IV. LAND USE ISSUES AND ANALYSIS

College Spring
A neotraditional style of development built in the late 1990's in lieu of multifamily “attached” units
IV. Land Use Issues and Analysis

A. Densities

1. The Question of Density - To Promote or not to Promote Increased Densities.

The question of density has been a major issue. Densities permitted in the growth area will have significant impact on the way we provide housing for anticipated population growth, the cost and efficiency of utilities and services, as well as the character of our growth area.

Increased densities in the urban growth management area could have some or all of the following impacts. Those designated with a + are usually seen as positive. Those with a - are usually seen as negative (for illustrative purposes only).

+ The UGMA will fill more slowly because of more efficient use of the land.
+ Theoretically, housing would be more affordable. However, experience shows that while the housing unit costs less per square foot, costs are sometimes higher.
+ Utilities can be provided more cost effectively and efficiently by serving more people over a smaller geographical area.
+ Mass transportation becomes more feasible and efficient with increase in densities.
+ Less pressure and impact on the natural resources in lands outside UGMA, including surface waters, ground waters, air and wildlife habitat.
- Increased crowding and transportation congestion. Locating new homes outside the Lacey Growth Area may still result in the need to commute through Lacey which would still add to congestion. Additionally, construction of road infrastructure to provide for sprawling development would be more costly compared to the provision of infrastructure for compact development.
- Transition to more intensive use of property, including more multifamily development and smaller single family lot sizes.
- Opposition from existing neighborhood groups because of perceived devaluation of property or changes to established character of neighborhood.
- Adverse social changes resulting from increased densities.
- More pressure and impacts to natural resources within the UGA, including surface waters, ground waters, air and wildlife habitat.

Faced with the above-described expectations regarding density and the outcomes desired, the City believes it is in the best interest of the public to encourage maximum densities but only to the extent the market is expected to support it. Many techniques are available to achieve this purpose. These include targeting of selected strategic vacant land for development under an urban center concept with significant design requirements, promoting mixed-use concepts along select major arterials and the use of density minimums. Mitigation techniques, particularly design review, have been successful in integrating new higher density developments within the City.

2. Minimum Densities

One of the density techniques applied with the first GMA plan was designation of zones with minimum required densities; zones where a developer is required to build at least to a certain minimum density. While it is necessary to allow the market to determine the types of housing that gets built so people have opportunities to choose between the full range of single family and multifamily housing styles, achieving the highest acceptable density throughout the growth area has distinct advantages. If “minimum” densities are required, a jurisdiction will have a better handle on the amount of growth it can accommodate within a certain time period. It will be possible to achieve goals to maximize utility and road planning, and to promote efficient use of available vacant land. It makes sense to set a standard to ensure a certain intensity of land use that will provide the most conservation minded
approach to land use and help the sizing of utilities and roads, and the extent and need of supporting land uses, such as commercial and industrial. Providing standards that maximize the use of land while allowing a full range of housing choices also will promote the availability of vacant land for the use of future generations. If the current dispersed low density trend continues, land resources will continue to be eaten up at an alarming rate. The key is to promote the highest acceptable density while requiring a design that properly integrates land uses of different intensities.

Based upon the form we want the urban growth area to take, we have designated some areas for low density residential at a minimum of three units per acre and a maximum of six. The moderate density residential zone designates a minimum of six units per acre and a maximum of twelve, and the high density residential zone designates a minimum of six and a maximum of twenty or higher. Given the development designs that we have seen, it is reasonable to assume that single family residential can still take place at the minimum densities allowed under the moderate density and high density residential classifications, if smaller lot sizes, clustering and flexibility in setbacks is permitted.

To be consistent with goals developed for environmentally sensitive areas, minimum density requirements have excluded any property containing wetlands, steep slopes, or other environmentally sensitive areas so that goals for single family large-lot subdivisions around wetlands would not be made impossible by density requirements. A twenty-acre site with ten acres of wetlands only needs to build the minimum densities based on the upland area. This allows average sized lots and does not force multifamily structures.

According to data in the Buildable Lands Report, the minimum density strategy has proved to be successful in obtaining minimum densities within the incorporated growth area. Areas within the unincorporated growth area have not. However, failure to gain minimum densities in the unincorporated growth area was attributed to “legacy lots” approved before policies for minimum densities were implemented.

A problem identified over the last decade with this strategy has been areas not being able to obtain minimum densities because of the lack of sewer. However, the solution to this has been worked out to allow only a portion of the property to develop in a cluster configuration with community drain field. This leaves a reserve parcel that can be more intensively developed when sewer becomes available. This allows some reasonable use of the land over the short term and preserves the ability to gain minimum densities over the long term.

Another issue has been areas where soils have been identified with significant limitations rendering higher minimum densities impractical. These areas have been reviewed in this update and adjusted with alternative designations where necessary.

3. Timing of Density

There is a need to look closely at timing of densities. However, this can unduly restrict reasonable use of some parcels that are in the outlying areas of the urban growth boundary. As discussed in the section on minimum densities, in such cases a provision has been allowed for interim density, pending the availability of infrastructure. To ensure that outlying larger parcels develop in a configuration allowing later infill with minimum density requirements, a larger threshold and design element for placement of the interim development has been applied. As an example, outlying interim density can be set at one unit per five acres, with a clustered configuration and urban size lots that allow for future development of the remainder of the property at urban densities. In the future, based upon standards for infrastructure and timing, a rezone to anticipated full density can be allowed upon
demonstration that infrastructure is or can be made available. At such time, the undeveloped portion of the property could more easily be developed at acceptable urban densities.

In such a scheme, timing could be left somewhat flexible depending upon market and consumer preference for certain areas, and utilities and infrastructure becoming available at dates earlier or later than anticipated in original plans. This technique has worked well, but it is still stifling for developers that desire to develop an entire property at permanent lower densities.

4. **Densities Through a Village or Urban Center Concept**

Another strategy that has been utilized in accommodating higher densities is the village center concept with mixed uses. This idea promotes specific areas for providing the full range of urban uses at higher density. In developing this technique it was thought the concept would allow significantly higher densities, perhaps approaching up to twenty units per acre.

However, the village centers that have been planned over the last eight years have only been successful in increasing densities modestly. One village has been planned to approach nine units per acre, but others have only achieved up to six.

The village center concept has been reworked for this update and renamed to urban center, a more descriptive term for this type of development in an urban environment.

5. **Upzone Properties**

A technique utilized in 1994, and still applicable with this update, is to up-zone properties. This provides a higher zoning designation allowing more density. This can include the full spectrum, from up-zoning existing developed properties for higher densities as such properties are redeveloped, to targeting only vacant land for higher density development. If developed properties are up-zoned, it may take years for them to redevelop. Redevelopment of higher densities may be inconsistent with protective covenants on already existing developed properties and significant opposition from neighborhood groups can be expected.

6. **Transfer of Development Rights (TDR)**

This is a technique gaining popularity and currently being provided for in all of the zoning codes of local jurisdictions. It is being implemented and administered by Thurston Regional Planning. It is a technique with promise for protecting agricultural land in the Nisqually Valley. It is a promising technique for protecting specified areas (preservation zones), while at the same time providing the owner of protected properties an opportunity to sell development rights to developers with property in “receiving zones”. Transfer of development rights is also very complex, administratively difficult, and there must be a demand for high density in the designated receiving zones. This technique can be used in conjunction with minimum zoning densities to help drive demand for high density. However, market is again the key. Without demand for high density in the receiving zone, a TDR program will not work. Over the last eight years there has only been one transfer right registered and none have successfully been marketed.

7. **Planned Residential Developments (PRD)**

The current PRD section of the City Zoning Code allows small density bonuses for developing a project as a PRD. To qualify as a PRD, significantly more open space is required, as well as certain recreation amenities not normally found in conventional developments. A PRD allows greater flexibility in design, allowing the clustering of units to protect valuable site characteristics and provides flexibility from most normal zoning requirements to allow for innovative projects. It should be noted that several PRD projects in Lacey have been criticized by neighborhood groups because of their non-traditional...
approach to development design; particularly smaller lot sizes to gain larger open spaces with higher density single family homes. Overall, the planning community has found PRD’s an acceptable/desirable alternative to traditional single family developments. The Growth Management Act also requires the Comprehensive Land Use Plan to have a section on “Innovative Techniques” and lists Planned Unit Developments (PUD’s), Planned Residential Developments PRD’s and clustering as techniques that should be considered.

8. **Smaller Single Family Residential Lots**

Because of the cost of land, the City has seen a trend towards smaller lot sizes for single family development. The 1994 Plan provided an opportunity for significantly reduced lots with design review to consider small lot issues, such as privacy and streetscapes. Developments designed with smaller lots have had no problem marketing houses, indicating there is a great demand for smaller lots (those who want single family houses but cannot afford houses on the more traditional larger lot sizes or don’t want the larger lots to maintain). This technique has been very successful in allowing higher density single family development in a more compact form.

9. **Inclusionary Zoning**

Inclusionary zoning is a technique whereby a certain portion of newly developed residential units are set aside for low to moderate income and/or disabled residents. If the developer sets aside a predetermined number of units then he will be permitted a density increase for market rate units. This technique was provided for in the 1994 Housing Plan, but standards for the technique were never developed or implemented. Inclusionary zoning and affordable housing techniques in general have been difficult to consider in a climate where more upper end housing has been the preferred target.

There are many benefits of allowing accessory dwelling units. One is that it allows new homeowners or older residents an opportunity to achieve a more financially secure situation. This would also create affordable units for individuals who need these type of facilities. Because of the crisis in today’s housing market, in some cases people are already doubling up in units, as it’s more affordable for everyone concerned.

Some of the impacts of this type of use in a single family neighborhood can include increased traffic and parking. There may also be a minor destabilizing social factor of perceived interruptions to the quality of life in the traditional single family neighborhoods. As we allow these type of units to be placed in single family neighborhoods, we need to regulate the size of the units, the exterior appearance of the structure and off-street parking. Conditions developed for implementation of this strategy have generally worked well over the last eight years.

10. **Accessory Dwelling Units**
B. Distribution of Land Uses

A major issue is the location and distribution of various land uses. An even distribution of residential uses is important, particularly in regard to higher density activities, to ensure even distribution of all economic groups throughout the planning areas. Commercial areas and industrial areas must be adequately dispersed to serve the needs of developing population. In particular, how do we want to site specific designations to provide for the needs of each planning area and the City as a whole. The placement of all of the various land uses, including residential, commercial and industrial, should consider available and necessary infrastructure, specifically road capabilities and utility and locational influence on commuting needs and patterns. Additionally, compatibility is important to provide logical neighborhood areas without significant land use conflicts.

C. Dispersion vs Consolidation of Commercial Areas

A major consideration that works its way into the land use equation is the dispersion of commercial activities and services to serve the needs of developing areas. The Planning Commissions have talked about the dispersion of community commercial and neighborhood commercial districts to serve the needs of residential areas and to reduce the need for long distance commuting. The idea of neighborhood shops within walking distance to everyone’s home is attractive, but the actual implementation of this concept to ensure adequate buffering, location and integration, and a concept that will be acceptable in the marketplace, is very difficult, particularly in established neighborhood areas that would resist designation of commercial properties. Again, this is accomplished much easier when areas are laid out like planned communities, as opposed to trying to retrofit existing developed neighborhoods to work under these new concepts.

While the above discussion applies in general to Community Commercial Districts, properties adjacent to the “cross-roads” intersection of Yelm Highway and Rainier Road/College St. SE were determined to be unique from other Community Commercial areas.

At the time of the adoption of the 1994 plan it was regionally accepted that there would be a major east-west connector built somewhere south of the growth area or near the southern boundary of the growth areas. That east-west connector was to connect from the I-5 corridor in Tumwater to the Marvin Road or Meridian Road area east of Lacey. In 1998, that plan was abandoned regionally and Yelm Highway was designated as the future east-west connector for all the jurisdictions. Therefore, Yelm Highway is now planned to connect Yelm to Tumwater through Lacey and Olympia, and College St. SE/Rainier Rd. serves as the north-south connection between the town of Rainier and points south to central Lacey and I-5. Existing traffic at the current Community Commercial node, including Little Prairie Shopping Center (northeast corner), Rainier Commercial Center (southwest corner) and the undeveloped “Fountain Place” (Fountain Place is the name of the Master Plan approved for Lacey Corporate Center) in Lacey Corporate Center (northwest corner) has become an extremely attractive node for future commercial activities. Little Prairie Shopping Center is currently built out and applying the new Community Commercial criteria will be difficult until it is ready for upgrades. Rainier Commercial Center is partially built out and the new Community Commercial criteria can apply during the build out of that center.

Lacey Corporate Center is the cross-roads intersection site with the most potential for expansion. “Fountain Place” in the Lacey Corporate Center currently has a “master plan” approved that is intended to enhance the Community Commercial criteria and is to be developed in accordance with a development agreement. The “Fountain Place” development agreement is a binding “contract” between the potential devel-
operators of the site and the City of Lacey Council. The Community Commercial zoning at this location should only be expanded if the master plan and development agreement are amended and approved by the City of Lacey Council. The City of Lacey should assure that such owners continue to have direct involvement with any proposed amendments to the current Master Plan and Development Agreement. Only in this manner will the expectations and investments of these owners be protected. Additionally, it is very clear that the conditions of the contract with the Lacey Corporate Center for the Community Commercial area are intended to far surpass the otherwise applicable development and design standards of the City of Lacey.

The only other Community Commercial designation in this area is the Summerwalk Village/Urban Center Community Commercial. The currently adopted Summerwalk master plan meets the intent and provisions of the Village Center/Urban Center zoning ordinance for Community Commercial land.

Community Commercial Districts in the northeast area of the City of Lacey, whether at the current locations along Willamette Drive or on either side of Hawks Prairie Road, are not located on arterials with the same characteristics of the crossroads. The intent of these commercial areas is clearly different. These commercial centers are intended to serve smaller and less intense area traffic than the crossroads. In the future, a new zoning classification other than Community Commercial may be necessary to implement the intent of the northeast area community commercial service areas. The intent of the new district should be much more in line with the Neighborhood Commercial District, with possibly a restriction to allow only one use in each area to exceed ten thousand (10,000) square feet and all other buildings restricted to the neighborhood commercial standards.

D. Integration and Design Review

In review of land use issues such as density and distribution, a common denominator appears: what is the impact to the neighborhood? Will the density or distribution of land uses degrade the character of the area? This is the bottom line concern we have wrestled with in consideration of densities and locational land use issues.

In the early 90’s a joint Lacey City Council/Planning Commission workshop on densities and housing was held. The consensus among those attending, including representatives from the development community and neighborhood groups, was design excellence. The answer to solving the density problem is “Give the neighborhood a design that will knock their socks off”. Design review, particularly building design, is being touted as the answer to achieving higher density residential goals without the typical negative impacts and feedback we are used to.

Some of the elements or techniques of design review, considering the mix of multifamily and single family residential, are listed below:

Beckonridge Entrance

An innovative small lot subdivision designed and developed in the late 80’s and early 90’s became a model for Lacey regulations developed under growth management.
1. Review of building design to accomplish objectives; make building blend into and complement the surrounding neighborhood.

2. Review design of site layout to accomplish objectives; ensure site layout is well designed and fits into neighborhood.

3. Use of natural or planted vegetated green belts.

4. Use of designated open space.

5. Clustering of high density multifamily structures away from low density areas.

6. Use of fences.

7. Use of berms.

8. Use of setbacks.


10. Use of garages underneath units to reduce surface parking.

Some of the techniques of design review for smaller single family lots include:

1. Attention to streetscape, use of street trees, planter strips, and rear load access with alleys.

2. Attention to privacy issues, consideration of window placement, visual screening of private space, use of fences and landscaping.

3. Use of pedestrian scale lighting to maintain a feel and look compatible with the more compact development and pedestrian comfort.

4. Strategic placement and use of open space to serve the entire neighborhood and connect key neighborhood areas.

5. Attention to connections to key neighborhood areas for pedestrians.

6. Great architectural design for units, creating an interesting, attractive development.

E. Recreation Needs and Amenities

An important part of planning for the future is to ensure that adequate outdoor recreation areas are developed to serve the needs of the urban population. This includes such things as parks, open space, green belts and trail systems. In 1989, the City of Lacey adopted a Comprehensive Plan for Outdoor Recreation. This plan was later updated in 1997 and again in 2003. It describes goals and policies for outdoor recreation. The Land Use Element of the Comprehensive Plan dovetails with these goals and policies and helps ensure that as land is developed the goals for outdoor recreation are satisfied. Regional Planning has also developed a Regional Trail Plan, which has been integrated into the City’s land use policies. Implementation of recreation elements includes such things as identifying trail corridors on plat maps, and ensuring that the pedestrian amenities throughout the City tie into Path at Wanschers Community Park on Hicks Lake
and complement the Regional Trails Plan.

Currently, the City has a number of policies in place in its zoning ordinance and subdivision ordinance requiring dedication of open space for active recreation needs and pedestrian requirements. The Land Use Plan is used to bring together these concepts to provide clear focus for what is expected in the design and layout of physical development to achieve open space, greenbelt and trail and pedestrian needs as the City develops. For this purpose our Comprehensive Land Use Plan includes a map identifying major trail and pedestrian corridors, green belt areas around environmentally sensitive wetland and habitat areas, and existing parks and sidewalk systems. New developments are required to design to incorporate these features. These techniques have served the City well over the last eight years of Plan implementation.

F. Multi-modal Transportation

In the early 90’s Regional Planning developed a Regional Transportation Plan with a heavy emphasis on mass transit and multi-modal modes of transportation. The local city Land Use Plans dovetailed with this concept and reflected significant consideration of alternative modes of transportation in designing and developing land use patterns and site design.

Recently voter initiatives have severely reduced funding available to Intercity Transit for bus systems. This has lead to questions regarding the major assumptions made in land use planning during the early 90’s plans. However, updates to local transportation plans still work towards less reliance upon the automobile and more multi-modal transportation options. For other alternative forms of transportation to be successful, provisions must be made to ensure that transit and other alternative forms of transportation can work on a macro scale, considering density and land use dispersion, as well as on a micro level, where individual sites are developed to encourage multi-modal transportation efforts. Designs that consider alternative modes of transportation can be developed to ensure future users are provided convenient multi-modal transportation options. If land use designs are developed that are not sensitive to requirements, future users will be discouraged from utilizing other transportation options. Site designs should continue to incorporate pedestrian-friendly designs, inter-connection with sidewalks, pedestrian trails and bike paths. Transit amenities should be made available, including covered bus waiting areas and convenient and enjoyable walks to and from destinations.

G. Schools

The land use plan also needs to make provisions for school sites and integration of schools into residential areas. During the planning in the early 90’s a close working relationship was maintained with North Thurston Public Schools to ensure the needs of the school district could be accommodated. Urban Center designations throughout the Lacey UGA include requirements for development of elementary schools. While several of the Urban Centers have been master planned and show future grade school sites, only one of the sites has begun developing and

Lonely Bus Stop

Not all days are as sunny as this one. Bus Stops without shelter do little to encourage use of buses.
no school sites have actually been dedicated to North Thurston Public Schools. Additionally, the urban center concept has been questioned considering its market feasibility and several have been re-designated eliminating planned school sites. As urban center sites are re-designated, consideration needs to be given to replacement of grade school sites. Other standards for impact mitigation need to be maintained and new means of identifying future school sites must be developed to ensure consideration of school district needs. These needs include a full spectrum, such as covered bus waiting areas for students, interconnecting safe and convenient pedestrian walkways to schools and provisions for helping alleviate the impact of students on the school district. School district planning should also consider integration of school sites into neighborhood areas so that the school can become an identifying quality for a neighborhood and act as a catalyst and focus for neighborhood activities.

H. Neighborhood Character and Design

The overall quality of life that our citizens enjoy will rely to a great extent upon neighborhood character and design. A significant effort needs to be made to provide each neighborhood area with a character and design commensurate with what citizens expect in a quality living environment.

Emphasis should be placed on trying to develop through concepts like a village or urban center, planned community, planned unit development, or PRD approach, where large areas are developed and it is easier to accommodate the full range of neighborhood needs within one development. This has definite advantages considering integration of neighborhood needs, such as consistent street layout, parks, integration of trail and pedestrian amenities, integration of public transit needs, community commercial needs with buffering and common area landscaping, all of which help establish a sense of place that comes with neighborhood identity and character. Where multiple ownership exists and PUD’s, planned communities, or PRD’s are not practical, planning should provide for future community needs by evaluation of vacant lands and making provisions for street layouts or, at a minimum, major interconnections. Dedication of open spaces should be planned to consolidate contiguous pieces to provide central park areas. Provision should be made for payment in lieu of to purchase park properties where they are most needed in neighborhood areas.

Width of streets should be scaled to neighborhood needs. Local access streets should be scaled down and oriented towards the pedestrian with 6 - 12 foot planters between the curb and sidewalk. Sidewalks should be placed on each side of the street and street trees should be placed in the planter area. Street trees should be provided to provide a neighborhood distinctive character.

Where land uses of different intensities are contiguous or in close proximity, transition techniques should be required. Green belts and buffers should be employed, developed in conjunction with pedestrian interconnections and community open spaces. Multifamily development should have a design review, ensuring compatibility and proper integration into the community setting. Multifamily design, where possible, should be developed to look like single family development by the use of multiple entryways, location of separate entrances on different sides of the structure, and other architectural features that provide a pleasing facade consistent with other residential development.

I. Water Quality and Regional Drainage Basin Planning

The Growth Management Act requires consideration of water quality issues. The Growth Management Act states that “the land use element shall provide for protection of the quality and quantity of groundwater used for public water supplies”. It goes on to state that “where applicable, the land use element shall review
drainage, flooding and stormwater runoff in the area and nearby jurisdictions and provide guidance for corrective actions to mitigate or cleanse those discharges that pollute waters of the state, including Puget Sound or waters entering Puget Sound.” This guidance provides for regional drainage basin planning. Over recent years, a considerable amount of work has gone into stormwater management, drainage basin planning, and aquifer protection. The City adopted the Environmental Protection and Resource Conservation Plan, an element of the Land Use Plan, which provides for consideration of aquifer sensitive areas. Other documents and plans developed that deal with this topic include the Puget Sound Water Quality Management Plan, the Northern Thurston County Groundwater Management Plan, the Drainage Design and Erosion Control Manual for Thurston Region, the Woodland Creek and Woodard Creek Comprehensive Basin Management Plan, the McAllister/Eaton Creek Comprehensive Drainage Basin Plan, Chambers Lake Stormwater Management Plan, the Henderson Inlet Watershed Action Plan, and the Water Conservation Plan for the City of Lacey. The Comprehensive Land Use Plan must help provide coordination for implementation of these plans, encouraging land use patterns and development that complement the plan goals, design of projects that implement plan policies and standards, and reservation of open space and zoning designations that are consistent with drainage basin planning.

Ground water protection within the McAllister Springs Geologically Sensitive Area and other vulnerable and important aquifers are of particular concern. McAllister Springs is recognized as one of the most important sources of drinking water in Thurston County, in that it is capable of providing water to over 100,000 people. It is also one of the more vulnerable ground water sources within the County due to its relatively shallow depth and overlying porous soil conditions.

In recognition of these conditions, in 1991 Thurston County adopted special protection measures for this area as part of a new McAllister Springs Geologically Sensitive Area zoning district.

In 1994 the County and City adopted policies in the Land Use Plan that protect the area within this district where sewer is not available, but also encourage sewer extension by providing opportunities for a higher density where sewer is provided. Plan policies and zoning adopted under the Plan limits residential uses to a maximum density of 1 dwelling unit per 5 acres where there is no public sewer and sets a minimum density of 3 units per acre and a maximum density of 6 dwelling units per acre where public sewer is provided.

Providing for greater density with sewer is based upon the belief that the extension of sewer to this area is in the best interests of ground water protection. And, it is thought any density below 3 to 6 units per acre would not provide enough incentive for private developers to extend sewer for development. The cost of sewer infrastructure would be expensive based upon any lower density, except for very high end development.

Advice from the Thurston County Health Department during discussion of density issues indicated that smaller lot sizes and higher densities might actually decrease impacts associated with fertilization of yards and use of pesticides. Larger lot sizes, particularly in the half acre to 5 acre range could be expected to increase the use of fertilizers and pesticides for lawns and gardens. While higher densities with greater incidence of automobile use would increase the potential for oil and gas contaminants from storm water runoff, new storm water management treatment requirements are expected to help protect ground water quality.

Based upon these considerations a low density designation of no more than 3-6 units per acre may be more desirable to promote sewer and protect groundwater.
Other ground water protection measures that should be considered within wellhead protection areas in general include: 1) using subdivision covenants, conditions and restrictions (CCRS) to help regulate landscaping, automobile maintenance, pesticide use, and other activities that affect ground water; 2) encouraging developments with open space areas to preserve native vegetation, or to landscape with vegetative materials certified as “low input”; and 3) other appropriate measures.