Chapter 3: NATURAL RESOURCES AND ENERGY

Citizen involvement is essential in the governmental process to promote the general health and welfare of the total community. New approaches must be developed by local government to effectively involve citizens in the planning and decision-making process. Positive accomplishments can be achieved.

The resources and natural systems of Clackamas County are the most enduring and tangible assets for its communities and their economies and environment.

River corridors, farm fields, marshes, scenic outlooks, wildflowers, spawning beds for salmon, deer and elk wintering areas, gravel quarries, magnificent stands of trees along Oatfield Ridge, or reservoirs of hot water beneath the slopes of Mt. Hood are all part of the wealth of Clackamas County's environment.

Natural resources and processes are interdependent, supplying benefits to the system of which they are a part. Plants are used by animals. Floodplains accommodate floods. Geologic processes produce areas of spectacular scenery. Skiers use the snow-covered slopes of Multorpor Mountain. Favorable soils and slopes result in savings for construction. Energy flows into the region from the sun, wind, and rain.

Clackamas County is an area of rapid growth, urbanization pressures, and diverse rural activities. As man exerts a greater influence on the environment, planning for future use of Clackamas County's land, water, and energy resources becomes increasingly important. The concern becomes one of insuring long-range values and a high quality of life. This can be accomplished by insuring that our resources are wisely managed, that different uses of land do not conflict, that energy for productivity is available in the quantities needed, and that there is a sufficient amount of high-quality water for the needs of the population as well as natural systems.

ISSUES

- Use of rivers for recreation and public water supply.
- Effects of river corridor development.
- Competing land use demands in river corridors and impact of development on wetlands.
- Availability and quality of groundwater.
- Management of agricultural resources.
- Management of forest resources on small woodlot ownerships.
- Management of urban forests.
- Competition of recreational demands in forest areas.
- Management of mineral and aggregate supplies.
- Reuse of exhausted aggregate extraction sites.

- Management of fish and wildlife habitat.
- Compatibility of structures and land uses in critical habitat areas; animal damage in agricultural/forest areas.
- Protection of scenic and unique natural areas on public and private lands.
- Housing density in hazard areas (e.g., steep slopes, active landslides, and floodplains).
- Government liability if known hazard areas are allowed to develop, and damage to life or property occurs.
- Energy efficiency and alternative local sources (e.g., solar, geothermal).
- Need for educational programs on energy conservation (e.g., weatherization, recycling, and efficient land use patterning).

SUMMARY OF FINDINGS AND CONCLUSIONS

- On peak days and/or during summer months, sections of the Willamette River are overused in terms of recreational activities. The Clackamas and Sandy Rivers may be approaching recreational overuse in some sections. The Molalla has very low summer flows. Access points on the Tualatin River and lower Molalla River are few. The banks of the Tualatin are predominantly mud, relatively fragile, and cannot withstand much wave (wake) action. Regulatory programs include State Scenic Waterways on the Clackamas and Sandy Rivers, Federal Wild and Scenic Waterways Act, the Willamette River Greenway, state water quality standards, Water Resources Department policy and water rights, and Division of State Lands fill permits. Seven cities and the County share jurisdiction of the Willamette River.
- All rivers either support or provide passage for anadromous fish, i.e. salmon and steelhead.
- Existing land uses within each river corridor area are:

Land Use as Percentage of Total

River	Residential	Commercial	Industrial	Ag/Forest/OS
Clackamas	6.5	0.1	3.2	90.2
Sandy	4.7	0.4	0.0	94.9
Molalla	2.0	0.0	1.0	97.0
Tualatin	13.9	0.2	0.0	85.9
Willamette	11.3	0.4	3.6	84.7

- Quality of groundwater in Clackamas County is generally good, although some dissolved iron is found in well supplies. Groundwater monitoring activities show a gradual yearly decline in the water table; however, according to the Oregon Water Resources Department, there is no indication of a critical groundwater situation.
- The County's agricultural production in 1987 had an estimated value of over $150 million. This contributed a total of approximately $500 million to the state's economy. The County's agricultural land base has decreased over 100,000 acres in the last 30 years. The potential for agricultural production is further reduced by rural parcelization patterns and inactive farm land owners.
- Techniques for maintaining the County's agricultural base are (1) regulating land uses to insure that in prime agricultural lands, economic farm units are preserved; and (2) utilizing and expanding existing resources that provide tax relief, educational programs, technical assistance, cooperatives, etc., to encourage the economic viability of the County's farms.
- Federal timber revenues to the County treasury averaged over $9 million per year from 1984 to 1988. The forest industry is one of the largest industries in the state.
- During the late 1980s (from 1984 to 1988) federal lands supplied 70 to 75 percent of Clackamas County's timber harvest volume, and the forest industry supplied about 15 to 20 percent. Small woodlot owners control approximately 20 percent of the Countywide commercial forest land, and supply 5 to 10 percent of the timber harvest.
- Inside the Portland Metropolitan Urban Growth Boundary, street trees are required in certain areas and encouraged elsewhere.
- Inside the Portland Metropolitan Urban Growth Boundary, preservation, maintenance, and enhancement of the tree canopy are required or encouraged through regulation and public education.
- The County could simplify management of its scattered forest holdings by exchanging them for forest lands in other parts of the County and using them for parks and/or open space. A County forest land inventory and management plan has been completed and is now being implemented.
- Aggregate supplies are integral to general economic development in the County; however, supplies near the urban area are limited due to encroachment of urban land uses.
- Fishing is a major recreational activity in the County, with many streams and rivers noted for their salmon and steelhead runs. Hunting is also a major activity, with deer, bear, elk, and other hunting having an important economic impact on Clackamas County.

- Areas near rivers or streams are the most important wildlife habitat, harbor the greatest species diversity, and are critical to the survival of numerous species. Cool and well-oxygenated rivers sustain fish in the summer. Winter range is necessary to support big game during inclement months.
- Scenic and natural areas are often quite fragile and easily obscured or degraded by inappropriate forms of development.
- County population projections indicate an increase of 45 percent by the year 2010, substantially increasing development pressure and recreational use of the County's scenic and natural areas. The quality of these resources affects tourism, a major County industry.
- Flooding and landslides are natural events posing hazards to existing structures and may be compounded by further development. There are approximately 330 acres of landslides and 935 acres of floodplain in northwest unincorporated urban Clackamas County.
- Inappropriate hillside development can increase runoff, erosion, and public service costs. County road maintenance costs, for development on hillsides with greater than 15 percent slope, are about four times as great as maintenance costs for development on 0 percent to 8 percent slope.
- Practically all energy is imported to the County. Although little can be done to affect price or supply, efficient use of energy can be accomplished once it enters the County, and auxiliary sources (e.g. solar, wind, geothermal, etc.) can be developed.
- Nearly 40 percent of the County's energy consumption is wasted by inefficient insulation, improper ventilation, poorly designed appliances, etc. Energy loss due to inefficient land use patterns add to this total. Energy conservation strengthens the economy by preventing job loss during shortages, reducing demands on natural resources, and providing time to develop new or more efficient sources.
- Solar and wind energy are both essentially unlimited in their supply and pose few environmental problems. If more actively promoted, they could become important auxiliary energy sources in Clackamas County. Solar energy can make an immediate contribution for heating and cooling individual buildings.
- The Metropolitan Service District has established a solid waste transfer station and recycling center in Oregon City. It, and a similar station near Sandy, are collection points for solid waste before the nonrecycled material is trucked to the landfill.
- Initial exploration near Mt. Hood indicates a potential for geothermal energy. Heat from the earth could be an important contributor to the total energy requirements of the Portland metropolitan area in the next 10 to 20 years.

WATER RESOURCES

The value of Clackamas County's water resources is immeasurable. Rivers, lakes, farm ponds, marshes, streams, and groundwater provide for domestic supply, recreation, wildlife habitat, drainage control, and many aesthetic benefits.

To protect our water resources, the following goals and policies address rivers and stream corridors in general, five individual river corridors, wetlands, and groundwater.

WATER RESOURCES GOALS

- Maintain an adequate amount of surface water and maintain and improve water quality to insure its continued use for domestic water supply, aquatic habitat, and recreation.
- Minimize erosion and hazards to life or private and public property.
- Maintain or improve the quality and quantity of groundwater.
- Maintain or improve the quality of rivers and streams.
- Protect and enhance wetlands as a valuable source of groundwater recharge, wildlife habitat, and stormwater drainage control.

3.A River and Stream Corridors Policies

3.A.1 Maintain rivers and streams in their natural state to the maximum practicable extent through sound water and land management practices. Consideration shall be given to natural, scenic, historic, economic, cultural, and recreational qualities of the rivers and adjacent lands.

3.A.2 Apply erosion and sediment reduction practices in all river basins to assist in maintaining water quality. Existing riparian vegetation along streams and river banks should be retained to provide fisheries and wildlife habitat, minimize erosion and scouring, retard water velocities, and suppress water temperatures.

3.A.3 For areas that are outside both the Metropolitan Service District Boundary and the Portland Metropolitan Urban Growth Boundary, require preservation of a buffer or filter strip of natural vegetation along all river and stream banks as shown on the adopted Water Protection Rules Classification (WPRC) Maps. The depth of the buffer or filter strip will be dependent on the proposed use or development, width of river or stream, steepness of terrain, type of soil, existing vegetation, and other contributing factors, but will not exceed 150 feet. River and stream corridor crossings shall be permitted provided they do not interfere with fish movement. Commercial forest activities and harvesting practices shall provide for vegetation buffers and the intended shading, soil stabilizing, and water filtering effects as required by the Oregon Forest Practices Act and administered by the State Department of Forestry. Tree cutting activities associated with river or stream enhancement projects approved by the Oregon Department of Fish and Wildlife are exempt from this policy.

3.A.4 For areas that are inside either the Metropolitan Service District Boundary or the Portland Metropolitan Urban Growth Boundary, require preservation of a buffer or filter strip of natural vegetation along all river and stream banks as shown on the adopted Habitat Conservation Areas Map and Water Quality Resource Areas Map and for unmapped Water Quality Resource Areas.

3.A.5 Encourage establishment and maintenance of adequate minimum flow standards in all streams to insure a productive fish habitat and to protect aquatic life and scenic qualities. As new data become available, and the Department of Water Resources Commission establishes minimum stream flows, such information shall be incorporated into the County planning process.

3.A.6 Require to the most reasonable extent possible the use of nonstructural methods of bank stabilization in areas experiencing accelerated soil loss. Require that bank stabilization not degrade fish habitat and not accelerate erosion in other sections of the river or stream.

3.A.7 Allow diversion or impoundment of stream courses if fisheries, wildlife, water quality, and flow will not be adversely affected. If the action is taken for fish or wildlife habitat enhancement, the action shall be approved by the applicable federal, state or local agencies having jurisdiction.

3.A.7.1 Require new dams or other impoundments, or major modifications to existing dams or impoundments, to demonstrate that anadromous and resident fish will not be adversely affected by the installation of such works. The methodology for such determination shall be developed by the County in conjunction with affected federal and state agencies, including, but not limited to, the U.S. Department of Fish and Wildlife, the Oregon Department of Environmental Quality and Environmental Quality Commission, and the Oregon Department of Fish and Wildlife.

3.A.7.2 Require all new dam and impoundment projects to incorporate designs which assist to the maximum extent practicable the restoration, expansion and monitoring of anadromous fish populations, as determined by the County in the development of a methodology with the agencies listed in Policy 3.A.7.1 above.

3.A.8 Allow low head hydroelectric dam facilities that do not adversely impact fisheries and water quality.

3.A.8.1 Require new dams or other impoundments, or major modifications to existing dams or other existing impoundments, to demonstrate pursuant to current accepted methodology that anadromous and resident fish will not be adversely impacted as determined by the Oregon Department of Fish and Wildlife.

3.A.8.2 Require all new dam and impoundment construction incorporate designs which assist to the maximum extent practical restoration, expansion and monitoring of anadromous fish populations as determined by the Oregon Department of Fish and Wildlife and U.S. Fish and Wildlife Services.

3.A.9 Decisions regarding developments in Principal River Conservation Areas, Stream Conservation Areas, and Habitat Conservation Areas shall be consistent with the applicable Economic, Social, Environmental and Energy (ESEE) analyses for the watershed.

3.A.10 Establish water-based recreational areas for activities such as swimming, fishing, and canoeing that are free from conflicts with speed boating and water skiing.

3.B Principal River Conservation Area Policies

3.B.1 Designate a Principal River Conservation Area along the corridor of the Willamette River. For areas that are outside both the Metropolitan Service District Boundary and the Portland Metropolitan Urban Growth Boundary, designate Principal River Conservation Areas along the corridors of the Clackamas River, Sandy/Salmon Rivers, Molalla/Pudding Rivers, Tualatin River, Roaring River, and Zig Zag River as shown on Map 3-2. The corridors include those rivers identified by the Omnibus Oregon Wild and Scenic Rivers Act (1988), and the State Scenic Rivers Program. The corridor width will be one-quarter mile from mean high water level on each side, except along the Willamette River, where the width is defined by the Willamette River Greenway boundaries, urban and rural.

- 3.B.1.1 Coordinate with regional, state and federal regulatory agencies to provide a common management direction and permit review procedures for the designated river corridors. This includes reliance on the Oregon Forest Practices Act for contemplated forest management activities.
- 3.B.1.2 Manage development in all Principal River Conservation Areas according to the following siting performance criteria:
  - 3.B.1.2.a Maintain vegetative fringe areas along the river free of structures, grading and tree cutting activities (see Policy 3.A.3). Diseased trees or those in danger of falling may be removed.
  - 3.B.1.2.b Minimize erosion and sedimentation through drainage control techniques, revegetation of cleared/disturbed areas, phasing of vegetation removal, closure of unused roads, and discouraging off-road vehicles.
  - 3.B.1.2.c Limit residential structure height to 35 feet and use a vegetative fringe to screen from the river primary and accessory structures.
  - 3.B.1.2.d Encourage subdued substructure color or tones to blend with surroundings and adjacent features.
  - 3.B.1.2.e Screen commercial/industrial structures (except water-dependent or water-related uses), parking and/or loading, and storage areas from view from the river, and orient signs away from the river.

3.B.1.3 Require a minimum setback of not less than 100 feet or more than 150 feet from mean high water level for all structures, except water-dependent uses. The actual setback shall be based on the site criteria stipulated in Policy 3.A.3. Residential lots of record and residential minor land partitions unable to meet this requirement shall be exempt from the minimum setback standard. However, all River Areas siting criteria and other provisions of this Plan shall be met. Requirements of the State Scenic Waterways Act and Willamette River Greenway must be met on the applicable reaches of the Clackamas, Sandy, and Willamette Rivers.

3.B.1.4 Encourage new public access points to minimize trespass and vandalism on private property.

3.B.1.5 Mining of aggregate within Principal River Conservation Areas shall only be allowed upon demonstration the site is significant, has been reviewed pursuant to the Goal 5 process and procedures, and when demonstrated such uses shall not adversely impact water quantity or quality. Under no circumstances shall mining or other development activities associated with the use occur within one hundred fifty (150) feet of the mean high water line of the river.

3.B.1.5.a The Canby Sand and gravel site, identified in Board order 95-47, commenced the Goal 5 process in 1992 and has been designated as a significant Goal 5 aggregate site but has not completed the ESEE stage of the process. This site has been found to have significant aggregate and fish habitat. The County has delayed the decision to protect these Goal 5 resources until a concurrent examination of these resources is performed pursuant to the ESEE analysis in OAR 660, Division 16.

3.C Stream Conservation Area Policies

3.C.1 For areas that are outside both the Metropolitan Service District Boundary and the Portland Metropolitan Urban Growth Boundary, designate stream conservation areas along the corridors of fish-bearing streams based on Water Protection Rule Classification (WPRC) Maps created through the cooperative efforts of the Oregon Department of Forestry (DOF) and Oregon Department of Fish and Wildlife (ODFW) pursuant to OAR 629-635-000. Establish and manage conservation corridors based upon the following performance criteria:

3.C.1.1 Large stream conservation areas: A minimum 100 feet from the mean high water line shall be designated along all streams described as fish-bearing streams (Type F) with average annual flows of 10 cubic feet per second or greater as shown on WPRC maps.

3.C.1.2 Medium stream conservation areas: A minimum 70 feet from the mean high water line shall be designated along all streams described as fish-bearing streams (Type F) with average annual flows greater than two cubic feet per second and less than 10 cubic feet per second or greater as shown on WPRC maps.

3.C.1.3 Small stream conservation areas: A minimum 50 feet from the mean high water line shall be designated along all streams described as fish-bearing streams (Type F) with average annual flows less than two cubic feet per second as shown on WPRC maps.

3.C.1.4 Manage development and establish minimum setbacks from watercourses. Allow stream corridor crossings provided they do not interfere with fish movement.

3.C.1.5 Maintain vegetative fringe areas along fish bearing streams free of structures.

3.C.1.6 Establish residential lots of record exemption provisions to allow development on properties physically unable to satisfy the minimum setback requirements.

3.C.1.7 Manage stream conservation areas to maintain and enhance water flows from springs, seeps, side channels and other sources.

3.C.2 Sandy/Zig Zag/Salmon Rivers Design Plan and Policies

3.C.2.1 Implement the design plan for the Sandy/Salmon Rivers according to Map 3-1b, which illustrates uses. Management activities and land classifications shown on the map are consistent with land use policies and designations in the Land Use Chapter. Official maps showing precise boundaries and sites (scale 1"=2000') are on file at the Clackamas County Department of Transportation and Development.

3.C.2.2 Limit development and intense recreation activities on those sites designated Protection Resource Areas on the Design Plan Map. Islands shall not be developed.

3.C.2.3 Apply policies contained in the adopted Mt. Hood Community Plan to the Sandy/Salmon Rivers.

3.C.2.4 Prohibit water appropriations or other withdrawals from the Salmon River unless it is demonstrated through current accepted methodology that anadromous and resident fish habitat will not be adversely impacted as determined by the Oregon Department of Fish and Wildlife.

3.C.3 Clackamas River Design Plan and Policies

3.C.3.1. Implement the design plan for the Clackamas River according to Map 3-1a, which illustrates uses. Management activities and land classifications shown on the map are consistent with land use policies and designations in the Land Use Chapter. Official maps showing precise boundaries and sites (scale 1"=2000') are on file at the Clackamas County Department of Transportation and Development.

3.C.3.2. Cooperate with the Oregon Department of Transportation (ODOT) in development of a coordinated management scheme for the scenic waterway section.

3.C.3.3. Limit development and intense recreational activities on those sites/areas designated Protection Resource Area on the Design Plan Map. Islands shall not be developed.

3.C.3.4. Develop, with the Oregon State Parks and Recreation Department, a Clackamas River Scenic Waterway Recreation Guide for river users that shows landmarks, access/egress points, and scenic waterway rules.

3.C.3.5. Study, for potential inclusion in the State Scenic Waterway Program, a Clackamas River "Gorge" from Estacada to Faraday Dam.

3.C.3.6. Encourage the posting of hazardous water signs in reaches of the river where safety hazards exist.

3.C.4 Molalla River Design Plan and Policies

3.C.4.1. Implement the design plan for the Molalla/Pudding Rivers according to Map 3-1c, which illustrates uses. Management activities and land classifications shown on the map are consistent with land use policies and designations in the Land Use Chapter. Official maps showing precise boundaries and sites (scale 1"=2000') are on file in the Clackamas County Department of Transportation and Development.

3.C.4.2. Encourage new public access points to minimize traffic hazards, trespass, vandalism, and crop disturbance. Clackamas County shall evaluate public access sites shown by the Oregon Department of Fish and Wildlife as indicated in the Pudding River Basin Master Plan for Angler Access and Associated Recreational Uses, 1969.

3.C.4.3. Limit development and intense recreational activities on those sites designated Protection Resource Areas on the Design Plan Map.

3.C.5 Tualatin River Design Plan and Policies

3.C.5.1 Implement the design plan for the Tualatin River according to Map 3-1d, which illustrates uses. Management activities and land classifications shown on the map are consistent with land use policies and designations in the Land Use Chapter. Official maps showing boundaries and sites (scale 1"=2000') are on file at the Clackamas County Department of Transportation and Development.

3.C.5.2 Encourage new public access points to minimize trespass and vandalism on private property.

3.C.5.3 Identify public access points above River Mile 3.4 (Lake Oswego Diversion Dam) and discourage boating activities which create bank erosion due to wave action.

3.C.5.4 Cooperate with the State Water Resources Department and other appropriate agencies to implement the Willamette River Basin Plan.

3.C.6 Willamette River Design Plan and Policies

3.C.6.1 Implement the design plan for the Willamette River according to Map 3-1e, which illustrates uses. Management activities and land classifications shown on the map are consistent with land use policies and designations in the Land Use Chapter. Official maps showing precise boundaries and sites (scale 1"=2000') are on file at the Clackamas County Department of Transportation and Development.

3.C.6.2 Support regulation of recreational activities in the rural portion of the Willamette Greenway to minimize conflicts between water-based recreational uses, manage the intensity of recreational uses, and buffer bankside uses from water-borne recreational activities including recreational noise levels. The County shall develop a joint land management program with the Oregon State Parks and Recreation Department for all County- and state-owned lands in the rural greenway.

3.C.6.3 Provide for recreational activities in the urban portion of the Willamette Greenway through a jointly developed management program with all incorporated cities. At a minimum, public safety, recreational use intensity, and recreational noise need to be addressed.

3.C.6.4 Exempt specified modifications of single family residences from the existing Greenway Conditional Use procedure. For all other uses, change of use, modifications, and intensifications, require Willamette River Greenway Conditional Use approval and compliance with provisions of the design plan and Policies 3.B.1.2 and 3.B.1.3 of this chapter.

3.C.6.5 Prohibit private noncommercial docks and moorages in limited-use rural portions of the Greenway to protect the natural river character.

3.C.6.6 Allow private noncommercial docks and moorages in urban and multiple-use rural portions of the Greenway through the Greenway Conditional Use provisions of the Zoning Ordinance which require an extraordinary exception in the rural portion.

3.C.6.7 Limit development and intense recreational activities on sites designated Protection Resource Areas on the Design Plan Map. Islands shall not be developed.

3.C.6.8 Encourage new public access points to minimize trespass and vandalism on private property. Emphasis shall be directed to the area from Gladstone to Milwaukie.

3.C.7 Cooperate with the State Water Resources Department and other appropriate agencies to implement the Willamette River Basin Plan.

3.D Habitat Conservation Area Policies

3.D.1 For areas that are inside the Metropolitan Service District (Metro) Boundary or the Portland Metropolitan Urban Growth Boundary, designate Habitat Conservation Areas as required by Title 13 of the Metro Urban Growth Management Functional Plan, a Statewide Planning Goal 5 program for riparian corridors, wetlands, and wildlife habitat.

3.D.2 Regulate development in Habitat Conservation Areas, and on parcels that contain Habitat Conservation Areas, in a manner consistent with Metro's acknowledged Goal 5 inventory, significance determination, and Economic, Social, Environmental, and Energy analysis.

3.D.3 Implement Habitat Conservation Area regulations by adopting by reference Metro's Habitat Conservation Areas Map, establishing an overlay zoning district, and applying development standards consistent with Metro's Habitat Conservation Areas model ordinance.

3.E Water Quality Resource Area Policies

3.E.1 For areas that are inside the Metropolitan Service District (Metro) Boundary or the Portland Metropolitan Urban Growth Boundary, designate Water Quality Resource Areas as required by Title 3 of the Metro Urban Growth Management Functional Plan, a Statewide Planning Goal 6 program for water quality.

3.E.2 Regulate development in Water Quality Resource Areas by adopting by reference Metro's Water Quality Resource Areas Map, establishing an overlay zoning district, and applying development standards consistent with Metro's Water Quality Resource Areas model ordinance.

3.E.3 Use Metro's Water Quality Resource Areas Map as a reference document, but rely on the text of the Zoning and Development Ordinance to establish criteria for the identification of protected water resources and the location of the boundaries of Water Quality Resource Areas.

3.F Wetlands Policies

3.F.1 For areas that are outside both the Metropolitan Service District Boundary and the Portland Metropolitan Urban Growth Boundary, prevent disturbance of natural wetlands (marshes, swamps, bogs) associated with river and stream corridors. Adjacent development shall not substantially alter normal levels or rates of runoff into and from wetlands. Site analysis and review procedures specified in the Open Space and Floodplains section of the Land Use chapter shall apply. (See Wildlife Habitats and Distinctive Resource Areas of this chapter).

3.F.1.1 Develop guidelines for compatible uses on wetlands and their peripheries, and for wetland restoration. Table 3-1 shall be used as a guide. Wetland restoration decisions shall be made on a site-specific basis.

3.F.1.2 The County recognizes the U.S. Department of the Interior, Fish and Wildlife Service National Wetlands Inventory as a resource document for wetland identification in the County. Individual site development of inventoried lands will be reviewed for compliance with wetlands policies.

3.F.1.3 The County has insufficient information as to location, quality, and quantity of wetland resources outside of the Mt. Hood urban area and the Portland Metropolitan Urban Growth Boundary to develop a management program at this time. If such information becomes available, the County shall evaluate wetland resources pursuant to Goal 5 and OAR Chapter 660, Division 16, prior to the next Periodic Review. In the interim, the County will review all conditional use, subdivision, and zone change applications and commercial and industrial development proposals to assure consistency with Section 1000 of the Zoning and Development Ordinance and goals and policies of Chapter 3 of the Plan.

3.G Groundwater Policies

3.G.1 Cooperate with appropriate state and federal agencies to inventory and catalog groundwater resources and their uses to assess groundwater potentials and establish management criteria and priorities to protect and maintain this natural asset.

3.G.2 Investigate the feasibility of maintaining or subsidizing a groundwater testing service, available to the County's citizens (upon request for a nominal fee) to assist in assuring adequate well water quality.

3.G.3 Cooperate in the monitoring of groundwater levels and quality with the Oregon Water Resources Department.

3.G.4 Protect groundwater supplies in rural, agricultural, and forest areas.

3.G.4.1 Implement large-lot zoning.

3.G.4.2 Regulate all subdivisions utilizing groundwater as a potable water source to promote long-term sustainability of groundwater supplies.

3.G.4.3 Regulate all development and land divisions utilizing groundwater as a potable water source located in areas classified by the State of Oregon as a groundwater limited area, critical groundwater area or other area where new groundwater appropriations are restricted by the State of Oregon, to promote long-term sustainability of groundwater supplies.

3.G.5 Develop programs to encourage the conservation of groundwater.

AGRICULTURE

Preliminary estimates of the County's farm income show that it added over five hundred million dollars to the State's economy in 1987. The County ranked second among Oregon counties for total farm income according to the Oregon State University Extension Service. Production of nursery stock, Christmas trees, poultry, and vegetables have increased in recent years, along with traditional County crops of berries, tree fruits, field crops, and livestock.

In addition to its economic importance, farm land is valuable open space and provides urban buffers, visual resources, and wildlife habitats.

For additional consideration of agricultural lands, see the Land Use Chapter.

AGRICULTURE GOALS

- Preserve agricultural lands.
- Maintain the agricultural economic base in Clackamas County and the State of Oregon.
- Increase agricultural markets, income and employment by creating conditions that further the growth and expansion of agriculture and attract agriculturally related industries.
- Maintain and improve the quality of air, water, and land resources.
- Conserve scenic areas, open space and wildlife habitats.

3.H Agriculture Policies

3.H.1 Recognize agricultural areas through appropriate zoning. All agricultural areas shall continue unencumbered by activities/land uses unrelated to agriculture in order to insure productive farm land. Specific policies relating to land use in agricultural areas are found in the Land Use Chapter of this Plan.

3.H.2 Investigate the feasibility of irrigation projects in cooperation with the Oregon State University Extension Service, Bureau of Reclamation, Soil Conservation Service, and other state and federal agencies.

3.H.3 Encourage cooperative agricultural projects in support of small agricultural businesses within the County, e.g., establishment of a receiving/shipping station for fresh produce and a farmers market for the direct exchange of local farm products between growers and the public to benefit the economic viability of agricultural businesses.

3.H.4 Encourage food processing industries and services that support agriculture to locate in the County.

3.H.5 Cooperate with the Oregon State University Extension Service to promote education and dissemination of information on agricultural crops, methods and technology, special tax assessment programs, new farming techniques, and commercial agriculture opportunities for new farmers.

3.H.6 Encourage the appropriate agencies to assess agriculture's labor force problems and develop a program to alleviate these problems (e.g., provision of second job opportunities in Unincorporated Communities).

FORESTS

The forest resources of Clackamas County, primarily Douglas Fir, Western Hemlock and other coniferous trees, have provided thousands of jobs for many decades both in Clackamas County and the surrounding region. Timber volume is temporarily declining in the County as the old growth stands are replaced by younger forests. Sound management practices and coordination are needed by all forest owners.

Increased demand for outdoor recreation from a growing County and regional population places renewed emphasis on the need for balanced use and management of forest resources.

Development pressures pose a challenge to retaining and enhancing a healthy urban forest canopy. Accommodating growth inside the Portland Metropolitan Urban Growth Boundary should be balanced with the preservation and planting of trees for their environmental, aesthetic, and economic benefits.

For additional consideration of forest lands, see the Land Use Chapter.

FORESTS GOALS

- Conserve and protect forest lands.
- Provide continued employment in the forest products industry.
- Protect, maintain, and conserve open space, environmentally sensitive areas, wildlife habitat, scenic corridors, recreational uses, and urban buffers.
- Maintain and improve the quality of air, water and land resources.
- Create conditions that will maintain or further the growth of the wood products industry.
- Support principles and implementation of the Oregon Forest Practices Act.

3.I Forests Policies

3.I.1 Protect from conflicting land uses productive forest lands and related forested areas which are environmentally sensitive or otherwise require protection (watersheds, areas subject to erosion, landslides, etc.) (see Chapter 4-Land Use). Recognize forest producing areas through appropriate zoning.

3.I.1.1 Ensure that forest productivity data, based on cubic foot site classes, is current and revised periodically to reflect changes in commercial forest resources.

3.I.2 Encourage forest related industries, specifically firms doing secondary wood processing or those which use wood products now underutilized or considered waste--hardwoods, slash materials, etc.

3.I.3 Continue to support and coordinate programs of the Oregon State University Extension Service and the State Forestry Department to promote more intensive management of small woodlot forest lands, including the education and dissemination of information on timber management methods, special tax assessment incentives, and programs to aid in the marketing of small timber sales.

3.I.3.1 Encourage ready availability of regeneration stock, greater opportunity for equipment-sharing co-ops, and joint timber harvest programs to assist smaller woodlot and timber tract owners.

3.I.4 Encourage coordinated management of major forest lands by cooperation with the U.S. Forest Service, the Bureau of Land Management, the Oregon State Board of Forestry, and the private industry sector.

3.I.5 Cooperate and coordinate with appropriate state and federal agencies to ensure forest management practices that recognize the multiple resource values of forest lands. Impacts on environmentally sensitive areas such as slide and erosion hazard areas, sensitive fish and wildlife habitat, scenic corridors, unique natural and/or cultural features, etc, shall be minimized.

3.I.5.1 Encourage forest owners to restrict the use of off-road vehicles to specified areas where environmental damage and conflicts with other forest uses will be minimized.

3.I.5.2 Encourage public agencies to acquire through purchase, exchange, or easement, scenic areas now in private ownership in order to insure their preservation.

3.I.5.3 Encourage strengthening of the Oregon Forest Practices Act to include special consideration of scenic values in methods of harvesting, in addition to prompt clean up and regeneration (ref. State Forest Practices Act, Section 629-24-541(h), 1978) and ORS 527.710.

3.I.5.4 Support visual management techniques on federal lands within the County, e.g., alternating smaller harvests along scenic corridors to reduce large-scale impacts. Develop incentives to increase the management of scenic/watershed resources on privately owned forest lands, e.g., tax incentives for modifying harvest techniques in designated scenic corridors.

3.I.6 Initiate a tree conservation and planting program inside the Portland Metropolitan Urban Growth Boundary to preserve urban forest areas and promote tree landscapes.

3.I.6.1 Implement tree conservation standards in conjunction with the processing of design review, land division, and conditional use applications to minimize and regulate removal of trees and other vegetation and protection of trees during construction.

3.I.6.2 Discourage excessive tree removal prior to development by imposing a five-year prohibition on approval of design review, land division, and conditional use applications, if such tree removal has occurred.

3.I.6.2.a Provide an exception for lands specially assessed as forestland on the effective date of the regulations.

3.I.6.2.b Provide an exception for minor modifications to approved developments.

3.I.6.2.c Allow unlimited removal of certain types of trees, such as those that are hazardous, diseased, or planted as a commercial crop.

3.I.6.2.d Allow unlimited removal of trees for certain purposes, such as utility line maintenance, or compliance with other legal requirements.

3.I.6.3 Develop non-regulatory approaches to encourage and facilitate tree preservation, maintenance, and planting. Such approaches may include public education and outreach, partnerships with other community organizations, and County-sponsored tree planting.

3.I.6.4 Develop an urban street tree planting and maintenance program that focuses on specified arterials (e.g., boulevards) and designated neighborhoods. This should be done in cooperation with businesses and community groups.

3.I.7 Adopt and implement an updated Forest Management Plan for County-owned forest land, emphasizing consolidation/exchange of scattered County holdings to facilitate more intensive programs for timber management, park development and acquisition, and protection of any recognized watershed, recreation, or scenic values.

MINERAL AND AGGREGATE RESOURCES

Clackamas County is rich in mineral and aggregate resources, the conservation of which is an economic necessity to our society. Haul distances and development, however, have limited many options for use of these resources. To maintain the availability of these valuable resources, areas containing significant resources must be protected from the potential limitations on their use caused by encroachment of conflicting uses.

Mining and processing these resources generates noise, truck traffic, dust and other impacts that can be a problem where there are conflicting uses like nearby houses or a school. Conflicting uses can reduce the economic viability of the resource site. Regulating some conflicting uses is necessary to allow the use of significant mineral and aggregate resources to some desired extent. Development standards are required of mining and processing to reduce the adverse effects these activities may have on surrounding land uses. The county requires reclamation of the mined land for use consistent with the comprehensive plan.

MINERAL AND AGGREGATE RESOURCES GOALS

Protect and ensure the appropriate use of mineral and aggregate resources while minimizing adverse effects of mining and processing on surrounding land uses.

3.J Mineral and Aggregate Resources Policies

3.J.1 To identify and protect mineral and aggregate resources, the county will comply with Statewide Planning Goal 5 and administrative rules adopted by LCDC interpreting the Goal 5 planning process.

3.J.2 The county will maintain an inventory of mineral and aggregate resources. The inventory comprises three parts.

- A list of sites the county has determined are not significant or not in its planning jurisdiction. These sites are “other sites.”
- A list of sites for which the county lacks specific information about the location, quality and quantity of the possible resource. These sites are “potential sites.”
- A list of sites the county has determined are significant Goal 5 resources. These sites are “significant sites”.

3.J.3 Where the county has completed the Goal 5 planning process and developed a program for protection of a significant mineral or aggregate site, the county shall use a Mineral and Aggregate Overlay District. The county may use other tools to carry out its program to achieve the Goal. If any aspect of the overlay requires interpretation, the county shall rely on direction in the site-specific program in the comprehensive plan.

3.J.4 The county shall use the site plan review process for the Mineral and Aggregate Overlay District solely for determining whether an application to mine complies with the site-specific program developed through the county's Goal 5 analysis or complies with other standards of the Zoning and Development Ordinance.

3.J.5 Applicants may seek land use permits to mine mineral or aggregate sites not zoned with the Mineral and Aggregate Overlay District. Subject to applicable laws, on land zoned exclusive farm use, the county may only issue a permit if an aggregate site is on the county inventory of mineral and aggregate sites. The requirement that a site be on the comprehensive plan inventory shall not apply to sites zoned other than for exclusive farm use.

3.J.6 Before 2005, the county will review its list of potential sites to determine if information exists to judge the significance of these sites. If the county finds sites on the list of potential sites significant resources, it shall complete the Goal 5 planning process.

3.J.7 Before 1999, the county will complete its analysis for the Anderson Quarry site, the Canby Sandy and Gravel site, and the Oregon Asphalt Paving Company site. The county will follow administrative rules interpreting and implementing Statewide Planning Goal 5.

3.J.8 The county will coordinate its planning and permitting processes for mineral and aggregate resources with the Oregon Department of Geologic and Mineral Industries (DOGAMI) and Oregon Department of State Lands (DSL).

- 3.J.8.1 To assist state agency permit decisions, the county will identify post-mining land uses as part of any program to protect a significant mineral or aggregate resource site.
- 3.J.8.2 The county recognizes the jurisdiction of DOGAMI for the purpose of mined land reclamation pursuant to ORS 517.750 to 517.900 and the rules adopted thereunder.
- 3.J.8.3 Unless specifically authorized by ORS 517.830(3), DOGAMI should delay its final decision on approval of a reclamation plan and issuance of an operating permit, as those terms are defined by statute and rule, until all issues concerning local land use are decided by the county.
- 3.J.8.4 No mining or processing activity, as defined by the Zoning and Development Ordinance, shall begin until the county has issued a final land use decision and the permittee provides copies of an approved reclamation plan and operating permit issued by DOGAMI or DSL.

3.J.9 The county shall resolve issues relating to mine truck use of public roads as directed in county transportation plans and policies. The county reserves the right to make agreements with aggregate operators about the use of county roads independent from its decisions in Goal 5 analysis.

WILDLIFE HABITATS AND DISTINCTIVE RESOURCE AREAS

Fish and wildlife species provide an essential "background" to our daily lives and must have the environments necessary to provide food, cover, and water in order to survive.

Clackamas County's well-known distinctive resources include mountains, rivers and lakes, forest lands, agricultural lands, unique natural vegetation, geological formations, and other natural features.

The popularity of such places as the Mt. Hood Highway Corridor, the Clackamas River Corridor, and the Willamette River is testimony to the quality of scenic resources available to the Portland metropolitan area and Clackamas County.

Visual corridors along scenic roadways, rivers, and major arterials, the prominent slopes in the urban areas, and other distinctive areas are landscapes highly sensitive to alteration and development.

WILDLIFE HABITAT AND DISTINCTIVE RESOURCE AREA GOALS

- Maintain and improve fisheries and wildlife habitat to enhance opportunities for consumptive and non-consumptive uses.
- Retain and enhance wetlands and riparian habitat to provide areas for fisheries and wildlife and to promote species diversity, bank stabilization, and storm water runoff control.
- Protect the scenic landscapes and natural beauty of Clackamas County.
- Provide an urban environment where trees and landscape plantings abound and where significant features of the natural landscape are retained.
- Preserve and protect areas of unique and distinctive wildlife habitats, native vegetation, and geologic formations.

3.K Wildlife Habitat and Distinctive Resource Area Policies

3.K.1 Cooperate with wildlife management agencies to enhance fish and wildlife opportunities and populations. This includes cooperation with the Oregon Department of Fish and Wildlife in its habitat improvement practices and programs and Wild Fish Management Policy, and with the U.S. Fish and Wildlife Service to inventory and classify wetland environments.

3.K.2 Protect native plant species, wetlands, and stream bank vegetation on County-managed public lands.

3.K.3 Manage roadside spraying programs to minimize adverse water quality, and fish and wildlife impacts.

3.K.4 Support preferential taxation methods to encourage retention of riparian habitat, brushy fencerows, and wetlands on private lands.

3.K.5 Minimize adverse wildlife impacts in sensitive habitat areas, including deer and elk winter range below 3,000 feet elevation, riparian areas, and wetlands.

3.K.6 Encourage closure of temporary roads outside the urban area that are no longer necessary for fire protection or logging activities to reduce wildlife harassment during the critical seasons of winter and spring. Countywide, all new roads crossing streams containing anadromous fish shall provide fish passage facilities acceptable to the Oregon Department of Fish and Wildlife.

3.K.7 Expand, in conjunction with the cities and the County's community planning organizations, the detailed inventory of unique natural and scenic areas, including a visual resource inventory and map showing areas of outstanding visual sensitivity as well as blighted areas.

3.K.8 Protect areas of high visual sensitivity and/or unique natural areas by requiring development review for any development which would substantially alter the existing landscape, as specified in the Land Use Chapter of the Plan. The purpose is to integrate development with natural features, minimizing any adverse impacts.

3.K.9 Improve scenic quality of areas impacted by urban blight, working toward the following objectives:

- 3.K.9.1 Regulation and/or removal of advertising billboards
- 3.K.9.2 Screening junkyards and other unsightly areas
- 3.K.9.3 Placing of utility service lines underground
- 3.K.9.4 Requiring landscape buffers (berms, trees, etc.) between incompatible uses and in visually sensitive areas.

3.K.10 When natural resource activities (e.g., commercial timber harvesting) compete with retention of visual or unique/natural resources and values, the County shall coordinate with appropriate state and federal agencies to minimize significant adverse impacts. The County also will encourage the public acquisition of land through purchase or land exchange, or conservation easements in designated scenic corridors or vistas and unique/distinctive natural areas (see Map 3-2).

3.K.11 Protect and conserve sensitive bird resources to avoid degradation of habitat by requiring development review for any development which could potentially result in adverse impacts to sensitive bird nesting and rearing areas. See maps 3-3, Molalla State Park Great Blue Heron Rookery, and 3-4, Stevens Great Blue Heron Rookery.

3.K.11.1 Inventory and analyze, on a periodic basis, nesting and rearing areas of sensitive bird species pursuant to the Goal 5 and Oregon Administrative Review Rules 660, Division 16 provisions.

3.K.11.2 Establish standards and procedures for evaluating development activities that affect sensitive bird habitat areas.

3.K.11.3 Cooperate and coordinate with wildlife management agencies to identify sensitive bird habitat areas and protect sensitive bird populations. This includes cooperation with the Oregon Department of Fish and Wildlife and the U.S. Department of Fish and Wildlife for inventorying habitat and reviewing development activities in habitat areas.

3.K.12 For areas that are inside the Metropolitan Service District (Metro) Boundary or the Portland Metropolitan Urban Growth Boundary, designate Habitat Conservation Areas as required by Title 13 of the Metro Urban Growth Management Functional Plan, a Statewide Planning Goal 5 program for riparian corridors, wetlands, and wildlife habitat.

3.K.12.1 Regulate development in Habitat Conservation Areas, and on parcels that contain Habitat Conservation Areas, in a manner consistent with Metro's acknowledged Goal 5 inventory, significance determination, and Economic, Social, Environmental, and Energy analysis.

3.K.12.2 Implement Habitat Conservation Area regulations by adopting by reference Metro's Habitat Conservation Areas Map, establishing an overlay zoning district, and applying development standards consistent with Metro's Habitat Conservation Areas model ordinance.

3.K.13 For areas that are inside the Metropolitan Service District (Metro) Boundary or the Portland Metropolitan Urban Growth Boundary, use the performance and implementation objectives and indicators identified in Table 3.07-13e of the Metro Urban Growth Management Functional Plan as the County's performance monitoring program for wildlife habitat protection and restoration.

3.K.14 In accordance with Statewide Planning Goal 5, the County will consider development of additional regulatory and non-regulatory programs to protect upland wildlife habitat identified on Metro's Regionally Significant Fish and Wildlife Habitat Inventory Map.

NATURAL HAZARDS

Policies for natural hazards protect County residents and prevent development in those areas with a potential for structural damage or destruction.

NATURAL HAZARDS GOALS

- Protect life, property, private and public investments from natural or man-induced geologic and/or hydrologic hazards.
- Incorporated hazardous areas within open space networks encouraging these areas to remain natural.

3.L Natural Hazards Policies

3.L.1 Recognize floodplains as areas where high water presents hazards to life and property, and provide protection in flood hazard areas as stated in the Land Use Chapter.

3.L.2 Prevent development (structures, roads, cuts and fills) of landslide areas (active landslides, slumps and planar slides as defined and mapped by the Oregon Department of Geology and Mineral Industries, DOGAMI) to avoid substantial threats to life and property except as modified by 3.L.2.1. Vegetative cover shall be maintained for stability purposes and diversion of stormwater into these areas shall be prohibited.

3.L.2.1 Allow mitigation of identified landslide hazards based on established and proven engineering techniques, and related directly to an approved specific plan that avoids adverse impacts (see Land Use Chapter). Developers should be made aware of liability in such cases for protection of private and public properties from damage of any kind.

3.L.3 Apply appropriate safeguards to development on organic/compressible soils, high shrink-swell soils and wet soils with high water table (as defined in DOGAMI Bulletin No. 99) to minimize threats to life, private and public structures/facilities.

3.L.4 Insure that data on the severity and area of natural hazards is current and revised periodically to reflect any additional information.

3.L.5 Continue cooperation with DOGAMI in the delineation of earth faults. As the information becomes available, policies governing the location of structures and land uses shall be adopted as a part of the Plan. The County Emergency Operations Plan should be reviewed and modified as necessary to prepare for volcanic eruptions, earthquakes, and other natural hazards.

3.L.6 Regulate the use of hillsides and steep slope hazard areas in order to direct urban area development toward more suitable lands. As slope and other adverse conditions increase, the need to regulate development also increased in order to reduce major sources of erosion and storm runoff, and public costs of maintaining development.

- 3.L.6.1 Require soils and engineering geologic studies in developments proposed on slopes of 20 percent or greater. More detailed surface and subsurface investigations shall be warranted if indicated by engineering and geologic studies to sufficiently describe existing conditions (e.g., soils, vegetation, geologic formations, drainage patterns) and where stability may be lessened by proposed grading/filling or land clearing. DOGAMI Bulletin No. 99 provides general geologic data.
- 3.L.6.2 Establish any additional standards or criteria including the density for development on hillside slope and hazard areas, as stated in the Land Use Chapter. Density Transfers shall be encouraged to take advantage of natural topographic features such as benches or terraces. Joint hillside development projects shall be encouraged.
- 3.L.6.3 Establish a consistent, uniform method for calculating slope on a site specific basis in conjunction with zoning and subdivision ordinances.

ENERGY SOURCES AND CONSERVATION

Virtually all energy used in Clackamas County is imported in one form or another from other counties, states, or in the case of petroleum and natural gas, foreign countries. There is very little the County can do to affect the supply or cost of imported energy; however, it is possible to develop supplemental energy sources, such as geothermal, solar and waste by products, and to use energy efficiently once it enters Clackamas County.

The importance of energy conservation cannot be overemphasized. Conscientious application of a broad energy conservation program to all sectors of the energy market -- homes, businesses, industry and transportation -- could significantly cut the historical energy growth rate and reduce long-term energy price increases. Programs such as home weatherization produce immediate benefits due to reduced energy expenditures by the homeowner or renter, and the creation of new jobs.

ENERGY SOURCES AND CONSERVATION GOAL

Conserve energy and promote energy efficiency and resiliency through source development, recycling, land use and circulation patterning, site planning, building design and public education.

3.M Energy Sources and Conservation Policies

3.M.1 Cooperate with the state legislature and appropriate state and federal agencies (Public Utility Commission, Geology and Mineral Industries, Forest Service, etc.) in programs to encourage alternative energy source development. Such programs will focus on (a) geothermal resources in the Cascades; (b) single building solar and wind conversion technologies; and (c) energy recoverable from solid wastes.

3.M.1.1 Support exploration, research and development of geothermal resources consistent with environmental protection policies of this Plan. The County also will cooperate in the development of any necessary transmission facilities designed to bring such energy to local industries and residences.

3.M.1.2 Cooperate with the State Department of Energy to undertake and evaluate studies on the specific nature and potential of the County's wind and solar energy resources.

3.M.2 Initiate solid waste recycling programs to reduce dependence on nonrenewable resources.

3.M.2.1 Work cooperatively with the Metropolitan Service District to develop a solid waste recycling program and refuse-derived fuel facility.

3.M.2.2 Facilitate recycling of domestic, commercial and industrial waste materials through collection franchises and conveniently located collection depots.

3.M.3 Encourage energy-efficient land use and circulation patterns.

3.M.3.1 Locate employment centers, shopping services, parks, recreational and cultural facilities, and medical/dental services near residential developments to minimize transportation, fully utilize urban services, and encourage neighborhood self-sufficiency.

3.M.3.2 Provide for high density developments near transit and major employment/shopping centers.

3.M.3.3 Develop an overall circulation system for the County which promotes transportation alternatives (transit, carpooling, bicycling, and foot travel) and improves traffic flow on major arterials (synchronized signals, vacating nonessential cross streets, access controls).

3.M.3.4 Design subdivisions, Planned Unit Developments, and multifamily, commercial and industrial developments to encourage the use of transit, bicycles, and pedestrian walkways (see Land Use and Transportation chapters).

3.M.3.5 Encourage bike lanes/sidewalks on collector streets. Bike/pedestrian paths should be developed through long blocks and between cul-de-sacs to improve neighborhood circulation.

3.M.4 Encourage energy efficiency through site planning of all residential subdivisions and multifamily, commercial, and industrial projects.

3.M.4.1 Permit lot configurations within subdivisions and Planned Unit Developments to make maximum use of energy-saving features of the natural environment and minimize the effects of temperature extremes.

3.M.4.2 Retain natural terrain features and vegetation where practical which create micro-climates conducive to energy conservation in subdivisions, Planned Unit Developments and multifamily, commercial, and industrial developments.

3.M.4.3 Encourage planting of appropriate landscape materials to reduce solar impact in the summer, minimize winter heat loss and buffer against prevailing wind sources in Planned Unit Developments and multifamily, commercial and industrial developments.

3.M.4.4 Orient structures to enhance potentials for both passive and active solar collection where practical.

3.M.4.5 Allow low-density residential developments to include common-wall structures or attached dwellings.

3.M.4.6 Allow flexibility in yard size, setbacks, and building height to permit efficient building orientation and shapes.

3.M.4.7 Cluster structures to minimize road surfaces and utility networks and to provide the potential for common-wall construction or attached dwellings.

3.M.4.8 Allow flexible road standards for more energy-efficient circulation within developments. Streets should be of such widths as to serve only necessary functions and minimize use of asphalt.

3.M.4.9 Provide for adequate and convenient bicycle parking spaces in multifamily, commercial, and industrial developments.

3.M.4.10 Revise parking standards to reflect the trend to smaller automobiles and use of transit. The integration and sharing of parking facilities within commercial/industrial areas should be encouraged.

3.M.4.11 Permit planting of street trees in new subdivisions and along designated arterials to minimize temperature extremes, favoring deciduous trees (sun in winter and shade in summer) over evergreens and ornamentals.

3.M.4.12 Encourage large employment centers to provide priority parking spaces for carpools and vanpools, as well as incentives for increasing transit ridership.

3.M.4.13 Encourage eating facilities, day care facilities, and on-site recreational areas in large employment centers and large multifamily developments.

3.M.4.14 Provide incentives such as density bonuses for housing proposals demonstrating exceptional examples of energy-efficient site planning.

3.M.5 Encourage energy efficiency through building design and weatherization of existing structures.

3.M.5.1 Encourage flexibility in building and zoning codes to permit energy-efficient building design, such as commonwall construction, solar collection and underground/earth-sheltered structures.

3.M.5.2 Encourage architectural and design features which are conducive to energy efficiency and conservation, such as south facing windows, roof overhangs, awnings, double entry vestibules, storm windows, insulation, shutters, louvers, double glazed windows and draperies with thermal linings. Many of these same features also can be utilized in the weatherization of existing structures.

3.M.6 Cooperate with the cities, other agencies (e.g., educational) and energy purveyors (Portland General Electric, Northwest Natural Gas, etc.), in development of an education program to:

3.M.6.1 Publicize the importance of energy conservation and available weatherization programs.

3.M.6.2 Serve as a forum for addressing energy-related issues (e.g., recycling of domestic wastes, code weatherization of existing residences prior to sale, and need for a Countywide Energy Advisory Commission).

3.M.7 Continue implementation of the 1983 County Energy Management Plan for County activities and property, including assessment of vehicular policy and an energy audit of County buildings.

3.M.8 Support and facilitate the placement of electrical lines underground to increase infrastructure resiliency and promote wildfire mitigation.

NOISE AND AIR QUALITY

Noise and air quality affect our health, our economic interests, and our quality of life. High noise levels affect a person's mental and physical well being and ability to work. Poor air quality can be a health hazard, impair views of scenic vistas, and erode and degrade structures. Air quality management is a regional responsibility, while noise control is more local.

NOISE AND AIR QUALITY GOALS

- Maintain an environment not disturbed by excessive levels of noise.
- Promote maintenance of an airshed in Clackamas County free from adverse effects on public health and welfare.

3.N Noise Policies

3.N.1 Cooperate with public agencies and the private sector to reduce noise, and continue to enforce the County noise ordinance.

3.N.2 Implement a procedure to minimize the impact of external noise on sensitive land uses.

3.N.1.1 Require, through the review process, buffering of noise sensitive areas or uses where appropriate. For example, adjacent to arterials, expressways, freeways or heavily used rail lines, landscaped berms or other solid barriers may be required. Encourage setbacks and/or noise insulation in structures.

3.N.1.2 Noise mitigation plans, subject to County approval, shall be required of significant new noise generating land uses adjacent to or impacting established noise sensitive properties.

3.N.1.3 Construction or reconstruction of high volume arterials, expressways, or freeways in or near residential areas may require sound buffers as part of the road project.

3.O Air Quality Policy

3.O.1 Cooperate with local, regional, state, and federal agencies and industry to maintain and/or improve local air quality.