaction to an individual construction project.
- Often signature vistas are deemed worthy of preservation and are subject to site-specific height controls.
- The quality of proposed architecture is critical to establishing or maintaining a city’s identity.
- Guidelines are developed to ensure adjoining public space is afforded access to light, inviting proportions and activated streetscapes.
- Increased building height is used to guide economic development and as an incentive for infrastructure upgrades and public realm enhancements.
- Height regulations typically favor clusters of taller buildings rather than site-specific exceptions or increases over a broad geography.
- In many cases, height limit increases are focused on specific confined districts situated in advantageous positions or gateway locations.
- In capital cities, the National Government often establishes a general goal, and the local government manages the specific processes to achieve those goals.

Lessons to Consider
Based on the experiences of these cities, the following concepts should be considered when examining building heights:

- Consider that the city with the most restrictive height limits, Paris, is also the most densely populated.
- Consider which vistas contribute to Washington’s identity as a National Capital.
- Consider the desired streetscape experience in Washington, DC and how it may be affected by a change in height limits.
- Consider how the quality of proposed architecture could be evaluated and regulated going forward.
- Consider the relationship of building heights to cultural and historic sites, structures and plans.
London, capital of the United Kingdom and the largest metropolitan area in the European Union, seeks to maintain its status as a leading global financial center and cultural beacon without disrupting its historic, predominately low-rise (approximately under 4 stories), urban fabric.  

Following the construction of buildings that blocked views of London’s House of Parliament and Buckingham Palace in the late 1800s, the London Building Act of 1939 was adopted to establish city-wide height restrictions of approximately 8 stories. By the 1960s, height restrictions were loosened to enable buildings 38 stories and higher with the construction of Centre Point (38 stories) and BT Tower (62 stories). The redevelopment potential of London’s closed port in the 1980s led the UK government and the Greater London Authority (GLA) to create a special business district, Canary Wharf, which would allow skyscrapers (approximately greater than 22 stories). Today, Canary Wharf has become one of the City’s financial centers and a home to its greatest density of skyscrapers.

The current 2007 London View Management Framework Plan strives to preserve views into the central core and its landmarks, such as the dome of St. Paul’s Cathedral (36 stories; 111 m; 365 ft), from the surrounding hilltops and other key locations. Specifically the Plan regulates building heights through layers of overlapping controls radiating outwards from St. Paul’s Cathedral, the Tower of London, Buckingham Palace and other historic resources, including 26 different strategic sight line viewing corridors and character conservation areas or historic districts.

The GLA administers the View Management Framework throughout London’s 33 individual boroughs, by coordinating negotiations, often lasting years, between regulatory agencies and the public to ensure that tall buildings planned within or outside of view corridors are of the highest quality and meet public, municipal, and UK government expectations.

London’s Skyline Timeline

- **1710** – St. Paul’s Cathedral is completed, rising approximately 36 stories (~111m; 365 ft), the tallest building in London at that time.
- **1873-1877** – In the absence of any height limits, residential flats called Queen Anne’s Mansions are constructed to 14 stories (~43 m; 140 ft), blocking views, including the Queen’s views of the Houses of Parliament from Buckingham Palace.
- **1939** – London Building Act and amendments establish height restrictions of approximately 8 stories (~24 m; 80 ft), largely in response to Queen Anne’s Mansions.
- **1960s** – Height restrictions were changed to enable heights taller than 38 stories (~116 m or 380 ft). Two buildings, BT Tower and Centre Point, proceeded to exceed St. Paul’s 36 stories.
- **1980s-1990s** – Canary Wharf district receives a concentration of buildings exceeding 60 stories (~183 m; 600 ft). Regional Planning Guidance for Protection of Strategic Views is issued, protecting ten key views in the city.
- **1988** – Tower of London (~9 stories; 89 ft; 27 m) is designated a UNESCO World Heritage Site, requiring viewshed protection and prompting discussions about balancing cultural heritage preservation with economic development.
- **2013** – The Shard is completed. At 72 stories (~308m; 1,012 ft), The Shard is the tallest building in the European Union.
- **2013** – Tower of London (~9 stories; 89 ft; 27 m) is designated a UNESCO World Heritage Site, requiring viewshed protection and prompting discussions about balancing cultural heritage preservation with economic development.

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3 Canary Wharf Group PLC. “Our History” [http://www.canarywharf.com/]
5 City of London. “City of London Unitary Development Plan”, 2002

Image credit: www.skyscraper-city.com
Lessons Learned in London

London’s height regulation approach is primarily comprised of protected view corridors between specific vantage points and priority landmarks. Prioritization of viewshe~shed preservation, while simultaneously allowing high quality tall building development in strategic gaps between protected view corridors, creates a complex planning framework. The emphasis on the quality of proposed buildings, not simply their height, is an integral part of the negotiation and approval process. The regulations resulted in several cluster areas of taller buildings near the city center, while areas around St. Paul’s Cathedral remained lower.

Simulation of London’s Future Skyline (proposed buildings in orange) from the south bank of the River Thames. Building height restrictions have resulted in a clustering of London’s tallest buildings just outside the historic core.

Policy map document showing the multiple layers of height restrictions in and around St. Paul’s Cathedral

Image credit: Google Earth & Skyscraperpage.com

Image credit: City of London Unitary Development Plan

Image credit: Robert Tavernor
Paris, France

Population: 2,234,000 | City Area: 40.7 Sq. Miles | Density: 54,889 People per Sq. Mile

Paris, capital of France and one of the densest urban centers of Europe, was founded approximately 250 BC as a fishing village along the River Seine. The centuries since have seen its population and urban form fluctuate with wars, conquests, epidemics, and revolutions.\(^1\)

Political directives from the nation’s leaders have also been a driving force shaping Paris’ urban form. During Napoleon III’s reign in the mid 19th century, the rush of migrants to fuel the city’s industrial revolution combined with uprisings led the newly empowered leader to “modernize” Paris. His adoption of Haussmann’s plan established Paris’ distinctive boulevards, parks and dense 5-7 story residential building character.

In 1958, President Pompidou established the La Défense high-rise (greater than 12 stories) office district just outside the city limits. In 1977, the 68 story (~210 m or 689 ft) Tour Montparnasse was authorized within city limits. Tour Montparnasse was widely disliked by residents and led the Paris City Council limiting heights to approximately 10 stories (~31m or 101 ft) in the city center and 12 stories (~37 m or 121 ft) on the periphery.\(^2\)

Former French President Nicholas Sarkozy launched an urban renewal project, Le Grand Paris (Greater Paris) which includes housing growth and economic development through increased building height clusters at city gateways and edges. Le Grand Paris also includes an 80-mile addition to the urban transit system and cultural resource investments to make metropolitan Paris a more economically competitive, greener, compact, and connected city.\(^3\)

The national government initiative also seeks to boost Paris’s global image through architectural statements by world-renowned architects. In support of Le Grand Paris, the Paris City Council increased the height limit to upwards of approximately 59 stories (~180 m or 590 ft) for office buildings and up to approximately 16 stories (~50 m or 164 ft) for residential buildings in the outer neighborhood districts.\(^4\)

Paris’s Skyline Timeline

1850s - 1860s – Napoleon III commissions George-Eugene Haussmann to re-design Paris, promoting an apartment building boom of 5-7 story residences located along the newly carved, tree-lined boulevards.

1889 – Eiffel Tower is erected as the entrance to the World’s Fair, reaching approximately 100 stories (~320 m; 1,050 ft) and becoming one of the most visible icons in the world.

1958 – Establishment of La Défense high-rise business district located outside, but adjacent to Paris city limits. La Défense will eventually contain 14 office buildings above approximately 49 stories (~149 m; 490 ft) and become Europe’s largest business district.

1977 – Tour Montparnasse is constructed, rising approximately 69 stories (~210 m or 689 ft) above central Paris and leading to an immediate regulatory response by limiting building heights in Paris to approximately 12 stories (~37 m; 121 ft).

2010 – Le Grand Paris initiative proposed by French President Nicolas Sarkozy includes increasing height limits in certain neighborhoods and at key gateways to approximately 59 stories (~180 m; 590 ft) for office and approximately 16 stories (~50 m; 164 ft) for residential.


Image credit: Lieu Song, Benh. Wikimedia Commons.
Lessons Learned in Paris

Paris demonstrates that restrictive building height controls can coexist with significant residential density. Among the case study cities, it has the greatest population density per square mile. National government visions for Paris have played a significant role in shaping the city’s growth while the city government has tended to develop mechanisms for implementing and managing those policies. The city has preserved the horizontal character of its central core through encouraging taller buildings at the gateways and edges of the city.

View to La Défense business district from the city center. La Défense is located outside the city limits. A strong axial boulevard, the Champs-Élysées, visually connects the high-rise La Défense business district to central Paris.

The proposed 59 story Tour Triangle skyscraper at Paris’ Porte de Versailles gateway

Buildings Over 12 Stories (40 m;~133 ft)
Buildings Taller Than The U.S. Capitol Building (88m;~289 ft)
Buildings Taller Than The Washington Monument (appx 55 stories;169m; ~555 ft)

Primary area where height is managed
Barcelona, capital of the autonomous government of Catalonia and second largest city in Spain, is situated along the Mediterranean Sea between two river deltas and the Collserola Mountain Range.

The city has been shaped by 2,000 years of religious, cultural and political influences. Modern Barcelona emerged with industrialization in the mid 1800s and subsequent annexation of surrounding municipalities.1 The implementation of the Eixample district and a uniform street grid pattern gave the city a strong residential character of extensive mid-rise housing blocks (approximately 7-9 stories).2

By the mid 20th century building heights were generally based on the width of the street to allow light to reach the ground floors until a building boom occurred in the 1980s and 1990s following independence from the Franco regime and a bid for the 1992 summer Olympic Games.

The current city-wide building height limit of approximately 50 stories (~154 m; 505 ft) is based on the planned height of the Sagrada Familia, a Roman Catholic Church designed by Antoni Gaudí. The Sagrada Familia is a World Heritage Site and is considered one of the city’s iconic structures, reflective of the city’s cultural, religious and historic prominence. When finished or around 2026, the church will be approximately 56 stories (-172 m; 564 ft). Gaudi based the church’s height on the elevation of a prominent hilltop framing the city, Mont Juïc. The highest point on Mont Juïc is approximately one meter higher than the planned height of the Sagrada Familia.3

The city is divided into 10 districts which administer and manage their own height limits under the city-wide 50 story (~154 m; 505 ft) cap with the guidance of the city planning department. The older historic districts, such as the Gothic Quarter and The Eixample, for example, do not permit buildings to exceed the neighborhood’s existing 5-8 story character. Some districts on the periphery of the city, however, have been slated for development and tall building growth (22-50 stories), such as the recent 22@ Innovation District development on former industrial areas along Avinguda Diagonal.4

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Barcelona’s Skyline Timeline

1840s - Low rise (1-4 story) housing and factory buildings are constructed inside medieval walls.

1850s - Ildefons Cerdà’s l’Eixample plan, inspired by Karl Marx’s social ideas, is selected for the model of city expansion beyond the medieval walls. Heights are not to exceed the width of the street to allow sunlight to reach the ground floors.

1883 – Construction commences on the Sagrada Familia, anticipated to rise 56 stories (~172 m; 564 ft) when completed in or around 2026. The height of the Sagrada Familia will become the new maximum building height for the entire city.

1945 – 1975 – 8 story apartments were constructed along major routes throughout the city, including its periphery. The consistent heights of these buildings create a distinct uniformity throughout the city.

1980s - 1992 – Barcelona’s newfound democracy and bid to host the 1992 Olympic Games led to a building boom with the tallest building topping out at 50 stories (~154 m, 505 ft).

2005 - Present – Torre Agbar, an iconic 38 story (~144 m, 473 ft) skyscraper is completed, marking the gateway to a major urban regeneration area on former industrial lands along Ave. Diagonal, named the 22@ Innovation District.

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Image credit: Candanedo, Juan Carlos. www.flickr.com
Barcelona’s Skyline Map

View of Barcelona’s skyline from the Mediterranean Sea

Lessons Learned in Barcelona
Similar to Paris, building heights are regulated across the entire city. While there is a maximum height limit city-wide (based on the height of the Sagrada Família), individual districts within the city retain significant power to regulate local height restrictions. This flexibility allows the districts to make adjustments that promote distinct neighborhood identities. New building proposals are encouraged to consider the scale relationship to the street, and surrounding building heights, and to frame prominent view corridors.

The Sagrada Família, when finished in or around 2026, will be the tallest building in Barcelona. City height restrictions (50 stories) ensure that no other building may approach its central tower of approximately 56 stories (~172 m; 564 ft).
Defined by water bodies and framed by mountains, Vancouver is a city where height restrictions are driven by natural beauty and its citizen's desire for a high quality of life.

Vancouver's proximity to mountain and marine resources has fueled the city's growth from the mid 1800s. The Downtown Official Development Plan released in 1975 marked the importance of these natural resources by establishing a planning framework for increased density that promotes "neighbourliness" by seeking sunlight preservation, view protection, privacy, topographic adaptation, tree preservation and recreational amenities.

By 1989, Vancouver's View Protection Guidelines (updated in 2011) were released to reflect "Vancouverism", a comprehensive approach that supports strategic density goals while maintaining a high quality of life through:
- Enhancing the city's dynamic skyline image
- Marking gateways to the downtown
- Ensuring that tall buildings have as little negative impact as possible on the usability, vitality and quality of the public realm
- Providing opportunities for signature architecture in the skyline at select locations

More than 35 view corridors have been approved by the City Council. "Vancouverism" encourages a street-scale relationship at the building base through use of windows and townhouses; a tower that slims as it rises to limit impacts to pedestrians; and a building top that strives to make an artistic statement. The clustering approach of tall buildings, stimulated by density bonuses for public amenity contributions, has enabled developer-funding of public park creation.

Higher buildings 55 to 70 stories (~168m to ~213 m; 550-700 ft) are permitted within designated areas located in the central business district with the tallest (greater than 70 stories; ~213 m; 70 ft) located on one of the City's three primary streets as gateways into downtown.

Vancouver's Skyline Timeline

1953 - Vancouver Charter is granted by the British Columbia legislature, empowering Vancouver's City Council with broad and considerable authority to shape governance, policy and planning.

1975 - Downtown Official Development Plan is adopted by the City and calls for dramatic residential density increases via high-rise (more than approximately 10 stories).

1975 - The City Council commissioned the Downtown Vancouver Skyline Study (1997). The study concluded that the skyline would benefit from a handful of iconic buildings.

1977 - General Policy for Higher Buildings adopted in 1997 and amended by City Council in 2011. These guidelines provide opportunities for strategically placed height at two prominent bridge “gateways” to mark the entry into downtown.

1989 - View Protection Guidelines were developed to protect views of the shoreline, downtown skyline and North Shore mountains. These guidelines continue to shape the City's growth through amendments in 1990 and 2011.

1997 - General Policy for Higher Buildings emerged from the Skyline Study and promoted the protection and enhancement of key views, design quality and enhancement of the natural environment.


Lessons learned in Vancouver

Vancouver has determined that views between buildings to the surrounding mountains are sufficiently important to the city’s character and economy to warrant preservation. View protection guidelines are used as the comprehensive tool for directing strategic density and maintaining quality of life. Height bonuses are seen as a public good which require developers to provide public infrastructure investments.

- Buildings Over 12 Stories (40 m; ~133 ft)
- Buildings Taller Than The U.S. Capitol Building (88m; ~289 ft)
- Buildings Taller Than The Washington Monument (appx 55 stories; 169m; ~555 ft)
- Primary area where height is managed

Existing regulated height levels from South Gateway to Downtown

The F1-Choklit Park to Grouse Mountain & Mount Fromme Preserved View Cone Policy Map (below left) and corresponding protected view field image (below center).

No structures may encroach in these areas from this field viewpoint in order to protect views to the mountains beyond.
San Francisco, CA, USA

Population: 812,826 | City Area: 47 Sq. Miles | Density: 17,331 People per Sq. Mile

San Francisco’s skyline, street grid across hills and valleys, and expansive views of the bay are essential characteristics of the city’s identity.

Since the 1960’s, the city’s building height regulations have been shaped through iterative tall building proposals, citizen-led propositions, shadow analyses, and bold city plans.

What citizen groups refer to as the “Manhattanization” of the city skyline through the 1970s and 1980s, established buildings like the Transamerica Pyramid (approximately 100 stories; ~325m; 1,065 ft) in the financial district. This building boom slowed in the early 1990s due to a weaker economy and public clamor for less-dominant office buildings.¹

Projected building growth also shifted when a city-led urban design plan in the late 1980s redirected future high density away from the fully built-out financial district, to the lower-scaled and underutilized South Market Street neighborhood.² By 2005, the need to finance regional public infrastructure such as a new multi-modal transit center, parkland, and affordable housing led the city to negotiate height bonuses (permission to build a range of approximately 80 to 100 stories) in exchange for public infrastructure investments.

The city’s planning department manages height restrictions through the zoning code, which designates height limits in different districts. In some cases, specific limits are identified based on analysis of development proposals which cause excessive shading of public spaces for individual block and lot locations.³

The city recently adopted zoning and planning standards for areas including the Transit Center District to provide regulators and the public with the framework for guiding economic development, controlling tall building characteristics and ensuring public sector investments in parks, streets and other community services. The revised zoning specifically addresses height and bulk restrictions, design, floor area ratio, character, land use, historic building impacts, parking requirements and fees.⁴


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San Francisco’s Skyline Timeline

1964 – 40 story (~12m; 40 ft) height limit established to protect the city’s views of the bay

1964 – 40 story (~12m; 40 ft) height limit established to protect the city’s views of the bay

1972 – Transamerica Tower is constructed to a height of 48 stories (~260m; 850 ft).

1984 – City adopts Sunlight Ordinance to protect public parks from shadows cast by adjoining buildings

1985 – City adopts Downtown Plan into the General Plan for guiding growth in the Downtown area

1986 – The citizen sponsored Proposition M creates the first limit on high rise development in US, heights are capped at 60 stories (~183 m; 600 ft)

2005 – City adopts Transbay Redevelopment Plan to direct the redevelopment of underutilized publicly-owned lands in a high density neighborhood with height limit increases.

2012 – City adopts the Transit Center District Plan. Height limits are increased to augment transit-oriented capacity for serving both regional & state needs. Office towers are planned to range from 900’-1200 ft (~274m to ~366m) in height.

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Image credit: Stephen W Oachs Photography
Pedestrians congregate in the sunny parts of a plaza overshadowed by a tall tower in San Francisco.

Lessons Learned in San Francisco

Building heights can be regulated through zoning and shadow analysis to minimize impacts to adjoining culturally significant, public open space. Increases in allowable building heights for specific locations can be used to guide growth and finance public infrastructure investments. Citizen advocacy and opposition to various building heights have helped the city’s government to shape height regulations that are consistent with public interests.

Simulation of San Francisco’s Future Skyline (proposed buildings in orange) with the Transbay Terminal Redevelopment. View from Dolores Park, South of the CBD.
Best Practices in Planning Building for Heights in Relation to Historic Resources

To further inform the ongoing discussion regarding the height of buildings in Washington DC, the following case studies summarize techniques employed by relevant cities for managing building heights in proximity to historic resources. The examples illustrate approaches that vary greatly in scale and offer lessons that can inform the public conversation.

These specific cities were selected either because they employ a unique approach to preserving the prominence of historic resources or they address the sensitivity of new development within historic urban plans. The cities studied include:

- Philadelphia, PA, USA
- Madison, WI, USA
- St. Louis, MO, USA
- Hamburg, Germany
- Dublin, Ireland

Andrew Ellicott’s 1972 adaptation of L’Enfant’s Plan for Washington DC

Image Credit: Wikimedia Commons
Summary Considerations for Washington, DC

Lessons to Consider

Each of the studied cities developed their own techniques for preserving the prominence of civic features. In some cities, the overall composition and impression of the skyline is the historic resource to be preserved. In other cities, the significant feature is an individual structure. In all cases, these resources have an embodied meaning that is vulnerable to loss without appropriate protections.

The techniques employed by the studied cities have achieved varied levels of success and offer useful lessons. The following concepts should be considered when discussing the optimal means of preserving historic resources and vistas.

• Consider the collective composition of historic and symbolic landmarks within the city’s skyline as a symbolic feature.
• Consider identifying special areas where additional density could be accommodated without adversely affecting the prominence of existing civic structures.
• Consider identifying a “zone of respect” surrounding historic and symbolic landmarks to protect their prominence.
• Consider relating the absolute maximum height limit or height setbacks to a fixed point on significant landmarks.

• Consider requirements that encourage varied, animated roofscape which could promote a dynamic horizontal skyline.
• Consider the vantage points from which preserved views to and from historic features are most critical.
• Consider that once encroached upon, views and vistas relating to historic or symbolic resources may be irreversibly altered.
• Consider ways in which the height and form of private buildings could accentuate civic or symbolic landmarks.
• Consider methods of integrating federal, regional, and local stakeholders to coordinate implementation.
William Penn’s plan for Philadelphia was published in 1683. As such, Philadelphia was one of the earliest planned cities in America and was designed to house the prominent public buildings at its center. Philadelphia City Hall was finished in 1901 and stands 548 feet tall, topped by a 27-ton statue of William Penn. This prominent building was intended to serve as Philadelphia’s beacon, similar to Paris’ Eiffel Tower and DC’s Washington Monument (which is only 7 feet taller). A gentleman’s agreement existed in Philadelphia that no building in the downtown should be higher than City Hall. It was noted that Philadelphia’s dynamic and influential Executive Director of the Planning Commission, Edmund Bacon, regularly pronounced this gentleman’s agreement as a way to maintain the civic prominence of the City’s skyline.¹

Up until 1986, no building was taller than City Hall. However, by then, much of the symbolism of Penn’s supremacy was already lost amidst “a stubby tide of undistinguished office buildings already [lapping] just shy of Penn’s pantaloons.”² As City Hall was getting crowded out within a sea of buildings just shorter than it, developer William Rouse proposed an office building, One Liberty Place, adjacent to City Hall that would rise to 960 feet. Despite considerable debate, the lack of a codified law prohibiting height encroachment of City Hall and the economic development benefits of the tall building project paved the way for the building’s approval and construction in 1986.

One Liberty Place stimulated debate within the preservationist and planning community. The City’s 1988 Center City Plan introduced specific view corridors and guidelines for downtown development, including promotion of public spaces, transit stations and office growth.³

The City of Philadelphia’s Historical Commission is responsible for ensuring the preservation of historic resources by designating structures and districts for protection and regulating their preservation through the City’s building permit process.⁴⁵ The Commission has designated 15 historic districts which are linked geographically and thematically in addition to the nearly 10,000 historic structures and properties listed on the Philadelphia Register of Historic Places.⁶ In addition to the Commission’s guidelines, entities such as the Preservation Alliance for Greater Philadelphia and the Secretary of the Interior’s Standards provide guidance for new construction that help protect the quality and historic sense of place. In many districts, new construction must align with existing adjacent building heights.

Lessons Learned in Philadelphia

• In Philadelphia, height regulations tailored for each historic district promote new buildings that match their context and maintain district scale.
• Height setbacks around significant landmarks with special design guidelines discourage the diminishing effect tall buildings had on Philadelphia City Hall.
• Codified height limits relating to a significant landmark’s features protect the prominence of historic structures.
• Exchanging additional height for construction of public amenities and infrastructure does not always work. While the 1988 Center City Plan sought to put this exchange into practice, fiscal constraints left some public amenities unrealized.

¹ Benjamin Gerber. Urban Height Restrictions Without a Law: A Philadelphia Story. Date unknown.
Despite overhead highways intrusions and other amendments, such as the Benjamin Franklin Parkway, William Penn’s gridiron with five civic squares and wide avenues has remained largely intact.

Civic and religious buildings dominated Philadelphia’s skyline, circa 1800.

Philadelphia City Hall when it was the tallest building in the city, circa 1910.

Other Relevant Sources
• Standards for Preservation and Guidelines for Preserving Historic Buildings, Secretary of the Interior, National Park Service.
Like Washington DC and Philadelphia, PA, Madison emerged as a planned city and a legislative capital. In the 1830’s, its picturesque isthmus of land located between two lakes was selected by the Wisconsin territory as its capital, with the construction of Wisconsin’s territorial Capitol building emerging in the 1840’s.

After destruction by fire and replacement of two previous capitol buildings on this same location by the early 1900’s, Wisconsin completed construction of the third state capitol building in 1917. The current structure’s white granite dome resembles the US Capitol building and rises to 284 feet, 5 feet shy of the US Capitol. The City established the Capitol View Preservation rules in the zoning code in 1966 as a way to protect views of the structure and throughout the downtown. The State of Wisconsin enacted a law in 1990 reinforcing the importance of these views and protecting the prominence of the State Capitol building.

A one-mile zone around the Capitol building that limits the height of any other buildings has been codified in City and State law. The height restrictions call for no building to exceed the elevation of the base of the columns of the Capitol Building (187 feet per the City datum). Provided, however, this prohibition shall not apply to any church spires, flagpoles, communication towers, elevator penthouses, screened air conditioning equipment on existing buildings and chimneys exceeding such elevation, when approved as conditional uses.

Lessons Learned in Madison

- A “zone of respect” (prevents vertical encroachment) around key historic resources.
- City of Madison zoning regulations ensure the prominence of the Capitol in the City’s skyline by preventing any building within one mile of the Capitol from rising higher than the base of the rotunda (approximately 187 ft).
- Building height limits account for elevation limitations as the Van Hise Hall building in Madison appears taller than the Capitol due to its higher topography, even though the building’s structural height (241 ft) is lower than the Capitol’s structural height (284 ft).
- Wisconsin State legislation also provides the City of Madison with an additional layer of protection against view encroachment around the Capitol building as a “matter of statewide concern”.

2 City of Madison Zoning Code, Section 28.134.
4 City of Madison, Downtown Plan: Adopted July 2012.
Madison, circa 1867

Madison's present skyline - Height regulations have created a horizontal skyline around the Capitol building.

In addition to the Capitol View Preservation zone, the City specifies height maximums for areas throughout the downtown.

Present bird's eye view of Madison.
St. Louis, MO, USA

Population: 318,172 | City Area: 66.2 Sq. Miles | Density: 4,806 People per Sq. Mile

St. Louis began as a trading post in the late 1760s, and grew significantly during the 18th century. By 1900, St. Louis was the 4th largest city in the United States. In order to commemorate the expansion of the country and the westward movement of its population, the U.S. Congress authorized the Jefferson National Expansion Memorial in 1935; the Memorial was completed 30 years later in 1965. The Memorial is intended to commemorate Thomas Jefferson’s vision of a unified continent; interpret those who explored, exploited, and inhabited land west of the Mississippi River; and to preserve the Old Courthouse, where the pivotal Dred Scott case was decided.

The Memorial consists of the Gateway Arch and designed landscape, the Old Courthouse, the Museum of Westward Expansion housed within the Arch, and areas east of the Mississippi River in Illinois. The Memorial design is intended to function as a single composition formed by the city, the Memorial, the river, and the area east of the river.1

To the west of the Memorial lies the St. Louis Gateway Mall, which extends 1.2 miles between two main boulevards. The park, which was designed by George Kessler, was identified in the 1907 Comprehensive Plan (although this plan was not officially adopted by the City).2 Within this area are two buildings, one of which was called for in the original plan (the Civic Courts Building). The other building, which opened in 1986, noticeably blocks partial views between the Civic Courts Building and the Old Courthouse.3

St. Louis zoning restricts building heights to an elevation of 751 feet mean sea level through a Jefferson National Memorial District zone, which surrounds the Jefferson National Memorial.4 The Arch structure, which is 630 feet high, is approximately 1100 feet above mean sea level at its highest point, a difference of approximately 350 feet relative to other structures. In addition, I-70, which separates the Arch Grounds from the Old Courthouse, serves as a development setback.

Currently, actions are underway by numerous agencies to improve linkages between the Arch and the city. The Missouri Department of Transportation is undertaking the “Park Over the Highway” project, which will cover the depressed I-70 in the vicinity of the Jefferson National Expansion Memorial with a green space. Further, NPS is currently undertaking improvements to the Memorial that would alter existing pedestrian paths, replace vegetation, and remove parking, much of which would build on the original landscape design for the Memorial. Finally, NPS has identified improvements to the land east of the river to be studied in an effort to further implement the original design for the Memorial.

Lessons Learned in St. Louis

- Limiting the elevation of buildings through zoning, regardless of topography, to approximately 350 feet lower than the Arch’s height preserves the prominence of the Arch.
- Implementing plans inconsistently resulted in changes to the visual character of the Memorial and its relationship to the city.

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3 St. Louis Gateway Mall Master Plan, July 2009.
4 City of St. Louis Municipal Code of Ordinances

“Each object should be designed in its “next largest context - a chair in a room, a room in a house, a house in an environment, environment in a city plan.”

-Eero Saarinen, Architect of the St. Louis Gateway Arch

“The height regulations [of the Jefferson Memorial District] are the same as those in the central business district except that in no instance shall any portion of a building or structure including all appurtenances and super structures thereon, exceed a mean sea level elevation of seven hundred fifty-one (751) feet.”

-St. Louis Municipal Code of Ordinances
Present view east along the St. Louis Gateway Mall - A private building obstructs the view to the courthouse and Gateway Arch

Image Credit: 2009 Gateway Mall Master Plan

Area before the Gateway Mall, circa 1928

Image Credit: St. Louis Comprehensive Plan

St. Louis's present skyline looking west

Image Credit: Wikimedia Commons

Image Credit: Wikimedia Commons
Hamburg, Germany

Population: 1,802,041 | City Area: 292 Sq. Miles | Density: 6,171 People per Sq. Mile

Hamburg, Germany is characterized by a horizontal skyline, punctuated by church spires, that reflect the city’s economic history as a major port, a role that continues to this day. The Speicherstadt, or Warehouse District, forms the historic core of the city and is listed by the city as a historical monument. Development expanded from this historic area onto the relatively flat plains of the Elbe River. Today, Hamburg is an economically vibrant city in northern Europe, whose primary economic sectors include trade, aviation, and media.

In response to changes in the needs of the shipping industry, Hamburg began exploring the reuse of its older, obsolete ports. In February 2000, the City of Hamburg approved the HafenCity Masterplan. This initiative proposed the reuse of formerly industrial land adjacent to the Speicherstadt. The HafenCity Masterplan calls for 2.32 million gross square feet of development, including almost 70 acres of parkland, 6,000 residential units, and an estimated 45,000 jobs. Comprised of both existing land and expansions into the current port, the development area covers approximately 388 acres.1

The HafenCity Masterplan states that as a general rule, height in HafenCity should not exceed the height of Speicherstadt [historic core] buildings in an effort to minimize potential impacts on historic resources and to maintain the historic character of Hamburg’s skyline. However, the Masterplan has identified specific areas that could include taller landmark building without having a negative effect on the skyline. Such areas are primarily outside the area directly adjacent to the historic core.2

Additional efforts were taken to accentuate views of existing and prominent buildings, features, and views. The views from the city center to HafenCity and the Elbe should be enhanced through physical structures. Harbor cranes are currently being preserved, as are the pavements, railway tracks, and customs facilities within HafenCity.

Most of HafenCity will be between six and eight stories, which is consistent with the traditional buildings of the city that are approximately 98 feet in height, although some areas near the Speicherstadt would be as low as four stories. Other areas, further from the historic core, are planned for high-rise development. The Elbphilharmonie, an adaptive reuse of an historic warehouse, will rise to approximately 360 feet in height, making it the tallest inhabited building within Hamburg. Adding multiple stories to the existing base structure, the Elbphilharmonie will contain a concert hall, hotel, and residential uses.

Lessons Learned in Hamburg

• Hamburg’s height limitations create consistency with an existing historic skyline.
• New and historic portions of the city work together to achieve an iconic collective composition.

2 HafenCity Masterplan, HafenCity GmbH and City of Hamburg
Central city building heights studies from Alster Lake's views to HafenCity

Simulation of Hamburg's future skyline with HafenCity development. Efforts were taken to accentuate views of existing prominent buildings and reinforce the distributed spires of Hamburg's skyline.
Dublin, Ireland

Population: 527,612 | City Area: 44.4 Sq. Miles | Density: 11,883 People per Sq. Mile

Originally founded as a Viking settlement at the mouth of the River Liffey, Dublin became Ireland’s most populous city following the Norman invasion in 1171 and rapidly grew from the 17th century on. Dublin has numerous landmarks and monuments dating back hundreds of years. Some of the oldest include Dublin Castle, Trinity College, and Saint Stephen’s Green.

Ireland began tracking national monuments and heritage architecture through the latter half of the 20th century by continually strengthening the National Monuments Act, which was initiated in 1930. Ireland’s ratification of UNESCO’s Convention Concerning the Protection of the World Cultural and Natural Heritage in 1991, and the Convention for the Protection of the Architectural Heritage of Europe (known as the Granada Convention) ratified by Ireland in 1997, strengthened the nation’s commitment to protection of its architectural heritage.1

An economic boom from the 1990s through 2007 led to numerous construction and redevelopment projects which confronted the tension between growth and preservation. Plans such as the Dublin City Development Plan (1999) and the Dublin City Heritage Plan (2002-2006) emerged as the City’s efforts to locally implement protection and management of heritage resources.2,3 The Dublin City Development Plan 2011-2017 promotes a low-rise city that protects historic and cultural resources. This plan provides qualitative and quantitative standards regulating building height which are used to assess new development proposals.

Four key components are used to regulate building height including:

- A city map that designates areas where tall buildings (over 164 feet) are allowed
- A set of development principles articulated for each area of the city where tall buildings are allowed that describes view corridors and profiles of historic features to be protected. For example, such buildings must be located to provide a coherent profile along the Thomas/James’s Street Ridge, when viewed from the historic city, including from the quays, the environs of the St. Catherine’s Church and St. John’s Church.
- An assessment criteria for taller buildings that includes urban form and spatial criteria relating to the protection of views and prominent landmarks; the buildings relationship to the historic and civic setting of key Dublin heritage sites; environmental and sustainability criteria; social, economic, cultural and transport criteria.
- Definitions for 3 types of building heights as designated for different areas of the city.

Lessons Learned in Dublin

- In Dublin, protection of key historic resources, views of these resources from identified vantage points, and the importance of placemaking are legislated in qualitative city development standards for any new building proposals.
- Height controls for new developments are presented in a simple set of height guidelines within the Dublin City Development Plan 2011-2017 that include a map designating areas of greater and lesser heights; principles describing view corridors to historic resources for localized areas; a building design criteria emphasizing urban form, heritage protection, local context, etc. and definitions of acceptable building heights for each area.

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1 Architectural Heritage Protection Guidelines for Planning Authorities (2004)
3 Dublin City Development Plan 2011-2017 (2011)
Dublin’s skyline from Saint Stephen’s Green, circa 1900

![Dublin’s skyline from Saint Stephen’s Green, circa 1900](Image credit: Judit Odena 2010)

Dublin’s present skyline - John’s Lane Church in foreground

![Dublin’s present skyline - John’s Lane Church in foreground](Image credit: Matt Robinson, MetroScenes.com)

Key views and prospects as regulated in the Dublin City Development Plan 2011-2017

![Key views and prospects as regulated in the Dublin City Development Plan 2011-2017](Image credit: Dublin City Development Plan 2011-2017)

Trinity College. View corridors protect the backdrops to and from many historic city landmarks and monuments.

![Trinity College. View corridors protect the backdrops to and from many historic city landmarks and monuments.](Image credit: The University of Dublin)