

MOTION NO. 2787

1
2 A MOTION adopting energy conservation policies
3 for King County and requesting the County
4 Executive to prepare a proposed ordinance
to adopt these policies as a part of the
County's Comprehensive Plan.

5 WHEREAS, "most of the world's consumption of energy from
6 fossil fuels during its entire history has occurred during the
7 last 25 years" (Committee on Resources and Man, National Academy
8 of Sciences and National Research Council, Resources and Man,
9 p. 166), and

10 WHEREAS, our present world industrialized civilization has
11 arisen principally in the last 200 years accompanied by the
12 ((exponential growth of most of its major components (coal oil,
13 natural gas, and thermal energy production, electrical generating
14 capacity, automobile population and miles flown by scheduled
15 aviation) at rates commonly in the range of 4 to 6% per year,
16 with periods of doubling from 8 to 16 years, excepting world
17 population which is doubling in 35 years (M. King Hubert,
18 "Survey of World Energy Resources," U.S. Geological Survey
19 (Washington, 1973), p. 16)) (accelerated consumption of its
20 energy resources in the industrial, building, and vehicular
21 segments without regard for wasteful habits and practices); and

22 WHEREAS, the United States ((energy system currently relies
23 most (75%) on the least plentiful domestic energy resources
24 (petroleum and natural gas), and)) has no coherent national
25 energy policy; and

26 WHEREAS, ((the United States reached its historic peak produc-
27 tion rate of domestic crude oil in 1970 and currently relies on
28 imported oil for 40% of its petroleum demand compared with
29 practically no oil imports in 1950 and it is projected to rely
30 on 50% from imports by 1980, and)) the United States energy and
31 economic policies of the past have resulted in an increased
32 reliance on imported energy to supply our needs; and

33 ((WHEREAS, the United States energy system currently relies

1 least on the most abundant resources (coal, uranium, oil shale-
2 kerogen, and solar power), and))

3 WHEREAS, energy conservation is not a part of the County's
4 1964 Comprehensive Plan's Development Goals, Development Concept
5 for King County or Development Policy (Plan Policies, Criteria
6 and Standards), and

7 WHEREAS, the King County Council at its April 4, 1975 Policy
8 Planning Session requested the Policy Development Commission to
9 develop proposed energy conservation proposals, and

10 WHEREAS, the Policy Development Commission on September 23,
11 1976 adopted the Ad Hoc Energy Conservation Committee's Report
12 on Energy Conservation Policies for King County and has presented
13 it to the Council for its consideration.

14 NOW, THEREFORE, BE IT MOVED by the Council of King County:

15 The Council adopts the attached statements (Attachment A
16 entitled "Ad Hoc Energy Conservation Committee's Report on Energy
17 Conservation Policies for King County", September 1976 and
18 Attachment B entitled "Addendum".) as energy conservation policies
19 for King County in the areas of:
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ADDENDUM

King County Energy Conservation Policies

The following two definitions are to be superscripts "5" and "6" on the appropriate places on page 7, noted below, and the definitions are to be added to page 8 of the Policy Development Commission's September 1976 Ad Hoc Energy Conservation Committee's Report on Energy Conservation for King County.

5. ENERGY RESOURCE EFFICIENCY is an expression of the efficiency of use of natural resource energy to serve all the energy needs of a building or project, and shall account for major energy consumption and losses, in equivalent energy units, pertinent to construction of energy facilities, energy transmission and conversion of energy forms, off-site as well as those pertinent to the building system efficiencies. All calculations shall be based on new energy forms being added to serve new loads. (Add superscript "5" on page 7 after the words "energy resources efficient" or "efficiency" in numbers 3, 4, and 5).
6. SOURCE ENERGY is the energy, in consistent energy units, required to supply a building's energy requirements from the energy source. It includes Accounting for major energy requirements for and losses related to energy conversion, and/or facility construction, and transmission to the point of use (buildings, etc). (Add superscript "6" on page 7 after the words "source impact" in number 6).

K I N G C O U N T Y
P O L I C Y D E V E L O P M E N T
C O M M I S S I O N

N O T I C E

ORDINANCE #2208 established the Policy Development Commission to advise King County government relative to county policy, planning, and zoning matters. The Commission and its seven committees include over 100 King County citizens. It is the officially recognized and authorized body involving citizens of King County in an advisory capacity to assist in planning for: land use, transportation systems, utilities, public facilities, recreation, housing, community development, human services, conservation and capital improvements.

Notification is hereby given that this report after approval by the Commission, will be transmitted to the Executive and Council recommending that the County take appropriate legislative and executives actions to implement these energy conservation policies.

A D H O C E N E R G Y C O N S E R V A T I O N C O M M I T T E E

R E P O R T O N

E N E R G Y C O N S E R V A T I O N P O L I C I E S

F O R K I N G C O U N T Y

A D O P T E D B Y T H E P O L I C Y D E V E L O P M E N T C O M M I S S I O N : S E P T E M B E R , 1 9 7 6

REPORT ON ENERGY CONSERVATION POLICIES FOR KING COUNTY

This report is intended to provide the County Executive and County Council with useful, practical policy recommendations to guide County actions which can have significant impacts on the use of energy in the County. The Policy Development Commission formed the Ad Hoc Energy Conservation Committee which developed this Report at the request of the County Council (made at its Policy Session at Battelle on April 4, 1975) and with the solid support of the Executive Branch. Committee members were drawn from a wide variety of fields concerned with the use of energy and they gave a great deal of time and service in an intensive effort to come up with realistic policy recommendations which will allow the County to take positive actions which can make a difference in the use of energy in this region.

The Commission believes there is an urgent need for the County to take action in the field of energy conservation. While most of the energy conservation policies recommended in this report are not new ideas, they need to be formally adopted as County policy and vigorously implemented.

The recommendations adopted by the Commission reflect an acute awareness that the quality of life enjoyed by the residents of King County is inextricably interrelated with the use of energy. This interrelationship calls for careful efforts to ensure that the choices made in both the public and private sectors reflect a thorough and thoughtful consideration of the balance between energy needs and energy resources. While strategies for developing such a balance are neither clearly evident nor certain of implementation, we can no longer afford to ignore the energy consequences of our

decisions and proceed without explicit policy guidelines. The quality of life enjoyed by King County residents depends increasingly on the energy consequences of the choices we make through out public and private institutions. What we do about energy will have more to do with how our communities interact with their environment than anything else.

On a global basis, the combination of increasing population and intensification of energy demanding activities is placing growing pressures on renewable and nonrenewable energy resources. These pressures cannot continue indefinitely without placing the future of all humankind in serious jeopardy. "Most of the world's consumption of energy from the fossil fuels during its entire history has occurred during the last 25 years."¹ The enormity and complexity of the system of natural resource and human relationships embracing the entire planet in which causes and effects are often separated by dimensions of space and time that transcent conventional geographic and jurisdictional boundaries is both staggering and sobering. Yet we cannot wait for a coordinated global strategy to take shape and bring all available social, political and technological skills to bear on the energy problems confronting us. We must begin to address energy issues at every level and in every way we can with the tools and techniques available to us while we work toward larger solutions.

This report recommends policies which King County can adopt and implement now. They are not intended to represent ultimate solutions to our energy problems. They represent beginning, practical steps which King County can take immediately to come to grips with the

¹Committee on Resources and Man, National academy of Sciences and National Research Council, Resources and Man (San Francisco: W.H. Freeman and Company, 1969), p. 166.

challenge of achieving a proper balance between energy needs and energy resources. The report recommends policies for the County in six areas: Land Use and Development; Residential and Commercial Site Planning, Design and Construction; Transportation; County Operations, County Inter-Governmental Relations; and County Educational Policies.

Land Use and Development Policies for Energy Conservation

1. Ensure that patterns of development are consistent with the urban centers development concept¹ and locate employment centers, commercial centers and transportation systems so as to minimize the need for energy usage. Cluster new developments in compact communities situated near existing transit corridors.
2. Establish a plan for development of higher residential densities including a variety of dwelling unit types to conserve energy in areas where the social, economic and physical impacts are acceptable.
 - a. Provide for multi-use buildings in appropriate areas, especially areas of high density development;²
 - b. Locate higher density development chiefly in urban centers while continuing to provide choice of low density development in areas where the secondary impacts³ of development can be controlled.
 - c. Separate urban centers by providing open space buffers.
3. Ensure fuller development or redevelopment of parts of the County already serviced by utilities, especially sewer and water, in order to make the most energy efficient use of existing utility services. Discourage development in areas that require extension of sewer and water utilities.
4. Ensure that amendments to the Comprehensive Plan take into account the County's energy conservation and urban centers development policies.

5. Ensure that the County's reviews of special district comprehensive plans and EIS's pay special heed to the energy conservation implications of those plans.⁴
6. Coordinate development and facility plans with cities, other counties, METRO, and other agencies with a view toward minimizing energy consumption throughout King County.
7. Assess alternative locations, spatial configurations and indirect consequences of major developments⁵ in light of the long-term consequences of land development.⁶
8. Provide a planning process for locating neighborhood shopping and recreational facilities⁷ consistent with the maintenance of the residential character of neighborhoods in order to minimize the need for energy consuming automobile trips.
9. Encourage mortgage lending practices which result in energy efficient land use development or re-development.
10. Ensure that zoning policy is consistent with the County's energy conservation policies.
11. Give full consideration to energy aspects of food production and transportation in determining County policies on agricultural lands.

FOOTNOTES

1. The "Urban Centers Development Concept" forms the conceptual framework for the King County Comprehensive Plan. It was adopted in 1964 and readopted in 1970 as part of the Plan. It encourages development around town centers which can "become focal points for employment, commerce and cultural activities; and can provide specialized services. Separating these urban centers would be open space elements such as river valleys and steep slopes."
2. Zoning and design practice in the United States has begun to recognize the benefits of mixing uses in certain buildings. A mixture of residential and commercial facilities in one building can increase energy efficiency as well as provide stimulating and diverse living and working environments. Such a principle can operate on a large scale, as in the John Hancock building in Chicago, or a small scale such as an apartment above the corner grocery. This policy must be implemented with care to protect residential values, quiet, privacy, and safety, and is probably not appropriate in low density areas.
3. "Secondary impacts" are those environmental and/or growth-inducing effects which are stimulated indirectly as a result of the implementation of a specific project.
4. Implementation of this policy may require amendment to Ordinance 1700, implementing the State Environmental Policy Act in King County and Ordinance 1709, relating to comprehensive plans for water and sewer districts.
5. "Major developments" means proposals for which an environmental impact statement or assessment is determined to be required under SEPA.
6. Special techniques such as net energy analysis might be required in order to assess energy consequences.
7. The size and type of shopping and recreational facilities which are to be considered consistent with neighborhood character can be defined operationally by each community through the community planning process.

Residential and Commercial Site Planning, Design and
Construction Policies for Energy Conservation

1. Encourage comprehensive site planning analysis, structure design, construction, remodeling and consideration of life cycle costs¹ to take advantage of energy conservation factors.²
2. Encourage the consideration of life cycle costs, annual operation and maintenance costs (including energy costs) as well as initial installation costs when upgrading existing residential and commercial structures or building new ones.³
3. Encourage the adoption of energy resource efficient design standards in heating, insulation and cooling systems of residential and commercial structures.⁴
4. Encourage the installation of more innovative and energy resource efficient heating and cooling systems in residential and commercial structures.
5. Encourage the upgrading and maintenance of heating and cooling systems in existing residential and commercial structures to increase energy resource efficiency.
6. Develop County building code specifications which set performance standards and which provide alternative functional standards to allow for and encourage innovation, with such encouragements based on energy source impact in equivalent energy units.
7. Encourage the siting of residential and commercial structures to take advantage of solar and other forms of energy for heating and lighting.

FOOTNOTES

1. The Life Cycle Cost is the total cost of a proposed project during its expected life. The total cost of any project includes its initial construction cost, annual operation and maintenance costs, periodic nonannual maintenance costs, and any decommission costs (salvage value is equivalent to a negative cost). This procedure of determining these future costs requires certain assumptions about future interest rates and capital, labor, fuel, and other O&M inflation rates. All costs are determined on an annual basis for each year of the project's expected life. These costs are expressed in nominal (current) dollars. Hence, inflation rate projections are important. The project's expected life is that life in which the project is expected to remain economically viable, rather than mechanically or physically viable. Once the annual costs are determined, these costs are converted to its present value, then summed. This sum is the life cycle cost of the project.
2. For example, roof overhangs to control the entrance of the sun's heat energy into a structure can help regulate heating and cooling in harmony with the season's weather cycle. The use of trees and shrubs can help to protect residences from cold winter winds and provide shade from the summer sun.
3. Applicable cost analysis standards may be helpful in following this policy. Some cost analysis standards which may be considered for applicability are:
 - a. Economic Analysis Handbook - Navy
 - b. Life Cycle Cost Analysis - Washington State
 - c. Value Analysis - Federal
 - d. Energy Conservation in NVAC Systems: A Methodology for Financial Assessment FEA
 - e. Energy 1990: City of Seattle, Department of Lighting

Some computer programs for energy system analysis which may be applicable are:

- a. Energy System Analysis Series (ESA) - Ross R. Meriwether
 - b. AXCESS - Energy Analysis Computer Program - EEA
 - c. ECUBE - Energy Conservation Utilizing Better Engineering - AGA
 - d. MACE - McDonnell Annual Consumption of Energy
 - e. TRACE - Trane Air Conditioning Economics
 - f. Westinghouse Energy Study
4. Sources of useful information pertaining to this policy are:
 - a. ASHRAE Standard - Energy Conservation in New Building Design, by the American Society of Heating, Refrigeration, and Airconditioning engineers, Inc. 1975.
 - b. Proposed Substitute House Bill No. 1301, State of Washington Legislature, February 9, 1976, "Thermal Insulation Standards for New Residential Occupancy Construction."
 - c. Proposed King County Code, Chapter 53, Building Code, "Thermal Insulation."

Transportation Policies for Energy Conservation

1. Encourage the development and use of energy efficient transportation systems.
2. Encourage METRO to shorten the time spans between buses to promote more ridership.¹
3. Encourage METRO to provide more direct and frequent service between activity areas outside the Seattle central business district, such as in the I-405 corridor.
4. Encourage large companies to provide subscription buses and van pools for their employees.
5. Encourage the use of carpools, preferential bridge tolls and preferential parking for carpoolers.
6. Support and encourage the development and use of more park and ride (as well as park and pool it) lots.²
7. Encourage pedestrian and bicycle access to work, shopping, school and other daily activities by removing obstacles or improving facilities.³
8. Use technical innovations to increase the efficiency of the flow of vehicle and pedestrian traffic on County roads.⁴
9. Consider the use of staggered work hours, four 10-hour day weeks, and other methods to spread peak time traffic loads.
10. Encourage prominent local, state and federal public officials to set examples of efficient energy utilization.
11. Encourage the provision of alternative modes of transportation to work, shopping and other daily activity centers.

FOOTNOTES

1. Although shorter time spans between buses may increase the required subsidy, this additional subsidy should be compared with and balanced against the environmental, social, economic and energy costs of those riders in cars using increased facilities.
2. This should occur at outlying locations from the central business districts where there are sufficient densities of population. The park and pool it lots would be smaller and have a wider distribution than the park and ride lots.
3. See the "King County General Bicycle Plan: Focus 1990" adopted February 17, 1976 by Motion 2314 and the included overall bicycle goal for bicycle facilities in King County, page 72, namely, "Safe, pleasurable bicycle facilities should be made available to all King County residents," and the three broad objectives with accompanying primary, supporting and ramifying policies, on pages 77 through 79.
4. Examples might be preferential ramp metering, signal light time synchronization, and bus activated signal changes.

County Operations Policies for Energy Conservation

1. Appoint a high-level County official to head a County Energy Office responsible for developing energy conservation measures and ensuring their implementation in all County operations and maintenance practices. This official should develop positive energy saving incentives for County employees.
2. Establish a formal energy conservation program for County operations and maintenance and report the program results to the County Executive annually.
3. Audit energy consumption in each County department, agency, building and vehicle on a regular basis and monitor savings that result from conservation measures.
4. Assess major energy consequences, both short and long range, of County operations and maintenance practices on a continuing basis.
5. Assess major energy consequences, both short and long range, of County comprehensive planning activities.
6. Determine critical energy-related problems in County operations and maintenance practices and establish specific objectives for cost-effective conservation measures.
7. Encourage feedback from all County employees on the effectiveness of energy conservation measures.
8. Provide County employees with non-duplicative energy conservation suggestions with positive incentives for utilization.

10. Emphasize energy conservation when remodeling County buildings.
11. Conserve energy through the appropriate location, design and operation of County facilities and programs.
12. Conserve energy through the installation and maintenance of energy efficient heating, ventilating, cooling, and lighting systems which are adequate for the intended uses of County facilities.
13. Conserve energy by reducing the use and/or increasing the efficiency of energy-demanding equipment and practices of the County.
14. Consider the feasibility of providing individual offices in County buildings with the capability of controlling heating, cooling and lighting.
15. Consider conversion to more efficient types of streetlighting, use of more efficient street lighting design, regulation of the hours streetlighting is in use and evaluation of future streetlighting projects to ensure that the most efficient streetlights, consistent with public safety and the needs of the community, are installed.
16. Consider ways the County can improve parking for carpoolers with convenient transit access to employment and shopping centers (e.g., parking at the Kingdome during the day).
17. Consider providing preferential County garage parking arrangements for County employees who carpool.

County Inter-Governmental Relations Policies for Energy Conservation

1. Support regional land use planning which pays special heed to the energy conservation implications of development patterns.
2. Support coordinated facilities planning and development with cities, other counties, METRO and other agencies with a view toward minimizing regional energy consumption.
3. Support basic energy research and related demonstration projects in solar, wind, geothermal and other nondepletable energy sources.
4. Support research in energy efficient transportation modes and related demonstration projects.
5. Support regional transportation planning and development of an energy efficient regional transportation system.
6. Support inter-governmental efforts to encourage the use of mass transit and carpooling.
7. Support inter-governmental cooperation to promote energy conservation, including consideration of establishing a joint Energy Office with the City of Seattle and a joint public information program with other public and private agencies.
8. Support the development of Uniform Building Code specifications which set performance standards for energy conservation and which provide alternative functional standards to allow for and encourage innovation.

County Educational Policies for Energy Conservation

1. Provide the public with information on site planning, design, construction and remodeling techniques for energy conservation in residential and commercial development (e.g., handbooks written so that a layperson can understand and use them might be made available to the public through appropriate County agencies).
2. Coordinate and cooperate with public and private agencies actively involved in energy conservation education programs.
3. Participate as appropriate in energy conservation education programs and conferences conducted by schools and colleges in the area.
4. Encourage the provision of information to the public on the full energy costs of alternative forms of transportation.
5. Encourage communication media involvement in energy conservation efforts.

¹The Energy Design Manual for Residential Buildings put out by the Department of Housing and Community Development of California provides an example of a handbook which might be useful.

ACKNOWLEDGEMENTS

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