

ADVISORY COUNCIL ON THE ENVIRONMENT

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(for information)

Promotion of Energy Conservation in Buildings

Purpose

This paper informs members of a proposal to amend the Buildings Ordinance to empower the Secretary for Planning, Environment and Lands to make regulations for the purpose of promoting energy conservation in buildings.

Background

2. In a move to address environmental problems, the then Director of Buildings and Lands (DBL) requested, in September 1987, a study to be undertaken to consider how to conserve energy in buildings. This study concluded that the energy efficiency of buildings could be improved by reducing thermal transmittance through the building fabric. A consultant was commissioned in 1990 to carry out a feasibility study on the use of Overall Thermal Transfer Values (OTTV) to control thermal transmittance.

3. The consultant completed the study in August 1991 and concluded that if a building was constructed to a suitable OTTV standard, electricity demand from air-conditioning and the emission of greenhouse gas from power generation could both be reduced.

4. The consultant's findings were accepted by the then DBL and the proposal to introduce maximum OTTV for buildings was agreed by the Energy Efficiency Advisory Committee (EEAC), a committee set up in April 1991 and chaired by the Secretary for Planning, Environment and Lands (SPEL) to advise Government on measures to increase energy efficiency. The committee also recommended that:

- (a) statutory OTTV controls should be introduced for new commercial and hotel buildings in the first stage, and should be extended later to other classes of buildings. A handbook on OTTV calculations should be published. Initially, this handbook should be treated as a consultative document and a guide for building design, during a trial period of sufficient length to allow refinement of the OTTV standard, if necessary, before any statutory control is introduced; and

- (b) the proposed OTTV control should be viewed as a first step to improve energy efficiency in buildings with a view to eventual establishment of a comprehensive building energy code to minimise the total building energy consumption, which OTTV controls would form but a part.

These recommendations were endorsed by the Executive Council in March 1992.

5. The then DBL subsequently produced a draft handbook, which gave a step-by-step guidance on the methods of calculation to meet the proposed maximum OTTV. Building professionals were invited to comment on the proposed OTTV calculation methods and standards during the period from September 1992 to April 1993.

6. After reviewing the various comments received and further consultation with the professionals, we considered it appropriate to introduce statutory control over the OTTV of all new commercial and hotel buildings in Hong Kong as soon as possible. This will increase the awareness of building professionals of the need to take into account energy efficiency considerations in building design as well as provide some guidance on the design of energy efficient buildings.

Proposal

7. To implement the recommendations referred to in paragraph 4, we are pursuing amendments to the Buildings Ordinance to empower the Secretary for Planning, Environment and Lands to make regulations for the purpose of promoting energy conservation in buildings, which at this stage would mean control over the OTTV of new commercial and hotel buildings. The regulations, which are under preparation, will require the external walls and roofs of these buildings to be constructed to have suitable OTTV and will require developers to provide information on such matters as the materials used in and the size and disposition of windows. The actual OTTV standards and the method of calculation will be stipulated in a code of practice to be issued by the Building Authority. Members will be consulted on the draft regulations when they are available. The standards will be 80 w/m² for the external walls and roof of the podium constructed within the first 15 metres above ground level and 35 w/m² for the external walls and roof of the rest of the building. A review will be conducted two years after implementation.

Further Development

8. The introduction of OTTV controls is only the first step towards promoting the design and construction of energy efficient buildings. We are now developing energy codes in respect of lighting and air-conditioning. The eventual aim is to publish a comprehensive set of building codes to guide the design of buildings and their electrical and mechanical systems for the purpose of achieving energy efficiency.

9. We are also aware of the fact that apart from a prescriptive approach which involves the promulgation of buildings codes to control design, a performance standard approach, which specifies a maximum amount of energy consumed per unit floor area of a building, has been adopted in other countries. This approach allows greater flexibility in the design of buildings and more room for professional innovation. The data and results of our research in developing building codes will be used to evaluate whether and how a performance approach can be introduced locally to allow a greater flexibility on the part of professionals in the design of energy efficient buildings.

Financial Implications

10. Enforcing the controls will initially be absorbed within the existing resources of the Buildings Department. The need for additional resources will be kept under review in the light of experience.

Economic Implications

11. The cost of building construction is not expected to increase significantly as a result of OTTV controls and increased energy efficiency will help to reduce running costs for buildings.

Environmental Implications

12. The proposal to impose control over OTTV in new buildings could reduce electricity demand from air-conditioning and consequently, the demand for non-renewable fuel resources as well as the amount of greenhouse gases emitted from power generation. The need to calculate OTTV will also increase the energy efficiency awareness of professionals.

Public Consultation

13. Building professionals and representatives from power companies and academic institutes have been consulted on the proposed introduction of OTTV control via the EEAC. Some building professionals have expressed the view that any control on the OTTV of buildings should start with a more relaxed standard and that codes for the building services system should be developed as well.

Conclusions

14. Members are invited to note the proposal in paragraph 7 and that the Council will be consulted on the regulations to control OTTV when they are available.