Overview: Fundamentals of Real Estate

This is the reorganized Fundamentals of Real Estate. The book is organized into four major sections. Chapter 6 explores government regulation of real estate.
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Chapter 6: Preview

Overview
This chapter explores government regulation of real estate focusing on land use controls. The discussion begins with an introduction to police power and the notion of takings which can occur under powers of eminent domain. The evolution of zoning is reviewed including the Standard Zoning Enabling Act that serves as a model for many local jurisdictions. Zoning ordinances are reviewed along with the legal requirements that they must satisfy. A case study of the impact of zoning on the intensity of use of a site is presented to demonstrate the importance of entitlements and the use of sensitivity analysis in exploring zoning appeals. The discussion of zoning concludes with a review of flexible zoning options and special zoning districts.

The role of building codes to protect the public health, safety and welfare is introduced along with model codes. Accessibility requirements are explored along with recent innovations and trends in energy efficiency that are affecting building codes.

What you will learn in Chapter 4
- The rationale behind land use controls and the delegation of authority that transfers powers to states and local jurisdictions.
- The differences between exercise of police power and takings along with the notion of just compensation.
- The philosophy behind zoning ordinances and the legal requirements they must satisfy.
- How zoning affects the nature, intensity and design of improvements.
- Approaches that can add more flexibility to otherwise rigid zoning ordinances.
- The role of building codes and how they have evolved over time.
- The importance of complying with accessibility requirements.
- The notion of green buildings including LEED, Energy Star and other approaches.
- Government initiatives to advance green.

Zoning Ordinances

- Council or elected body creates zoning code
- Develop zoning map
- Specify policies & practices
- Develop appeals procedure
- Planning & Zoning Commission
  - Role: advisory to council; changes or revisions
  - Evaluate Proposals; Changes
  - Compatible with Comprehensive Plan
  - Justified in public interest
  - Not undue adverse effects on surrounding community
- Zoning Board of Adjustment
  - Reviews petitions for variances for individual parcels
  - Makes final decision
  - Judicial appeals can be filed.
Real Estate Regulation

Land Use Controls

**Public Constraints on the Private Bundle of Rights**

Real estate is a tangible asset, the ownership of which is comprised of a bundle of rights. The complete bundle of rights includes the exclusive right to enjoy, use and transfer. While this might imply that an owner can do anything to land that they own, the reality is far different. That is, the use of land, the intensity of use and the uses to which it can be placed are subject to government regulation and approval. This regulation may be rather benign and beyond the prudent and economic uses to land can be placed or it can be complete, denying all uses of land. Thus, in addition to the private bundle of rights, the use of land is subject to a series of private regulations and policies that may further restrict the private rights normally associated with real estate ownership. Thus, other than the inherent value in land from the sheer joy of ownership or the ability to harvest the value of mineral, water, oil and other natural resources, the value of land is derived; it is the constrained or residual bundle of rights left over after government regulations are brought to bear on usage decisions and compliance costs have been exacted.

**Police Power and Dillon’s Rule**

The right to regulate land use is vested in the constitution under the right to protect citizens’ health, safety, morals and general welfare. In general, these regulations come under the umbrella of “police power.” The power to regulate land use stems from inherent and plenary powers vested with the federal government under the constitution.

Inherent powers are powers of necessity that may not be implied in the constitution but are essential to government. Plenary powers are the absolute powers of the federal and state government that cannot be superseded by lower levels of government. However, they can be...
delegated to local governmental jurisdictions. If it is determined these powers are not being applied in an acceptable manner, the delegations can be withdrawn.

Dillon’s rule was established to determine whether land use regulations as implemented by local jurisdictions are reasonable and fall under police power or whether they are excessive. Briefly, Dillon’s rule traces local land use controls back to the federal constitutional requirements. It mandates that local land use regulations must be explicitly authorized by states, reasonably necessary to achieve their authorized activities, and essential to achieve locally set goals and objectives.

**Dillon’s Rule**

- Fed and state have strong constitutions
- Municipal is inherently weak, all powers from Fed & State

**Federal & State vs. Local**

- Be expressly authorized by state statute
- Be reasonably necessary to the achievement of an authorized activity
- Be essential to the declared objects and purposes of the municipality

**Requirements for Local Activity**

**Exhibit 6-2**

In reviewing zoning and other forms of government regulation of land, it should be noted that they are inherently adversarial. That is, local government sets the rules of land use and once set, these rules become institutionalized and are difficult to change in order to avoid issues of fairness and equity that could arise from arbitrary and capricious changes that affect long-term usage decisions. While there are some exceptions to this policy and local jurisdictions can periodically change land use and zoning codes, these changes are not made lightly and are often made under pressure to respond to some external trigger event or judicial intervention.

Since the market is in a continuous state of flux, land use restrictions can often become obsolete and thwart the optimal use of land. To that end, land use decision-makers should approach zoning and other forms of land use controls as constraints, but not as obstacles that cannot be overcome or modified if a strong case can be made. This process is known as entitlement and can have a tremendous impact not only on the value of a property, but on the urban form and social fabric of which land uses become an integral component. One of the challenges built into an adversarial land use control system is that the burden of change falls on the private...
sector, especially when seeking more intense land use. As such, land owners and developers can be painted as the “bad guys,” the ones not willing to play by the rules. This adversarial system tends to create schisms, ones which can create a false sense of separation of interests among private property owners and neighborhood, community or other stakeholders. This can lead to an environment of distrust which is not only counterproductive, but can thwart the ability to create economically viable, livable vibrant communities and neighborhoods.

Unfortunately, the lack of a scientific foundation for real estate and the resultant ambiguity makes it extremely difficult to identify the true benefits, costs and implications of various land use interventions. As such, decisions regarding land use controls are often developed without the benefit of fact-based critical thinking in which both the public and private sectors engaged in the debates. As such land use decisions can be based on normative beliefs and attitudes regarding how the market should function rather than on an understanding of how it does function. This situation is amplified by a lack of communication across constituencies and the absence of a holistic approach that could draw on the various specializations to develop more pro-active, collaborative solutions to the complex problems the industry faces. Rather, decisions are often compromised by the natural tendency of various parties is to approach those on the opposite side of a land use issue with a fundamental sense of distrust. As such, attention is shifted from the objective elements surrounding the issue and toward personal agendas which can poison the debates and preempt optimal solutions. When disputes do come up, the ultimate decision wind up in the courts and are resolved on the basis of legal issues and precedents rather than the pursuit of market-based, sustainable decisions,

The Takings Issue

Eminent Domain

In order to be accepted as a valid exercise of police power rather than a “taking,” certain guidelines have been established to protect private owners and ensure they have the right to “reasonable” enjoyment of property they own. Where the public interest argues for more control of a property than allowed under this standard, the right of “eminent domain” which allows the government to take ownership of a property can be invoked. However, this...
right must satisfy certain tests to protect private rights. If these tests—which can be changed over time—are met, the government must provide the owner with “just compensation” to make them economically whole. There are a number of types of takings ranging from direct and complete, to a more indirect form known as “inverse condemnation.” This occurs where the restrictions on use are so onerous that they fail to pass the “reasonableness” criterion.

There are three types of takings: 1) physical as in an overt takeover of occupancy and use, 2) regulatory as in an unwarranted restriction on private use, or 3) inverse which is a taking of such significant rights that it effectively renders the property useless even though some rights are left behind.

When a taking is permitted, a public body can exercise its right of eminent domain to condemn and seize private assets for the public good. This right must satisfy a public test; it cannot be used for primarily private gain which favors a new user over an existing user. If a taking occurs, the owner is entitled to “just compensation” to offset the loss of public property rights. Takings may be complete, encompassing the full bundle of rights for an entire property, or may be partial, covering some of the rights or some of the property. There are three types of takings: 1) physical as in an overt takeover of occupancy and use, 2) regulatory as in an unwarranted restriction on private use, or 3) inverse which is a taking of such significant rights that it effectively renders the property useless even though some rights are left behind. Since there are no hard and fast rules that unambiguously determine when the boundary between police power which supports restrictions on land use and takings occurs, the decision often winds up being litigated. If the control is within the legitimate police power, no taking has occurred and no compensation is required. On the other hand, if the regulation or control are clearly excessive and exceed the limits of police power, the condemnation can be resisted. If the appeal fails, the owner will be entitled to a monetary award that is referred to as “just compensation.”

Public Use vs. Public Benefit Doctrine

Public Benefit vs. Use

In the early interpretation of takings, the test was fairly narrowly defined to require a public use. This included parks, recreation, public buildings and other amenities that would be open to the public and ownership maintained in the public domain. On the other hand, public use did not include condemning land to be turned over to private developers or the development of public parking to support a primarily private use. Over the years, the requirement for a taking shifted to a “public benefit” standard. In some states, the determination of a valid public benefit has been delegated to state and local legislative bodies to determine what a valid public benefit is and then establish the boundaries of what is reasonable and equitable. In some states this has led to a significant expansion of the use of takings under eminent domain umbrella. The end result has been the use of eminent domain for urban renewal and urban revitalization projects, as well as industrial parks, stadiums and convention facilities, many of which may be operated in the private domain for private benefit. At this point, the federal government and federal courts have not developed...
definitive guidelines for when the boundary has been crossed and private land is being taken for private vs. public benefit. As pressure mounts to increase density, infill and transit-oriented development, the system is likely to be tested even more and should be closely monitored for the impact on private property rights.

**Commentary 6-1**

**Just Compensation**

When it is determined that a taking has occurred, the owner of the land must be provided “just compensation.” In general, the courts have interpreted this requirement to be satisfied by offering the previous owner the “fair market value” of the property. In some respects, the notion of “Just Compensation” is aptly named. That is, it is JUST compensation; a term that may or may not be consistent with a fairness doctrine that would be applied under a “common sense” model. Indeed, while it sounds like a reasonable approach in reality it can create a series of windfalls and wipeouts, with the wipeouts having a disproportionately devastating impact on owners, especially small business owners who were operating going concern businesses.

A case in point occurred in Seattle Washington in the mid-2000s. After years of wrangling and voting and re-voting, the city received the green light to go ahead and extend the existing monorail that was developed in conjunction with the 1982 World’s Fair. Since the monorail was clearly an example of a public use and benefit, the city used its powers of eminent domain to condemn the land along strategic points to build stations. As might be expected in a city with a vibrant downtown, a number of local establishments —many of which were landmarks to their customers—had sprung up at these now key intersections. Many of these were smaller family-owned business that had created significant “intangible value” attributable to the personal touch and human capital they had invested in developing and maintaining their loyal clientele over the years. While the buildings and neighborhoods may have suffered from neglect around them, they continued to maintain profitable businesses benefiting from customer service and loyalty. Thus, when word of the expanded monorail came down, many tried to resist but were quashed in favor of the greater public good. While they were indeed offered “fair market value,” the value was determined on traditional appraisal assumptions which ignored the “investment value” or subjective value to an individual or company, much of which was predicated on the “intangible value” and goodwill they had established over the years. Rather, they were offered arm’s length fair market value which focuses on the value of the building as is and its surroundings, and ignores special circumstances. It also assumes no undue duress and that the property is available for purchase. Ironically, if that was the case, invoking the powers of eminent domain would not have been necessary and the public body could merely have purchased the desired properties. The fact that evident domain was required offers prima factual evidence that the properties were not being freely sold and the owners were under more than a little duress. Those facts were not compelling and the cases were settled on a one-by-one basis with some appealing and many acquiescing to the greater power of government.

While the story might end there, the plot actually thickens. After the sites were condemned and the parcels along the line were assembled, the inimitable “Seattle Style” struck again, with a new vote vetoing the extended monorail and stopping the process dead in its tracks (or is that rails?). Now, since no development had occurred and the valid public purpose was no longer “valid,” it might have made sense to return the properties to the original owners at the price they were acquired. No such luck in the state of Washington where there was no legislation in place that could reverse eminent domain. Instead, the previous owners would have to compete at the new “market values” along with other speculative buyers who would replace the existing buildings with higher and better uses. As might be expected, many of the small business owners were unable or unwilling to try to reacquire their previous premises as the higher cost basis would have not allowed them to continue to return to “operations as usual.”

The expansion of “eminent domain” authorization to achieve “public benefits” continues, creating the opportunity for more windfalls and wipeouts. This is particularly true with the interest in revitalizing and renewing inner cities. While desirable on many fronts, social justice and public equity argues for caution and added efforts to ensure that unintended consequences do not go unnoticed and market forces are considered.
Zoning Codes

Zoning Rationale
Zoning is one of the more common forms of land use controls employed by local jurisdictions to regulate land use. Zoning codes are developed, implemented and enforced at the local level of government. The first zoning code was crafted in New York in response to development of the Equitable Building in 1916 which towered above surrounding neighborhoods blocking views and sunshine to surrounding parcels. The New York zoning law became the model for the Standard Zoning Enabling Act of 1924 which served as a blueprint for local zoning authorities across the country. After zoning regulations passed a Supreme Court test that was decided in 1926 (i.e., Village of Euclid Ohio vs. Ambler Realty Co.), zoning codes blanketed the country. Indeed, standard zoning is often referred to as Euclidian zoning. One of the notable exceptions behind adoption of local zoning codes is the city of Houston which remains free of a zoning, with the shape of the urban form vested in the hands of market forces, private easements and restrictive covenants.

Components of Standard Zoning Enabling Act

<table>
<thead>
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<th>Exhibit 6-6</th>
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| **Section 1: Grant of Power** | • Delegation  
• Authority to zone to protect health, safety, morals & welfare |
| **Section 2: Districts** | • Authority to divide into any number of districts of shapes & sizes  
• Objective to regulate uses or structures within districts |
| **Section 3: Purposes in View** | • Power must be executed under a master plan  
• Objective of plan to protect and provide adequate amenities to all |
| **Section 4: Method of Procedures** | • Authorized to set procedures for adopting regulations  
• Set procedures for amending regulations |
| **Section 5: Changes** | • Limits if 20% of owners in area oppose change  
• May extend to those in proximate area; distance to be specified |
| **Section 6: Zoning Commission** | • Establishes right to create Zoning Commission  
• Objective to set up initial plan |
| **Section 7: Board of Adjustment** | • Authorized to set up Board that can make exceptions/variances  
• Must be consistent with general intent of master plan |

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The initial strategy behind zoning codes was to concentrate certain activities and densities in designated areas. The underlying objective was to protect other areas from negative externalities (e.g., noise, smoke, congestions) and encroachment. As noted in Exhibit 6-6 the typical zoning code indicates permitted uses and intensity of use. For example, in Seattle Neighborhood Commercial (NC) is broken into NC1, NC2 and NC3 with the numbers indicating increased density of use. The same system is built into the other land use codes. In some of the districts, density bonuses are offered for including certain desired uses. In addition to density restrictions, the various districts also establish requirements for treatment of various items including parking, open space and street front design in an effort to encourage the development of more amenities.

Zoning Map

The designation of geographic areas under zoning codes is typically communicated by a set of comprehensive maps. These maps illustrate the urban mosaic of designations that blanket the city or jurisdiction. These maps contain clearly delineated districts that establish what can and what cannot be built, the intensity of buildings and the nature of the use of the built facilities. The map provides constructive notice (i.e., discoverable) of what can and cannot be developed on a site.
Zoning Creation, Amendment & Appeals

Once a zoning ordinance has been created and validated, the system becomes largely “institutionalized” or fixed. The resultant lack of flexibility is built into zoning codes and judicial decisions to help stabilize market expectations. In effect, the zoning map and accompanying code provides constructive notice. Due to the capital-intensive, durable nature of real estate development, the expectation that zoning designations will be maintained is critical for allowing the free market system to function. As such, the courts approach existing zoning codes with a presumption of validity that must be overcome to defend a proposed change in zoning.

Zoning Ordinance, Amendments & Appeals Process

- Council or elected body creates zoning code
- Develop zoning map
- Specify policies & practices
- Develop appeals procedure

Zoning Ordinance

- Role: advisory to council on changes or revisions
- Evaluate Proposed Changes
- Compatible with comp plan
- Justified if change comp plan
- Not undue adverse effects on surrounding or community

Planning & Zoning Commission

- Reviews petitions for variances for individual parcels
- Makes final decisions;
- Judicial appeals can be filed

Zoning Board of Adjustment

Zoning Requirements & Appeals

To satisfy judicial scrutiny, zoning ordinances must address the basic requirements established in the Standard Zoning Enabling Act and/or other model code upon which they are based. The ordinance must be consistent with the underlying goal of preserving the public health, safety, morals and general welfare consistent with local community standards. At the same time, zoning ordinances cannot violate constitutional rights of landowners or deny them due process. As such, the policies and procedures for developing the zoning ordinance must be specified along with appeals procedures and processes for making changes to the master plan or ordinance. In general, this requirement is satisfied by the creation of a Planning Commission and Zoning Appeals Board. In evaluating proposed changes, the Planning Commission must make sure they are compatible with the comprehensive plan, justified if a change is made to the comprehensive plan, and do not impose undue adverse effects on the surrounding or community as a whole.
Zoning appeals can be reactive or proactive. On the proactive side, they may be brought by landowners or other stakeholders seeking an increase in density or a change in allowable uses for a site or district. In making their decision, the Zoning Appeals Board may look for changes in public policy or values, although such determinations will typically be deferred to the local council or other body who can best speak for the public interest.

On the reactive side, zoning appeals may be brought by landowners owning property that has been downzoned to a less intense use or to use that is less desirable to the owner. After exhausting appeals procedures established in the zoning ordinance, landowners and those with standing can turn to the courts for a remedy. The courts will try to ensure that zoning changes that affect an individual land owner or group of owners do not exceed the limits of police power. In such cases, the courts may be asked determine if a change in designation is reasonable or if is too onerous and constitutes a taking. The courts will evaluate if the administration of the zoning ordinance adhered to procedural and substantive due process. The courts will also look for precedents where other waivers have been granted to make sure the equal treatment doctrine has been satisfied. Briefly, the “equal protection doctrine” which dictates that if exceptions or waivers are granted to an individual landowner(s) in a particular area or a comparable area, the same exceptions must be granted to others. This reliance on precedents is necessary to avoid favoritism or other forms of corruption and abuse of power that could otherwise occur.

Model Land Use Process Code

In addition to standardizing zoning requirements, the American Bar Association developed a model land use process code. To help ensure that landowners benefit from clarity, consistency and efficiency in the permitting and appeals processes, the model land use process code provides the legislative body with greater flexibility than the Standard Zoning Enabling Act with respect to specification of which body makes what kind of land use decisions. For example, rezoning can be delegated to a legislative body, initial approvals and conditional uses to a planning commission, and appeals and variances to a review board. It also allows some administrative reviews that do not require a record hearing, and limits the number of record hearings and appeals to one occurrence thus reducing the cost and time associated with appeals. The model code also allows a local governmental body the authority to approve, deny or make conditional approvals of permit applications. These approvals must state the regulations, goals and policies upon which the decision is based; the facts behind the decision; the conditions are consistent with the comprehensive plan; the applicant responded to all relevant issues submitted in administrative review; and, the conditions that must

To help ensure that landowners benefit from clarity, consistency and efficiency in the permitting and appeals processes, the model land use process code provides the legislative body with greater flexibility than the Standard Zoning Enabling Act...

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1 To view the 2008 model code, go to: http://new.abanet.org/sections/statelocal/PublicDocuments/ModelLandUseCode.pdf
be satisfied before a certificate of compliance is issued and those that must be satisfied after the certificate is issued. Finally, the model code addresses the issue of stays or freeze orders during the appeal process, authorizing the courts to refuse to grant a stay if it determines the appeal has a low probability of success and is without merit. The goal of this provision is to avoid delaying tactics which can kill real estate deals due to the high carrying costs and lack of access to capital that can occur in the face of uncertainty.

**Model Land Use Process Code**

<table>
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<th>General Provisions</th>
<th>• Definitions</th>
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<td>• Preliminary Hearing and expedited review</td>
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<td>• Stay pending review, review and supplementation of Record</td>
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<td></td>
<td>• Relief: standards, decisions, definitive, compensation &amp; damages</td>
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**Zoning Constraints**

**Nature and Intensity of Use**

In general, zoning codes are hierarchical providing the most protection to higher order uses (e.g., single-family residential) and the least to manufacturing and industrial which are perceived as less influenced by their surroundings. In many zoning codes, higher order uses are permitted in lower order areas, although some jurisdictions have created exclusive zones to avoid the backlash and complaints that are raised by residences moving into new developments that are located in close proximity to manufacturing and agricultural uses. Zoning codes have two basic types of restrictions on land use. First, they restrict the uses to which the land and buildings can be placed by establishing permitted uses for designated areas. Second, they establish limits on the intensity of uses that are placed on the land located in designated areas.
Government Regulation

Intensity of Use Zoning Factors

Zoning restrictions that affect the intensity or density of development include several key elements:

- **Lot Coverage Ratio.** The maximum percent of the lot area that can be covered by buildings or other improvements.
- **Height Restrictions.** The maximum height of a building in footage or stories.
- **Parking Requirements.** To address parking requirements and avoid overloading streets, zoning codes often establish parking indexes for the respective zones that specify the minimum number of parking spaces that must be provided per commercial square foot or per residential unit.
- **Floor Area Ratios (FAR).** The maximum total square footage of improvements per square foot of land regardless of the height or other constraints on the intensity of use (e.g., FAR = 4:1 indicates a 40,000 SF building could be put on a 10,000 SF site).

Siting of Use Factors

In addition to controlling the nature and intensity of use, zoning codes influence the siting or location of improvements on a site. This is achieved through several criteria that may be written into the municipal zoning code:

- **Setback Requirements.** Setback requirements establish the minimum front, rear and side yard buffers that must be maintained. The objective of such requirements is to protect neighboring lots from encroachment, ensure adequate visibility to improve safety for pedestrian and vehicular traffic, provide a buffer for location of utilities, and establish some uniformity in terms of design and streetscape. In some cases, areas subject to setback requirements may be used for enjoyment of the owner (e.g., parking, hardscaping) while in others they must remain open with minimal landscaping. In some jurisdictions, as in Seattle with its steep slope and waterfront areas, standards for granting variances are written into the code to accommodate for steep slopes and provide wetland buffers without excessively burdening owners of such land.

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2 See: [http://clerk.ci.seattle.wa.us/~codepics/2350024A.gif](http://clerk.ci.seattle.wa.us/~codepics/2350024A.gif)

3 For a discussion of these policies, see: [http://www.ci.seattle.wa.us/dclu/Publications/cam/cam330.pdf](http://www.ci.seattle.wa.us/dclu/Publications/cam/cam330.pdf)
Site Triangle Requirements

- **Site Triangles.** In addition to setbacks, some jurisdictions establish minimum clearances for intersections to ensure adequate visibility. In Seattle, sight triangle shall also be kept clear of obstructions in the vertical spaces between 32 inches and 82 inches from the ground. These areas are typically left open and cannot be obstructed by plants or materials.

- **Ingress/Egress Requirements.** Ingress and egress refer to the physical connection points by which visitors enter and leave a site. To protect the public and manage traffic flows, these points are typically controlled by placing a cap on the connections in terms of number, size and traffic flows. The exact location of such curb-cuts may be determined by traffic volumes, flows, lights and other factors but the general requirements are typically noted in zoning codes.

- **Parking/Vehicular Requirements.** In addition to controlling access points, depending on the nature of the use, zoning codes often establish specific requirements for loading and unloading of trucks, trash pickup and deliveries. They can also address on-site traffic flows and establish minimal criteria for parking in terms of stall sizes, driveways and special requirements. Zoning codes can also specify whether surface parking or deck parking is allowed.

- **Street Frontage.** In some jurisdictions, design standards are established for the first floor or frontage of a building. These requirements are set to control the visual appearance of buildings to achieve some desired state. For example, in urban villages retail storefronts may be mandated, with specifications set for glass, building articulation and other design details. These requirements are sometimes changed to respond to market forces or stakeholders as in the case of Seattle.

Seattle Streetfront Code Changes

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4 See: [http://clerk.ci.seattle.wa.us/~codepics/2354030D.gif](http://clerk.ci.seattle.wa.us/~codepics/2354030D.gif)

The “Modular Approach” to building envelopes is fairly straightforward. It converts a set of inputs to a module by adjusting each item to a modular equivalent. That is, each module contains surface area of the site, parking requirements, and open space. In essence, the approach calculates the number of modules and then allocates the site to the respective components of each module.

**Step 1: Specify Inputs**

- Gross Site Size
- Height Restriction
- Parking Index
- Floor Area Ratio
- Lot Coverage Ratio
- Parking/Stall
- Open Space Required
- SF/Module
- Number of Modules

The net coverable site is 34,848 sf. Each module contains 62.5 sf of surface building area (i.e., 1000/4 Parking/4 stories), and 400 sf of parking.

- **Step 2(a): Calculate Modules**

  In this case, assume the site is one acre or 45,560sf with a lot coverage ratio of 80% and a 4 story maximum building height. The parking index is 4 stalls/1,000sf of building and the average size of a parking stall is 400sf.

  - Net Coverable Site: 43,560 * 80% - 34,848sf
  - SF/Module
    - Building SF/Parking: 1,000/4 = 250sf
    - Building Coverage/Module = 250sf/4 stories = 62.5
    - Parking SF/Module: 400
    - SF/Module = 62.5 + 400 = 462.5

**Exhibit 6-15**

Step 1: Specify Inputs

- GSsf = Gross Lot Size: 43,560sf (one acre)
- LC = Lot Coverage Ratio. 80%
- # st = Height Restriction: Max. 4 floors.
- Parking
  - PI = Parking Index: 4 per 1,000sf
  - PS = Parking stall size: 400sf
- Floor Area Ratio (FAR): 2

Step 2: Calculate Modules

- Net Coverable
- Lot Coverage Ratio
- Open Space Required
- SF/Module
- Number of Modules

Step 3: Allocate Site

- Allocate sf/Use
- Test vs. FAR
Step 2(b): Calculate number of Modules

= Net Site / SF/Module
= 34,848sf / 462.5sf
= 75.3

After netting out the open space requirement, the 34,848 sf of coverable site area will support 75.3 modules. Thus, 75.3 modules will fit on the net site area.

Step 3: Allocate Site

- **Building**
  - Each of the 75.3 modules contains 250sf of building bringing the total building to 18,837sf.

- **Test FAR Constraint**
  - Under most zoning codes, the maximum building envelope will be the lesser of the building maximum constrained for height, parking and open space or the Floor-Area-Ratio (FAR). In this case, the constrained Building Square Feet max (BSF$_{max}$) is 18,837 sf which is less than the FAR constraint of 87,120sf (i.e., FAR = 2 * Site = 43,560sf).
Allocate Site
At this point, the site can be allocated to the various uses. If the calculations are correct, the entire site should be taken up by building, parking and open space as is the case.

Mathematical Approach to Building Envelopes
As an alternative to converting the site to modules, maximum building envelope sizes can be calculated by some algebraic manipulations. While less intuitive, this approach can allow the analyst to explore alternative building scenarios in an efficient manner.

Exhibit 6-17 presents the equation that can be used to calculate the Building Square Foot Maximum (BSF\(_{\text{max}}\)) for the same one acre site used in the modular example. The numerator in the equation calculates the net coverable site area after open space. If there was an additional reserve or set-aside area, the net coverable site would be further reduced. Without getting into too much detail, the denominator converts the components (e.g., maximum height, parking index and parking stall size) to building equivalents; it standardizes them to the same base.

Maximum Building Envelope
As noted, the BSF maximum under the mathematical equation is the same as in the modular approach. However, once the equation is set up in Excel or some other mathematical modeling software, sensitivity analysis can be applied to see how changes in independent variables (e.g., lot coverage, height and parking) can change the maximum allowable size of buildings. The flexibility and efficiency allowed by the use of mathematical models is important in helping eliminate the "analysis paralysis" syndrome which prevents many players from evaluating options. It can also empower real estate professionals explore design options.
without incurring costly consulting or design fees. Thus, a developer can objectively explore whether zoning designations should be accepted as is or whether it is worth the costs of appealing for a variance (i.e., allowable change for a particular site).

The flexibility and efficiency allowed by the use of mathematical models is important in helping eliminate the "analysis paralysis" syndrome which prevents many players from evaluating options. It can also empower real estate professionals explore design options without incurring costly consulting or design fees.

Assume a developer who is interested in the one acre site believes she can get the site up-zoned to allow for a 6 story building. On the surface, it might appear that the size of the building would increase by 50% going from 4 to 6 stories. Assume the building value would be $260/sf net of land and the cost of construction would be $160/sf. That would translate to a $1,883,700 of value – added development (e.g., (18,837 * ($260 value – $160 cost)).

Based on this assumption, the developer believes she could hire an architect, consultants, lawyers and other professionals to push for a rezoning and still come out ahead after professional fees. As such, it would creation which would make the effort of pursuing a rezoning a good investment and would also help increase density which would further the community’s goal of improving sustainability.

As noted in Exhibit 6-19, by increasing the building height by 50% (e.g., 6 vs. 4 story), the allowable increase in maximum building envelope would be 19,725 square feet. Thus, rather than doubling the size of the building, the increase would only be 888sf (e.g., 19,725-18,837). The main driver behind this constraint is the parking which eats up more of the site.

| Sensitivity: 6 Story vs. 4 Story |

Step 1: Calculation Building Envelope

\[
\text{BSF}_{\text{max}} = \frac{\text{GSSF} \times \text{LC}}{(1/#\text{St}) + [(1/(1,000/\text{PI})) \times \text{PS}]}
\]

\[
= \frac{43,560 \times 80}{0.1667 + [1.60]} \]

\[
= \frac{34,848}{1.7667}
\]

\[
= 19,725 \text{ SF}
\]

Original 18,837

Exhibit 6-19
As noted in Exhibit 6-20, the building footprint is only 3,288sf while the parking has risen to 30,139sf. Thus, the “value-add” would only be $88,888; an amount that could easily be eaten up by professional fees. Thus, rather than a good investment, the zoning appeal would actually erode value. This loss could be exacerbated by the fact the cost/sf of building would likely be higher since the 6 story building would have to be built of concrete or steel vs. wood frame, and construction time would be longer thus increasing carrying costs.

Site Allocation: 6 Story Building

<table>
<thead>
<tr>
<th>Building Footprint</th>
<th>Original</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSF&lt;sub&gt;max&lt;/sub&gt; / #St</td>
<td>3,288 SF</td>
</tr>
<tr>
<td>= 19,725 / 6</td>
<td>4,709</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parking Footprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSF&lt;sub&gt;max&lt;/sub&gt; * PS</td>
</tr>
<tr>
<td>= 19,725 * 1,000/PI</td>
</tr>
<tr>
<td>= 250</td>
</tr>
<tr>
<td>= 31,560 SF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Open Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSSF * (1 - LC)</td>
</tr>
<tr>
<td>= 43,560 * 20%</td>
</tr>
<tr>
<td>= 8,712 SF</td>
</tr>
</tbody>
</table>

Total Site: 43,560 SF

Interestingly, with the six story building the building footprint is only 3,288sf while the parking has risen to 30,139sf. Thus, the “value-add” would only be $88,888; an amount that could easily be eaten up by professional fees. Thus, rather than a good investment, the zoning appeal would actually erode value. This loss could be exacerbated by the fact the cost/sf of building would likely be higher since the 6 story building would have to be built of concrete or steel vs. wood frame, and construction time would be longer thus increasing carrying costs.

To reduce the site required for parking for the 6-story building, the developer would have to build deck parking or underground parking, both options which could be cost prohibitive. However, to eliminate guessing, these options could be easily calculated.

Maximum Building: 4-story Building; 2-story Parking

Suppose as an alternative to increasing the building height which would require a rezone, the developer wanted to explore a 2-story parking deck which is authorized under the current zoning. As noted in Exhibit 6-18 and 6-19, the maximum building size could be increased significantly by developing a parking deck rather than adding 2 stories to the 4 story building. As noted, the maximum building envelope would be 33,189sf vs. the 18,837sf with surface parking. That would add value of some $1.4million which could cover the costs of parking and professional fees.
Site Allocation: Deck Parking

### Step 2(a): Test FAR

<table>
<thead>
<tr>
<th>FARtest</th>
<th>(GSSF x FAR) - BSFmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>43,560</td>
<td>33,189</td>
</tr>
<tr>
<td>=</td>
<td>87,120 - 33,189</td>
</tr>
</tbody>
</table>

### Step 2(b): Allocate Site

<table>
<thead>
<tr>
<th>Building Footprint</th>
<th>BSFmax / #St</th>
<th>8,297 SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Footprint</td>
<td>BSFmax x PS/PP</td>
<td>26,551 SF</td>
</tr>
<tr>
<td>Open Space</td>
<td>GSSF x (1 - LC)</td>
<td>8,712 SF</td>
</tr>
<tr>
<td>Total Site</td>
<td>43,560</td>
<td>43,560 SF</td>
</tr>
</tbody>
</table>

In this case, the building footprint would be 8,297sf and the resultant building would be allowed under the current zoning. It would also fit into the character of the neighborhood and thus receive less attention during various reviews that might be necessary.

As noted in the previous case study, the ability to evaluate alternative scenarios for development is fairly straightforward and can be extremely helpful and cost-effective when considering zoning appeals or other actions to increase or change intensity of use. It can also be used to explore the economic losses associated with down-zoning or other changes that might be considered by local councils or planning authorities to protect neighborhoods from commercial development. Both the modular approach and the mathematical approach can be built into a spreadsheet and linked to cost models and other financial models to increase the scope of analysis. The results can also be submitted during negotiations to demonstrate the cost/benefit of various policies and practices.

### Zoning Flexibility

Once a jurisdiction creates a master or comprehensive zoning plan and operationalizes it by creating maps and the accompanying zoning codes that set the rules of development, the system becomes institutionalized and is relatively difficult to change. This rigidity is understandable, especially in light of the durable, capital-intensive nature of real estate and the important of creating a stable land use environment to help mitigate risk. However, changes in market conditions, community values and preferences will inevitably occur over time and render some zoning designations obsolete resulting in inappropriate or suboptimal land use decisions. While changes to the zoning ordinance are possible, due to the presumption of validity in existing ordinances and the need to protect private property rights, the process is understandably cumbersome, expensive and time-consuming. Thus, the inclusion of more flexible options in zoning ordinances is intuitively attractive.
The addition of flexible zoning options must be carefully managed with an eye toward constitutional rights, equity, the equal treatment doctrine, due process and social justice. While some degree of flexibility can be introduced via policies and practices, to withstand judicial scrutiny they should be built into the original zoning or into an amended ordinance that has been fully vetted and is consistent with the state and federal standards attached to the delegation of authority to zone land.

Flexible zoning options can be classified as general exceptions or as special exceptions. The category of general exceptions includes zoning variances, conditional use zoning and non-conforming uses. Zoning variances are exceptions that are made on a case-by-case basis. In effect, an individual landowner files and administrative and/or judicial appeal to get the zoning changed for an individual parcel that would make the use or intensity of use inconsistent with other parcels in the district. This might occur when a district is fairly well built out and the allowable uses are currently inconsistent with community needs or market demand. An example might be in a district in which community values have shifted to more emphasis on multi-use to increase walkability. In light of this shift, a landowner may seek and exception to allow the addition of some retail or commercial to make a neighborhood more independent and self-sustainable.

Since the primary use for the district has not changed, this exception will help retain the character of the neighborhood and add some synergistic uses without going too far. It should be noted that controlling future conversions may be difficult since the variance becomes a precedent and may be cited under the equal treatment doctrine.

If these conditional use criteria are satisfied, the conditional use authorization could enable a landowner to add uses that would not otherwise be allowed and/or build to a greater height and/or density.

Conditional use zoning is basically implemented by creating a set of criteria that apply to various overlay zones (i.e., on top of current districts). If these conditional use criteria are satisfied, the conditional use authorization could enable a landowner to add uses that would not otherwise be allowed and/or build to a greater height and/or density. Within bounds, these criteria can be modified over time allowing the community to respond to changing values by modifying the zoning treatment without requiring a change in the underlying districts or general rules. Such systems are often used to encourage developers to add socially desirable uses (e.g., day care, libraries, open space), or to add affordable
housing or other special needs housing. Since each owner in the district has the opportunity to meet the criteria, the designation will generally pass the equal treatment doctrine.

A non-conforming use is a designation that can be attached to a property that was once in compliance with the zoning requirements but, after rezoning, are no longer allowed. In effect, the designation removes the hardship that the owner would endure if forced to tear down an existing building or shift current land uses to satisfy the new designation or land use requirements. Without such a designation, the courts may prevent the rezoning of districts or areas by determining would constitute a taking as a result of the hardship owners would face to comply with the new standards. In effect, the current use or intensity of development is allowed to continue on specified parcels which are grandfathered in under the previous zoning rules. However, other landowners are denied the right to add similar uses or develop to a similar level of intensity. On the surface it might appear that there are no adverse consequences to non-conforming use designations since they are enforceable as long as the building exists or the use remains intact. However, there are some strings attached to conditional use designations since the ultimate objective is to eliminate the exceptions over time and bring the entire district into compliance with the new zoning designation. As such, there are threshold tests for determining when the current use continues or is disrupted thus causing the site to fall under the new rules for the district. For example, in some cases a building cannot be repaired if the cost of repair exceeds a certain percentage of the value of the building. Thus, in the event of a fire that causes moderate damage, the end result might be a total wipeout with respect to the previous use or building that have to be demolished to make way for a compliant use or building. Similarly, the building cannot be substantially expanded or modified.

**Special Land Use Districts/Zones**

**Special Land Use Zones**

To accommodate special land uses, zoning ordinances may create a number of special land use zones or categories. As noted in Exhibit 6-24, these land use categories differ from the traditional hierarchical district zoning system that blankets the jurisdiction. They include: floating zones, special districts, special uses, historical districts and transferable development rights (TDR) zones.
Special Zones/ Districts

A “floating zone” and “special use” designations are distinct but contain some philosophical similarities. In both cases they identify certain land uses that are desired for the community but do not designate where exactly they will occur. By keeping the location open, the designations provide flexibility and to defer to the market to determine when and where they will be assigned to a geographic location. The floating zone is distinctive in the fact it can encompass more than one property, blanketing sufficient land mass to accommodate the use or portions of the use. On the other hand, the special use is approved for individual parcels, but the location of those parcels is not pre-defined. To protect the community from over-development of the desired use, the designations are awarded on a first-come, first-served basis up to some capacity limit. This approach satisfies the equal treatment doctrine but also protects the community from over-development.

The “special districts” label includes several distinct but related categories of land use treatment. In general, they each target a special zone or geographic area within which sites are treated differently from comparable locations not so designated. For example, a special improvement district could be established to encourage redevelopment and urban infill with uses and intensities that were not allowed under the previous zoning classification for the affected area. At the same time, designating such areas would not require modification to the zoning ordinance and would not risk spill-over to other comparable areas. Within these districts, changes from the original zoning may be made with respect to the types of uses that are allowed, added density bonuses, and amenity requirements in hopes of creating a more desirable market area than what was in place when the designation was made. To stimulate the private market to invest in the area, local jurisdictions may offer property tax abatements, create income tax subsidies tied to job formation, add infrastructure and amenities, or offer low-cost loans or guarantees and other inducements.

Depending on authorization under state enabling legislation, the costs for new infrastructure investment in special districts may be covered by use of “tax increment financing (TIF).” Briefly, TIF financing programs raise capital for investment in infrastructure and amenities to benefit a dedicated area by issuing tax-exempt bonds which will be repaid by a special assessment levied on properties located in the targeted area. This approach allows a jurisdiction to charge the landowners who will be the ultimate beneficiaries of the dedicated improvements. If successful, these benefits would come through increases in market value. In many cases the use of TIF programs will be more politically palatable in the sense it will not impose a financial burden on other taxpayers who may not see a direct benefit and might oppose the differential treatment. It may also help avoid a situation in which other landowners lobby for such investment where they own property which is not located in a targeted redevelopment area.
Urban Villages

Some zoning ordinances have been customized to create a vibrant network of “cities within cities” that can allow smaller markets retain their local character at the same time they help achieve desired community values. In Seattle these “cities” are designated as Urban Villages and are designed to allow the city to deliver services equitably, achieve environmentally and economically sound development patterns, and better manage growth. The City created four categories of villages including dense, mixed-use urban centers; manufacturing & industrial centers, moderate density hub urban villages providing a balance of jobs and housing, and lower density residential urban villages that provide goods and services for residents and surrounding communities but are not intended to be employment centers. Unlike a traditional zoning code that blankets the area, the urban villages do not cover the entire geography but focus on selected nodes within the greater market. The underlying strategy is to accommodate growth in the urban villages and channel it away from single-family areas.

Historic Districts

Historic districts are a form of specialized district in the sense that they are specifically delineated areas within which the historically significant areas can be protected from development or modifications that would change the character of the area. The designation differs from “historical buildings” in the sense that rather than applying to individual buildings it blankets an area. Within these areas, development of vacant lots and redevelopment of buildings that may not be “historically significant” is controlled to protect the historical feel and/or ambiance of the area. In many cases, these areas were once the heart of a city but lost their luster over the years. To help reverse successional forces, some cities created historical districts which would allow the creation of development guidelines that overlaid existing zoning to help preserve the character of the neighborhoods and help marshal resources to regain their lost luster.

An example of an historic district is the Pioneer Square District in Seattle was the birthplace of modern Seattle and the city’s first

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6 For a more detailed discussion, see: [http://www.cityofseattle.net/dpd/static/Urban%20Village%20element_LatestReleased_DPDP016169.pdf](http://www.cityofseattle.net/dpd/static/Urban%20Village%20element_LatestReleased_DPDP016169.pdf)

7 For more information, see: [http://www.pioneersquaredistrict.org/about/](http://www.pioneersquaredistrict.org/about/)
downtown. Most of the Square’s historical buildings were developed in the late 1900s after the Great Fire of June 6, 1889 wiped out the district. At that time, due to landform challenges the District had a monopoly on flat land. That changed after a series of landfills and regrading which shifted development to the north and south along the waterfront. After losing its competitive edge, the District declined to the point of being known as the decadent “Skid Road.” In the late 60s, on the heels of the urban renewal movement, the 30 acres area was designated as an historical preservation district in an effort to reverse the downward succession and revitalize the neighborhood. A major catalyst was the development of the Kingdome which anchored the neighborhood to the south. Although the Kingdome was replaced with Quest Field the initial development help attract private capital to the struggling area. The program has been largely successful, benefiting from a strong neighborhood advocacy group. However, to maintain success efforts must be made to maintain public infrastructure and attract private investment necessary to allow it to maintain its historical niche and still be able to compete in the larger market.

Transferrable Development Rights (TDRs)

Transferrable Development Rights (TDRs) are another example of special districts that create overlays on top of existing zoning. The underlying strategy in TDR programs is to create a market in development rights that can use private market solutions to encourage “desired” development patterns by shifting development from delineated “sending” areas to designated “receiving” areas. In 1999 the City of Seattle and King County entered into a 10 year interlocal TDR agreement.

TDR Projects in Seattle

Over the next decade, the agreement permanently protected 840 acres of rural farm and forest land along the Tolt and Cedar Rivers— the City’s water supply. The development rights on the two rural sites were transferred to several high-rise projects in Seattle’s receiving area which enabled the developers to exceed the density under existing zoning. The 10 year agreement was renewed in 2009 but was expected to be supplanted by a new regional program for Central Puget Sound.

Exhibit 6-27

Excerpt from Daren Greve made available through CTED Publications, June 2010.
Subdivisions, PUDs and Fully-Contained Communities

In addition to traditional zoning ordinances that delineate specific districts or zones, several types of development can be used to create customized areas within which land uses, patterns and intensity are negotiated: subdivisions, planned unit developments (PUDs), and fully-contained communities (FCCs).

Subdivisions

In general, subdivisions are master-planned residential developments that are designed to create a sense of community, identity and pride for residents. Subdivision design and map approvals are delegated from the state to local and county jurisdictions. However, these approvals are not perfunctory and must satisfy a number of criteria that are established by the respective state or delegating authority. For example, in the State of California, approval of subdivisions is delegated to local jurisdictions, although a number of state requirements are imposed on those bodies. This requirement is designed to provide a balance between state and local interests, with the overall goal of protecting residents and the broader community and state. Depending on the state, enabling legislation may also empower local jurisdictions to require that developers may be forced to provide certain amenities, to dedicate land or pay fees in lieu of dedication, or to pay fees to mitigate offsite impacts.

In addition to satisfying state and community standards, subdivision regulations are designed to ensure integrated residential projects are designed to satisfy the housing-related needs of the future residents. Thus, one of the key elements of subdivision regulations is access to sufficient infrastructure and services

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Subdivision, PUDs and FCCs

- Ensures sufficient water supply, drainage, utility easements, fire safety
- Adequate open spaces, sidewalks & amenities
- Ensures traffic flow & pedestrian safety
- Covenants, Conditions & Restrictions (CC&Rs)

Planned Unit Development

- Mixed density & uses
- No setback requirements
- Open community spaces & facilities
- Negotiated “contract” with land use authorities

Fully-Contained Communities

- Self-contained submarkets not creating externalities for other areas
- Includes live, work, shop plus amenities
- Operates as exception to general code

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... enabling legislation may also empower local jurisdictions to require that developers may be forced to provide certain amenities, to dedicate land or pay fees in lieu of dedication, or to pay fees to mitigate offsite impacts.

In addition to satisfying state and community standards, subdivision regulations are designed to ensure integrated residential projects are designed to satisfy the housing-related needs of the future residents. Thus, one of the key elements of subdivision regulations is access to sufficient infrastructure and services

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9 For a more detailed discussion, see: [http://ceres.ca.gov/planning/pzd/sub_ch4.html](http://ceres.ca.gov/planning/pzd/sub_ch4.html)
are available to protect the safety, health and welfare. In addition to basic services, this concern translates to requirements for open spaces and other amenities, as well as control of pedestrian and vehicular traffic. While there are no strict guidelines, access points are typically limited and street patterns eschew grid systems in favor of winding roads and cul-de-sacs. To ensure visibility and some level of standardization, front, side and rear setback requirements are enforced. To increase the sense of community and neighborhood pride, subdivision ordinances typically allow developers to establish their own standards which transcend typical single-family requirements. In addition, ordinances typically endorse the creation of Covenants, Conditions and Restrictions (CC&Rs) which impose additional requirements on residents. However, CC&Rs must be consistent with generally accepted community standards and must not violate the constitutional rights of residents.

**Planned-Unit Developments (PUDs)**

PUDS are similar to subdivisions in the sense they are both projects that are governed by negotiated terms between the developer and relevant jurisdictions. The major difference between PUDs and subdivisions is that they are not restricted to residential projects, but may focus on a commercial property type or may contain a mixture of uses and densities, creating a sense of community as well as a degree of self-sufficiency. Rather than imposing setback requirements as in traditional zoning codes, PUDs have no explicit requirements other than those delineated in the master plan. As such, PUDs can accommodate more density through the addition of zero-side yard projects and clustered development. Residential PUDs can also offer a mixture of single-family, townhouses, and multifamily projects. Given the emphasis on density, requirements are usually established for open spaces and community facilities. With respect to commercial PUDs, the emphasis is on creating an integrated development which creates positive synergies on site and avoids negative externalities (e.g., congestion, noise).
Chapter 6: Government Regulation of Real Estate

Office-Residential-Industrial PUD in Greenmount

Exhibit 6-25 delineates the “Greenmount West – Arts and Entertainment District PUD approved by the Mayor and City Council of Baltimore in 2002. The owners submitted the PUD to allow them to develop the properties for a combination of business and residential uses as part of Greenmount West. The PUD approval allowed the amendment to the zoning map, changing the designation from an industrial zone to an Office-Residential alternative. The approved changes were processed through the City Council after the developer received approvals from the Department of Planning. The application was also compatible with the Baltimore City Zoning Code. The resolution identified the permitted uses to which the properties could be placed in general, as well as authorized uses for the first floor street front spaces. Consistent with the entertainment theme, the approval also authorized the creation of artist’s studios which were defined as live-work spaces. The ordinance also authorized outdoor table services accessory to restaurants, as well as live entertainment accessory to art gallery uses.

Fully-Contained Communities

In some states, Fully-Contained Communities (FCCs) can be created to accommodate large-scale development not covered by current zoning codes. Briefly, FCCs are special district overlay designations that allow the development of cohesive, integrated multi-use projects. The general strategy behind FCCs is to create new communities where residents can live, work and play in self-sufficient environments which do not impose negative externalities on surrounding communities. FCCs include a mixture of single family, multi-family, retail, schools, parks, golf courses, fire/police stations, business parks, commercial zones and retail areas necessary to support residents. In general, FCCs adopt a clustering approach with greater densities in designated areas that creates open space and public land for parks and trails, increases efficiency for public services and reduces sprawl. Rather than placing the burden for maintenance of such spaces on the surrounding communities or county, these “public amenities” are privately owned and regulated under rural zoning. Development standards are governed by long-term Development Agreements negotiated between the developer the relevant local jurisdiction. These agreements are binding and lock the two parties into requirements at the time of the agreement with exceptions building and safety codes.

© JR DeLisle, PhD
Redmond Ridge, Trilogy & Redmond Ridge East

In the State of Washington, the Growth Management Act (GMA) created the enabling legislation for FCCs. Since authority was established, several large-scale FCCs have been developed including the three-phase Urban Planned Development / Fully Contained Community (UPD/FCC) on Novelty Hill, east of the City of Redmond. The phases included Redmond Ridge, Trilogy at Redmond Ridge, and Redmond Ridge East. The 1,046-acre Redmond Ridge site includes a full range of residential densities, employment, retail and business services, parks and public utilities. As might be expected, approvals and development of such projects are long-term ventures. Proposals for development of the Redmond Ridge and Trilogy at Redmond Ridge were submitted to King County in 1984 and 1988 respectively. Each of the projects was required to prepare Environmental Impact Statement (EIS) and participate in the Bear Creek Community Plan (BCCP) process. The Redmond Ridge East UPD/FCC application was filed in 2003. After an environmental impact statement was issued in 2004 the applicant withdrew the FCC application and received approval from the King County Council for the UPD Permit in mid-2006.

The Development Agreements contained a number of “public benefits” that were negotiated between the County and developers. For example, the developers of the three projects were collectively required to provide 1,391 affordable housing in the local community, targeting populations making below 80% - 120% of the median income levels. The Agreements also required the development of Master Drainage Plans (MDPs) to ensure the FCC was supported by a comprehensive drainage system. The environmental protection standards for the projects exceed King County development regulations. Since it was not approved until 2006, the Redmond Ridge East was conditioned under the Critical Areas Ordinance (CAO) that came into effect in 2005. Some 500 acres which was half of each site was retained in a native state. The projects were required to reuse native materials from one site to another and conduct on-site soils management to balance cut and fill material and reduce the impact of construction traffic on off-site roads. Perimeter buffers exceeding County standards were required and had to include a mix of native vegetation and be re-vegetated to achieve a standard mix of native plants and trees.

Although the projects were privately developed, they had to include a number of public facilities that would be dedicated to the communities by the developers. These included: a 28-acre King County Equestrian Park, a 6-acre park for Little League use, a 10-acre King County park for baseball and soccer fields, a fire and police station, 2 elementary school sites, a 40-acre youth soccer complex, public park-and-rides for transit, a regional trail system, both soft and hard surface, public roads and public storm water detention facilities. Even though the projects were designed to be “fully-contained” and thus not place a burden on local streets, the developers are required to make significant contributions to mitigate traffic impacts. These requirements included: 1) participation in 32 off-site road projects, 2) payment by Redmond Ridge of some $10 million, Trilogy of some $7 million and Redmond Ridge East of some $13 million dollars toward traffic mitigation, 3) monitoring area traffic annually to determine the timing of needed off-site road projects, 4) provision of public park-and-rides, shuttle buses, and a transportation demand program, 5) development of an annual construction traffic management plan to coordinate the construction traffic, haul routes, and timing of road projects, including those not associated with the UPDs, and 6) phasing of Redmond Ridge East construction to achieve concurrency with progress on the Novelty Hill Road CIP project and the SR 202/NE 124th St CIP projects within the City of Redmond.

10 For more details, see: http://www.kingcounty.gov/property/permits/info/SpecialInterest/UPDRR.aspx#about
Transit-Oriented Development Zones

A number of cities adding or extending light rail service have created Transit-Oriented Development (TOD) zones. For example, San Francisco has created the Metropolitan Transportation Commission (MTC) to oversee its TOD program.\(^{11}\) In 1998, the MTC created an incentive program to support TOD and transit-friendly development. Since that time, it has awarded over $80 million to 80 local projects that support multimodal travel, the establishment of more livable neighborhoods, and the creation of new jobs and housing in targeted centers.

In general, TOD zones are overlay areas that enfold rail or buss transit stations. The objective in creating TOD zones is to create environments that encourage the use of mass transit and reduce dependency on automobiles. TOD zones typically encourage moderate to high density development, favor mixed-use projects containing a combination of residential, commercial, retail and entertainment spaces, and pedestrian-friendly environments with open spaces or plazas and limited parking. While boundaries as somewhat flexible, they are typically in the range of ¼ mile which is deemed “walkable.”

San Francisco’s MTC TOD Policy Program

<table>
<thead>
<tr>
<th>TRANSIT AGENCY ACTION</th>
<th>CITY ACTION</th>
<th>MTC/CMA/ABAG ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>All parties in corridors that do not currently meet thresholds (see Table 1) establish Corridor Working Group to address corridor threshold. Conduct initial corridor performance evaluation, initiate station area planning.</td>
<td>Environmental Review/ Preliminary Engineering/ Right-of-Way</td>
<td>Coordination of corridor working group, funding of station area plans</td>
</tr>
<tr>
<td>Step 1 Threshold Check: the combination of new Station Area Plans and existing development patterns exceeds corridor housing thresholds.</td>
<td>Conduct Station Area Plans</td>
<td>Adopt Station Area Plans. Revise general plan policies and zoning, environmental reviews</td>
</tr>
<tr>
<td>Final Design</td>
<td>Revision of Station Area Plan. Local jurisdictions in implementing station area plans</td>
<td>Regional and county agencies assist local jurisdictions in implementing station area plans</td>
</tr>
<tr>
<td>Step 2 Threshold Check: (a) local policies adopted for station areas; (b) implementation mechanisms in place per adopted Station Area Plan by the time Final Design is completed.</td>
<td>Construction</td>
<td>Implementation (financing, MOUs, Solicit development)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TLC planning and capital funding, HIP funding</td>
</tr>
</tbody>
</table>

Exhibit 6-33

Cities have approached TOD from different angles with some creating master plans designating land uses, intensities and designs, and others creating public/private partnerships to support development. To encourage development around stations, some cities have also created incentive programs in the form of density bonuses that override zoning limitations for certain desired uses. Other cities have established expedited entitlement and permitting processes to reduce uncertainty surrounding approvals and help speed up development timelines.

\(^{11}\) For more detail, go to: [http://www.mtc.ca.gov/planning/smart_growth/index.htm](http://www.mtc.ca.gov/planning/smart_growth/index.htm) Picture from website.
From a land use perspective, the creation of TOD zones makes a lot of sense, especially with concern over global warming and renewed interest in sustainable development. Like all private development, to be successful a TOD project must respond to underlying market demand in terms of the quality of product and price points it offers that allow it to compete with other TOD projects and TOD zones that are likely to be simultaneously created. The fact that TOD zones are often cited in areas that would not support such development without the presence of the transit stations raises some particular challenges in terms of timing and critical mass. For example, TOD programs often introduce multiple stops which must compete with each other for tenants. In cases where there is significant pent-up demand and the pace of development does not get out of hand, the market may be able to absorb multiple projects. This is especially true where the respective stations are developed with an eye to their position in the overall market and build on their sustainable competitive advantages to differentiate themselves from other stations. However, land prices are likely to rise around each station, creating upward pressure on price points that may have a homogenizing effect, pushing developers to create competing projects rather than complementary offerings. At the same time, the desire to reduce parking may make it difficult to support new commercial and retail facilities that are envisioned for many TOD zones. This is especially true where the proximate area is currently underdeveloped and does not have sufficient trade area demand to support the intended uses at the time and scale they will be developed.

Thus, while TOD zones are intuitively attractive, with very few exceptions they should not be expected to be overnight successes or “no brainer” investments. With the combination of patient capital and disciplined development activity, TOD zones in infill locations can be viable and when linked together can help build a more efficient, vibrant, economically viable community. However, “first to market” strategies earmarked for quick profits will not work and are unlikely to stand the test of time.

**City of Seattle: Station Area Planning**

Exhibit 6- 34

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12 For a detailed discussion of Seattle’s TOD program, see: http://www.cityofseattle.net/transportation/ppmp_sap_neigh.htm
Building Codes

Model Building Codes

Building codes are one of the oldest forms of government regulation of land use, predating zoning laws. Building codes are designed to protect public safety by reducing fire, sanitation, and injury due to failure of construction or design flaws. The standards evolved over time and varied from jurisdiction to jurisdiction. Indeed, at some point almost all major cities had developed their own building codes. Due in part to the high costs of responding to awareness of new risks over time many local jurisdictions moved away from proprietary codes in favor of model building codes that are updated on a periodic basis.

In the mid-90s, the International Code Councils was formed to help rationalize building codes and develop a uniform code standard. The non-profit organization was created by merging the three regional organizations which had previously addressed building codes including the Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO), and the Southern Building Code Congress International, Inc. (SBCCI). As part of its mandate, the ICC publishes a set of codes known as I-Codes which serve as model that have been widely adopted at the state and local levels. Despite widespread adoption of ICC, there are some competing approaches that have pre-empted the development of a single national standard. Of particular concern was the inability of the ICC and National Fire Protection Association to maintain their collaborative approach on certain elements of building code. Since that time, they have worked with several other trade associations focused on the mechanical and operational sides of the equation to develop a set of alternative codes. Despite this disagreement, the ICC remains the dominant model code, placing more emphasis on design criteria while the competing codes pay more attention to the operating side of the proposition.

Los Angeles Building Code Requirements

Exhibit 6-35

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to be satisfied by new buildings. Depending on market acceptance of these new standards, buildings that are not in compliance may experience some degree of functional obsolescence.

**Code Modification**

Building codes are updated on a periodic basis to ensure they address contemporary issues and take advantage of new technologies. In most cases, changes in building codes are not extended retroactively to avoid the costs and uncertainty that would be required to bring existing buildings up to code. New buildings generally have to comply with the version in force when building permits are issued. However, the discovery of some imminent risk to the safety of the general public may require retrofitting as in the case of fire sprinklers and seismic reinforcements. In some jurisdictions renovation, expansion, changes in use or sale of a building may trigger compliance with updated building codes.

Since building codes are ever-evolving, projects are typically grandfathered in to avoid continuous upgrading and capital expenditures that may not be affordable. There are some exceptions to this treatment however, as in the case when some a new hazard that jeopardizes the health and safety of the public is discovered and some remedial action is warranted. With those exceptions, buildings can continue to operate under previous standards until such time as the building is renovated or replaced and it must be brought into compliance with current codes.

**ADA and ABA Accessibility Guidelines**

Although delegated to local jurisdictions, federal and state code requirements are often imposed on local jurisdictions. For example, the American Disability Act (ADA) and the Architectural Barriers Act (ABA) have set stringent standards to ensure public buildings are accessible to handicapped. The requirements under ADA are applied during the design, construction, additions to, and alteration of sites, facilities, buildings, and elements. The ADA applies to facilities in the private sector (places of public accommodation and commercial facilities) and to state and local government facilities. On the other hand, ABA applies to all federally funded facilities including those funded by General

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13 For more details, see: [http://www.access-board.gov/ada-aba/final.cfm](http://www.access-board.gov/ada-aba/final.cfm)
Services Administration (GSA), the U.S. Postal Service (USPS) and the Department of Defense. In addition, accessibility standards issued by the Department of Justice (DOJ) apply to all ADA facilities except transportation facilities, which are subject to Department of Transportation (DOT) standards.

**Energy Efficiency and Building Codes**

Voluntary Rating Systems:

One of the more significant forces that is likely to affect building codes is the “green building movement.” Over the past several years, concern over global warming has resulted in a number of proposed changes to the design, mechanical systems, materials and operation to make buildings more sustainable. Indeed, in many circles, the notion of “sustainability” has been synonymous with “green buildings” which is too narrow of an interpretation. While this definition is excessively narrow, tracking the “green building” movement can provide some insights into the growing importance of sustainability to the industry.

**LEED Rating System**

Over the past several years, a significant number of reports have been published on the Leadership in Energy Efficient Design (LEED) rating system developed by the United States Green Building Council (USGBC). Since its introduction, the LEED system has evolved, with gradual changes made to incorporate some of the “innovations” emerging from participants, as well as respond to changing priorities. In many respects, this continuous process of improvement is attractive in that it allows the USGBC to benefit from new knowledge and feedback from participants. While not unacceptable per se, the emergence of a dramatically different LEED rating system over time exposes owners of existing certified buildings to the risk of functional obsolescence and loss in value. That is, there is some concern that the early adopters who paid premiums for LEED certified buildings may face some downside risk in value if the market comes to the conclusion that these buildings are not up to the current standards.

**Changes in LEED System**

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
<th>Change</th>
<th>Share of Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Original</td>
<td>2009</td>
<td>% Increase</td>
</tr>
<tr>
<td>Sustainable Sites</td>
<td>14</td>
<td>26</td>
<td>86%</td>
</tr>
<tr>
<td>Water Efficiency</td>
<td>5</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Energy and Atmosphere</td>
<td>17</td>
<td>35</td>
<td>106%</td>
</tr>
<tr>
<td>Materials and Resources</td>
<td>13</td>
<td>14</td>
<td>8%</td>
</tr>
<tr>
<td>Indoor Environmental Quality</td>
<td>15</td>
<td>15</td>
<td>0%</td>
</tr>
<tr>
<td>Innovation in Design</td>
<td>5</td>
<td>6</td>
<td>20%</td>
</tr>
<tr>
<td>Regional Priority</td>
<td>4</td>
<td>4</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>69</strong></td>
<td><strong>110</strong></td>
<td><strong>59%</strong></td>
</tr>
</tbody>
</table>

Exhibit 6-37

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14 For more information on LEED and USGBC, see: [http://www.usgbc.org/](http://www.usgbc.org/)
Energy Star Rating System

Environmental Protection Agency (EPA) in collaboration with various stakeholders developed the Energy Star Rating System. The Energy Star system provides an external benchmark that helps energy managers assess how efficiently their buildings use energy compared to comparable buildings nationwide. The system is based on 100 point scale, with 50 indicating “average” and 75 or more indicating top performance. To compare a building, the owner must enter its size, location, number of occupants, and other date. Based on the inputs, the system estimates the amount of energy the building would use if it were the best performing, the worst performing, and every level in between. While the system does not explain why a building consumes the energy it does, the system allows the users to identify buildings that might benefit most from upgrades. To help promote the system and raise awareness, buildings rating 75 or greater may qualify for an ENERGY STAR rating. In addition, the EPA’s Target Finder allows users to establish energy performance targets for new buildings as well as existing buildings undergoing major renovations.

Global Alternative Systems

The widespread support for LEED among practitioners and academics is especially true in the US. While the bulk of attention has been focused on LEED, Energy Star and some other “green” ranking systems have received attention. Despite this market dominance, it should be pointed out that LEED is not the only system in the US, and that the US has lagged many other countries in the introduction of green building systems. Exhibit 6-33 presents a snapshot of some of the competitive systems that have been introduced across the world. In some countries like the US, there is more than one system which forces those adopting a system to make a choice. At the same time, it creates some uncertainty in the market as conservative or risk-averse investors remain reluctant to invest significant amounts of capital in unproven projects.

Selected Alternative Green Building Systems

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABGR</td>
<td>Australian Building Greenhouse Rating</td>
<td>Australia</td>
</tr>
<tr>
<td>BASIX</td>
<td>Building Sustainability Index</td>
<td>New South Wales</td>
</tr>
<tr>
<td>BEPAC</td>
<td>Building Environmental Performance Assessment Criteria</td>
<td>Canada</td>
</tr>
<tr>
<td>BREEAM</td>
<td>Building Research Establishment Environmental Assessment Method</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>CASBEE</td>
<td>Comprehensive Assessment System for Building Environmental Efficiency</td>
<td>Japan</td>
</tr>
<tr>
<td>CEPAS</td>
<td>Comprehensive Environmental Performance Assessment Scheme</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>EMGB</td>
<td>Evaluation Manual for Green Buildings</td>
<td>Taiwan</td>
</tr>
<tr>
<td>Energy Star</td>
<td>USEPA &amp; DOE Rating on Energy Efficiency &amp; Indoor Env.</td>
<td>USA</td>
</tr>
<tr>
<td>EPGB</td>
<td>Environmental Performance Guide for Building</td>
<td>New South Wales</td>
</tr>
<tr>
<td>GHEM</td>
<td>Green Home Evaluation Manual</td>
<td>China</td>
</tr>
<tr>
<td>GreenStar</td>
<td>Green Building Council</td>
<td>Australia</td>
</tr>
<tr>
<td>HKBEAM</td>
<td>Hong Kong Building Environmental Assessment Method</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>NABERS</td>
<td>National Australian Building Environmental Rating System</td>
<td>Australia</td>
</tr>
<tr>
<td>SBAT</td>
<td>Sustainable Building Assessment Tool</td>
<td>South Africa</td>
</tr>
</tbody>
</table>

Exhibit 6-38

Since efforts to develop more efficient buildings in the US are relatively new, a number of new innovations are likely to emerge that will make it necessary to continue to raise “best practices.” Indeed, in the absence of sufficient data (i.e., long enough time series and large enough sample) to test the efficacy of various systems, there is not enough scientific data to support empirical analysis of many of the innovations that have been adopted which makes the integration of “green building” standards into model building codes somewhat problematic. However, such integration is likely to happen in spite of the dearth of empirical research that takes a comprehensive look at the costs and benefits of various initiatives with special attention to impacts on the market. For example, in 2009 the ICC launched the development of a new International Green Construction Code (IGCC) initiative. This initiative which is entitled “Safe and Sustainable: By the Book” is committed to developing elements of a model national green building code addressing green building design and performance standards for new and existing commercial buildings. Growing public concern and rising political pressure over climate change are likely to force such interventions which will have to be based in part on expectations and normative beliefs.

**Governmental Interventions in Green Buildings**

### Federal Initiatives

Energy efficiency standards for buildings have been introduced at the local, state and federal levels of government. To date, these changes have been voluntary, although some communities and states are moving forward with mandatory programs. At the federal level, a bill in the 111th Congress, H.R. 2336 concentrated its efforts on programs associated with Housing and Urban Development (HUD). Briefly, the bill would create annual energy efficiency participation incentives for HUD programs. These “incentives” would establish basic energy efficiency and conservation standards for residential single family or multifamily structures. They would also establish an energy efficiency demonstration program for multifamily housing projects assisted with project-based rental assistance.

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In addition to regulation, the Federal Government has introduced a number of incentive programs to encourage energy efficient practices. The Database of State Incentives for Renewables & Efficiency (DSIRE) which has been funded by the U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy (EERE) since 1995 has an online database of incentive programs. As noted in Exhibit 6-36, there has been a proliferation of programs at the Federal level, covering a range of initiatives.

### Selected Federal Financial Incentive Program

<table>
<thead>
<tr>
<th>Hyperlinked Federal Financial Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corporate Deduction</strong></td>
</tr>
<tr>
<td>• Energy-Efficient Commercial Buildings Tax Deduction</td>
</tr>
<tr>
<td><strong>Corporate Depreciation</strong></td>
</tr>
<tr>
<td><strong>Corporate Exemption</strong></td>
</tr>
<tr>
<td>• Residential Energy Conservation Subsidy Exclusion (Corporate)</td>
</tr>
<tr>
<td><strong>Corporate Tax Credit</strong></td>
</tr>
<tr>
<td>• Business Energy Investment Tax Credit (ITC)</td>
</tr>
<tr>
<td>• Energy-Efficient New Homes Tax Credit for Home Builders</td>
</tr>
<tr>
<td>• Renewable Electricity Production Tax Credit (PTC)</td>
</tr>
<tr>
<td><strong>Federal Grant Program</strong></td>
</tr>
<tr>
<td>• Tribal Energy Program Grant</td>
</tr>
<tr>
<td>• U.S. Department of Treasury - Renewable Energy Grants</td>
</tr>
<tr>
<td>• USDA - Rural Energy for America Program (REAP) Grants</td>
</tr>
<tr>
<td><strong>Federal Loan Program</strong></td>
</tr>
<tr>
<td>• Clean Renewable Energy Bonds (CREBs)</td>
</tr>
<tr>
<td>• Energy-Efficient Mortgages</td>
</tr>
<tr>
<td>• Qualified Energy Conservation Bonds (QECBs)</td>
</tr>
<tr>
<td>• U.S. Department of Energy - Loan Guarantee Program</td>
</tr>
<tr>
<td>• USDA - Rural Energy for America Program (REAP) Loan Guarantees</td>
</tr>
<tr>
<td><strong>Industry Recruitment/Support</strong></td>
</tr>
<tr>
<td>• Energy-Efficient Appliance Manufacturing Tax Credit</td>
</tr>
<tr>
<td>• Qualifying Advanced Energy Manufacturing Investment Tax Credit</td>
</tr>
<tr>
<td><strong>Performance-Based Incentive</strong></td>
</tr>
<tr>
<td>• Renewable Energy Production Incentive (REPI)</td>
</tr>
<tr>
<td><strong>Personal Exemption</strong></td>
</tr>
<tr>
<td>• Residential Energy Conservation Subsidy Exclusion (Personal)</td>
</tr>
<tr>
<td><strong>Personal Tax Credit</strong></td>
</tr>
<tr>
<td>• Residential Energy Efficiency Tax Credit</td>
</tr>
<tr>
<td>• Residential Renewable Energy Tax Credit</td>
</tr>
</tbody>
</table>

Exhibit 6-40

### Information and Market-Based Approaches

On a positive note for the real estate industry, the use of information to allow the market to make informed decisions has also become an important component of energy efficient building initiatives. For example, in as a part of its Energy Efficiency and Renewable Energy program the US Department of Energy has formed a partnership with the private sector, state and local governments, national laboratories, and universities in the development of a Building Technologies Program. Briefly, the program is designed to

17 For more details and links, see: http://www.dsireusa.org/incentives/index.cfm?state=us&re=1&EE=1
help improve the efficiency of buildings and the equipment, components, and systems within them. This comprehensive, collaborative approach allowed the sponsors the opportunity to step back and develop several criteria for performance metrics and procedures before launching into data collection policies and practices. First, the data would have to be standardized to support valid comparisons of energy performance among buildings. Second, the system would have to be versatile and flexible to adjust for idiosyncrasies of a particular building or use. Finally, the system would have to be efficient and customizable to ensure data collection is carefully matched to the goals of the analysis and the study questions. This latter criterion was developed to help avoid the problem of generating too little data which would thwart empirical analysis or too much data which can create overload and waste resources by forcing the market to compile reams of meaningless data that are interesting but provide little insight, especially in a cost-effective manner.

The Commercial Building Initiative that is part of this program has taken a product life cycle approach to energy efficiency. The initiative recognizes a number of individuals and interest groups are involved with a building over its lifetime from design to operation. It also notes that these parties have different interests, needs, spatial and economic requirements for buildings. Despite these differences, the initiative recognizes that metrics can help make more informed decisions regarding: 1) how to control energy costs and energy consumption, 2) how to minimize negative environmental impacts, 3) how to brand buildings and enhance the image through marketing, and 4) how to improve load forecasting, energy management, and reliability. As noted in Exhibit 6-37, the initiative seeks to address these somewhat disparate needs by approaching benchmarking from two tiers. The Tier 1 data focus on the basic metrics opting for relatively low cost, efficient data compilation and analysis focuses on the facility rather than the building since it does not adjust for other energy uses. The Tier 2 data would be more comprehensive and include an analysis of end use which could affect energy consumption. The approach would also be more expensive, resulting in the recommendation that cost/benefit analysis should be conducted before applying it to a building.

Commercial Building Performance Metrics

For more information, see: http://www1.eere.energy.gov/buildings/commercial_initiative/performance_metrics_tiers.html

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State governments have also begun to embrace the “information” side of energy efficiency although some states have gone the regulation route. For example, the State of California has taken a more aggressive stance than many states with its revised Building Energy Efficiency Standards. Rather than relying on information and voluntary compliance as in other states, California’s Integrated Energy Policy Report (IEPR) concluded that Standards are the most cost effective means to achieve energy efficiency, reduce energy related to meeting water needs and reducing greenhouse gas emissions. The most recent standards were developed by the California Energy Commission in 2008 and apply to building permit applications filed beginning in 2010.\(^\text{19}\) These standards emanated from a number of public policy needs including the overarching goal of providing California with an adequate, reasonably-priced, and environmentally-sound supply of energy. The standards responded to legislative initiatives as well as an Executive Order to aggressively move to increase emerging efficiency in non-residential buildings in the state.

### Mayors Going Green

At the local level, a number of jurisdictions have taken aggressive stances on energy efficiency, with the US Council of Mayors Climate Protection Agreement the focal point for these efforts. On February 16, 2005 the Kyoto Protocol, the international agreement to address climate change was passed and subsequently ratified by 141 countries. Since the US did not ratify the agreement, Seattle Mayor Greg Nickels launched an initiative to advance its through leadership and action by American cities.\(^\text{20}\) Within two years, 500 mayors had signed the agreement with the figure at mid-2010 standing at 1,044. The mayors’ agreed to three major elements. First, they would seek to meet or exceed the Kyoto Protocol targets in their own communities. Second, they would urge their states and the federal government to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol. Finally, they would Congress to pass the bipartisan greenhouse gas reduction legislation, which would include the creation of a national emission trading system. The action of the mayors was understandable in light of heightened awareness of the dangers of global warming and disappointment with the federal responses to the Kyoto Protocol. However, there is a danger that further movement into the political arena will pose added risks to the real estate industry. To address these risks, the industry should assume a leadership role in the discussion and help ensure that decisions are based on scientific evidence rather than normative standards.

Furthermore, the industry must be able to effectively argue the importance of seeking market-based solutions and help identify unintended consequences that might be associated with certain interventions.


\(^\text{20}\) For an update, see: [http://www.usmayors.org/climateprotection/agreement.htm](http://www.usmayors.org/climateprotection/agreement.htm)
Summary Chapter 6

- **Land Use Controls.** The power to control land use at the local level is delegated to the state and local government and is subject to recall.
- **Zoning.** Zoning is one of the more common approaches to regulating land uses, intensity of use and location of improvements on site.
- **Hierarchical Nature of Zoning.** In general, zoning ordinances are hierarchical, protecting one are from negative externalities from others. This philosophy creates a number of challenges for infill development and other efforts to promote mixed use neighborhoods and communities.
- **Zoning Ordinances.** There are strict legal requirements that zoning must address including equal treatment and due process; appeals mechanisms must be built into ordinances at the time they are created and approved.
- **Zoning Setbacks.** Elements of zoning codes influence where improvements are located on a site, as well as ingress/egress, circulation and parking. View corridors are often required to protect pedestrians and vehicles.
- **Building Envelopes.** The exploration of alternative building envelopes and building intensities is relatively straightforward allowing developers and planners to explore a number of alternative scenarios in an efficient, cost-effective manner.
- **Special Use Districts.** Zoning ordinances often enfold a number of special use districts including urban villages, historic districts, TDR zones, subdvision, PUD and FCCs.
- **Building Codes.** Codes are designed to protect the health, safety and welfare of the public. As such, they evolve over time to respond to discovery of new risks and take advantage of new technologies and innovations.
- **Green Buildings.** The green building movement is having a significant impact on building codes and is likely to continue to evolve introducing risk of functional obsolescence into land use.

### Building Envelopes

**Step 1: Calculation Building Envelope**

$$\text{BSF}_{\text{max}} = (\text{GSSF} \times LC) \left( \frac{1}{\text{#St}} + \left( \frac{1}{1000/\text{PI}} \right) \times \left( \frac{\text{Pav/St}}{\text{PF}} \right) \right)$$

- **GSSF**: 43,560
- **LC**: 80%
- **#St**: 4
- **PI**: 4
- **Pav/St**: 400
- **PF**: 2

$$\text{BSF}_{\text{max}} = 43,560 \times 0.8 \left( \frac{1}{4} + \left( \frac{1}{400} \right) \times \left( \frac{400}{2} \right) \right)$$

$$\text{BSF}_{\text{max}} = 34,848$$

$$\text{BSF}_{\text{max}} = \text{BSF}_{\text{max}} = 33,189 \text{ SF}$$
Section 7: Chapter Next -- Sustainable Growth Management