

Executive Order no. 1314 of 12 December 2012, In force
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Danish Ministry of Climate, Energy and Building
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Amends the following regulations

- Executive Order no. 810 of 28 June 2010

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Executive Order amending the Executive Order on Publication of the Danish Building Regulations 2010 (BR10)¹

1.

The following amendments shall be made to Executive Order no. 810 of 28 June 2010 on Publication of the Danish Building Regulations 2010 (BR10) as amended by Executive Order no. 1309 of 29 November 2010, Executive Order no. 792 of 29 June 2011 and Executive Order no. 909 of 18 August 2011:

(1) *The footnote* to the title of the Executive Order shall have the following wording:

»The Executive Order implements parts of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, Official Journal of the European Union 2012 no. L 315, p. 1, parts of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, Official Journal of the European Union 2010 no. L 153, p. 13, parts of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, Official Journal of the European Union 2009 no. L 285, p. 10, parts of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, Official Journal of the European Union 1992, no. L 206, p. 7, as amended by Council Directive 2006/105/EC of 20 November 2006, Official Journal of the European Union 2006, no. L 363, p. 368, and parts of Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications, Official Journal of the European Union 2005, no. L 255, p. 22, as amended most recently by Commission Regulation (EU) no. 623/2012 of 11 July 2012, Official Journal of the European Union 2012 no. L 180, p. 9.«

(2) *The introduction* to the Executive Order shall have the following wording:

»Pursuant to sections 3, 5, 6(1), paras (a)-(d), (f) and (g), 6(2) and (3), 7(1), 8(1), 9(1), 10(1), 16(8) and (9), 16A, 16B(1), 18(5), 21, 22(5), 28(1) and (3), and 30(2) and by the delegation of authority under section 31D(1) of the Danish Building Act, see Consolidation Act no. 1185 of 14 October 2010, and pursuant to section 32a of the Danish Public Administration Act, see Consolidation Act no. 988 of 9 October 2012, it is provided as follows:«

(3) In *Appendix I, 1.2*, the following shall be inserted as *1.2(6)*:

»1.2(6) Transportable structures erected and used for the performance of building work for which a building permit has been granted are only covered by the provisions of 4.7. The provisions apply to transportable structures placed on building sites or nearby when the use of the structure is directly connected to building work in progress. Transportable structures which are erected or used for any purpose other than the actual performance of the building work, including structures involving the performance of drawing office work, office work or any other work that is not actual building work, and which are used as a permanent place of work, are covered by the provisions of 4.7, 5 and 7.3.1(2). The provision does not apply to storage areas and the like which serve two or more building sites simultaneously. Structures used for overnight accommodation are not covered by the provision. Tents are not covered by the provision.«

(4) As *explanatory comments* to Appendix I, 1.2(6), the following shall be inserted:

»(1.2(6)) The provision was introduced as by far the majority of transportable structures for use in building works have been covered by both the Building Regulations and the Danish Working Environment Authority's Executive Order on Building and Construction

Work, in particular sections 10, 12, 17 and 21. The provision therefore means that the area will no longer be subject to double regulation. The structures that are not covered by the provisions of the Danish Working Environment Authority.

The provision means that transportable structures used for the performance of building works are covered by few of the provisions of the Building Regulations and, for example, not covered by the requirement of building application processing.

It is generally the responsibility of the building owner to ensure that the structures meet the requirements of building legislation, see section 17(1) of the Danish Building Act. The building owner is the person who owns the plot of land on which the building work is performed. In accordance with the provision of the Danish Building Act, however, responsibility may also rest with the user.

The provision means that all transportable structures, for example cranes, scaffolding, sheds and welfare provisions for use during working hours as well as structures for use by the site management that are solely used occasionally, are excluded from the scope of the Building Regulations as these are covered by the Danish Working Environment Authority's Executive Order on Building and Construction Work.

Structures in which work is performed that is not actual building work, however, must also meet the requirements of Part 5 and Appendix 6 of the Building Regulations, see the provision of 7.3.1(2).

Structures that are not solely used during working hours, for example sheds used for overnight accommodation, are not covered by the provision. These structures are therefore subject to building application processing. The provision does not exempt the transportable structures from complying with requirements under other legislation. For example, the requirement of a rural zone permit may exist regardless of whether the structure is covered by the Building Regulations or not.«

(5) As *explanatory comments* to Appendix I, 1.3.1(1) paras 1 and 2, the following shall be inserted before »(1.3.1(1) para 1)«:
»(1.3.1(1) paras 1 and 2) The provisions apply regardless of the type of building in connection with which the structures are established.«

(6) The *explanatory comments* to Appendix I, 1.4(2) para 2, first and second sentences, shall have the following wording:
»(1.4(2) para 2) The airtightness measurement requirement only applies to buildings that are covered by 7.2 and heated to 15° C or more. The provisions on airtightness appear from 7.2.1(4)-(6).«

(7) *Appendix I, 1.5(1) paras 1 and 2*, shall have the following wording:

»1) Garages, carports, outbuildings, greenhouses, roofed-over terraces and similar structures which are erected in connection with buildings covered by 1.3.1(1) paras 3-5 and which, at the time of erection, conversion or extension, exceed 35 m², but does not exceed 50 m² and equipment houses for electronic communications networks or services which do not exceed 50 m² either

2) Garages, carports, outbuildings, greenhouses, roofed-over terraces and similar structures which are erected in connection with buildings covered by 1.3.2(1) para 1 and which, at the time of erection, conversion or extension, exceed 20 m², but does not exceed 50 m².«

(8) As *explanatory comments* to Appendix I, 1.5(1) paras 1 and 2, the following shall be inserted after »(1.5(1) paras 1-5)«:
»(1.5(1) para 1) Buildings covered by 1.3.1(1) paras 3-5 comprise:

- Detached single-family houses
- Linked single-family houses with vertical party walls incorporating no more than two dwellings
- Holiday homes in designated "summer house" areas.

(1.5(1) para 2) Buildings covered by 1.3.2(1) para 1 comprise linked single-family houses with vertical party walls incorporating more than two dwellings.«

(9) *Appendix I, 1.5(1) paras 3 and 4*, shall be repealed and replaced with the following:

»3) Garages, carports, outbuildings, greenhouses, roofed-over terraces and similar structures which are erected in connection with buildings covered by 1.3.2(1) paras 2 and 3 and 1.3.3 and which, at the time of erection, conversion or extension, does not exceed 50 m².«

Paras 5-9 shall then become paras 4-8.

(10) In *Appendix I, 1.5(1) para 6*, which shall become para 5, the following shall be inserted after »Wind turbines«: »in rural zones«.

(11) *Appendix I, 1.5(10)*, shall have the following wording:

»1.5(10) If the building work requires exemption from the technical provisions of Parts 3 to 8 of the Building Regulations, such an exemption must be applied for in the building notice, and the work may not commence before exemption is given, notwithstanding the two-week time limit.«

(12) In *Appendix I, 1.6(1) para 2*, the following shall be inserted after »similar buildings with a«: »total«.

(13) In *Appendix I, 1.6(1) para 3*, »area of no more than 20 m²« shall be amended to: »total area of no more than 20 m² per dwelling«.

(14) *Appendix I, 1.6(1) para. 8* shall have the following wording:

»8) Installations with an LPG storage capacity of up to 1,200 gas storage units (GSU).«

(15) In the *explanatory comments* to Appendix I, 1.6(1) para 8, the following shall be inserted as the *fourth sentence*:

»The erection of LPG tanks is also covered by the Danish Emergency Service Act.«

(16) In *Appendix I, 1.6(1)*, the following shall be inserted as *paras 12-14*:

»12) Conversions and other alterations to residential units in multi-storey buildings that only affect alterations within the individual unit and which do not entail alterations to load-bearing structures. Such individual conversions or alterations must not entail any extension of the floor area.

13) Individual conversions and other alterations to commercial buildings that only affect a single business unit of no more than 150 m² and which do not entail alterations to load-bearing structures and escape route conditions. Such individual conversions or alterations must not entail any extension of the floor area.

14) Individual conversions and other alterations to traditional office buildings that only affect alterations within one or more office units, each of which forms a separate fire-resisting unit. The individual conversion or alteration must not affect escape routes used by several fire-resisting units and must not entail alterations to load-bearing structures. Such individual conversions or alterations must not entail any extension of the floor area.«

(17) As *explanatory comments* to Appendix I, 1.6(1) paras 12-14, the following shall be inserted:

»(1.6(1) paras 12-14) The provision only applies to conversions and other alterations that do not entail any extension of the floor area or a significant change of use. The conversions and alterations must still comply with the technical provisions of the Building Regulations. Conversions affecting the shared building installations, including the establishment of new bathrooms, are not covered. Changing a business unit into a residential unit or changing a residential unit into a business unit is a significant change of use and is therefore not covered by the provision, and a building permit is therefore required.

(1.6(1) para 12) The provision applies to conversion works and alterations within the individual residential units that are converted or altered. The provision applies to, for example, alterations to non-load-bearing walls in the individual residential unit and the replacement and conversion of bathrooms, windows or kitchens.

Conversions affecting the entire building, for example the replacement of roofing with another type of roofing which thus implies an alteration to the roof structure or alterations to the escape route or ventilation system of the building, are not covered by the provision, and a building permit is therefore required. The same applies to conversions entailing alterations to exit routes from the dwelling, conversions entailing alterations to escape routes as well as the filling-in of door openings leading to stairs that serve as escape routes

In connection with substantial conversions to residential units, a smoke alarm system connected to the power supply and using battery backup must be installed. In connection with minor conversions, it will also be appropriate to install a smoke alarm system connected to the power supply and using battery backup.

(1.6(1) para 13) The provision applies to conversion works and alterations to a single business unit.

Conversion works to large parts of a commercial property require a building permit, and a whole commercial building therefore cannot be converted under this provision by claiming that the building project comprises separate, individual conversions. Some changes of use of commercial buildings are subject to permission under the Danish Planning Act, and a permit for such changes must therefore be obtained from the municipal council.

(1.6(1) para 14) The provision applies to traditional office buildings, which for example means office buildings erected in accordance with the guidelines set out in "Eksempelsamling om brandsikring af byggeri" [Collated examples of fire safety measures in buildings].

The provision applies to conversion works and alterations within separate fire-resisting units, for example a fire compartment or a fire section. The provision applies to, for example, the changing of cellular offices into open-plan offices and vice versa, the combination of individual offices into one fire-resisting unit, alterations to non-load-bearing walls as well as the replacement and conversion of bathrooms or kitchens.

Alterations that affect more than a single unit of the building or which affect escape route conditions are not covered by the provision, and a building permit is therefore required.«

(18) In the *explanatory comments* to Appendix I, 1.7(1), the following shall be inserted after the seventh sentence: »See also the Executive Order on Waste issued by the Danish Environmental Protection Agency.«

(19) *Appendix I, 2*, shall have the following wording:

»2.1 General

2.1(1) The total footprint of the building and its impact on the surroundings are regulated in respect of:

1) The size of the plot.

2) The distance of the building from common boundaries, roads, paths and other buildings on the same plot.

3) The height of the building and number of storeys, including the height of the building in relation to common boundaries, roads, paths and other buildings on the same plot.

4) the floor area of the building and the plot ratio.

5) The layout of the unbuilt areas.

2.1(2) Building control specifications must be calculated in accordance with the calculation rules set out in Appendix 1.

2.1(3) The provisions of Part 2 do not apply if a local plan or a town planning by-law or a regulatory plan under the previous building acts provides otherwise.

2.1(4) The calculation rules set out in Appendix 1 apply independently and cannot be amended by a local plan, town planning by-law or regulatory plan.

2.2 Building rights

2.2(1) The municipal council cannot refuse to approve a building's floor area, number of storeys, height and separation distances if the conditions specified in 2.2.1-2.2.2 are satisfied, with the limitations and extensions specified in 2.2.3-2.2.8.

2.2.1 Plot ratio

- 2.2.1(1) The municipal council cannot refuse to approve the floor area of a building if the plot ratio does not exceed:
- 1) 60 in the case of multi-storey domestic buildings in an area designated for that purpose in the municipal plan.
 - 2) 40 in the case of wholly or partially joined single-family houses, including semi-detached houses, terraced houses, linked houses and similar dense/low-rise housing.
 - 3) 30 in the case of detached single-family houses and/or two-family houses with horizontal party walls situated in a housing estate.
 - 4) 15 in the case of holiday homes in designated "summer house" areas and
 - 5) 45 in the case of other buildings.
- 2.2.1(2) In regard to two-family houses with horizontal party walls, multi-storey buildings, commercial buildings and institutional buildings, in the case of conversions and extensions on plots in exceptional locations built before 1 February 1977, the municipal council may not refuse to approve a floor area exceeding 50, see 2.2.1(3).
- 2.2.1(3) Plots in exceptional locations; see 2.2.1(2), are:
- 1) corner plots,
 - 2) roadside plots with a width of 15 m or more and
 - 3) plots with a depth of no more than 25 m measured from the plot's road-facing boundary.
- 2.2.2 Number of storeys and heights in general
- 2.2.2(1) The municipal council may not refuse to approve the height of a building pursuant to 2.2 if the height of the building as applied for does not exceed two storeys and no part of the external walls or roof of the building is more than 8.5 m above ground level.
- 2.2.3 Detached single-family houses, two-family houses and semi-detached houses
- 2.2.3(1) In the case of detached single-family houses, two-family houses with horizontal party walls, the municipal council may not refuse to approve the height of the building or the separation distances if the conditions of paras 1 and 2 have been met.
- 1) Maximum height: 1.4 x the distance from the common boundary and path.
 - 2) Minimum distance from the common boundary, road and path: 2.5 m.
- 2.2.4 Holiday homes in designated "summer house" areas
- 2.2.4(1) In the case of holiday homes in designated "summer house" areas, the municipal council may not refuse to approve the number of storeys, height and separation distances of a building if the conditions of paras 1-3 have been met.
- 1) Maximum number of storeys: 1.
 - 2) Maximum height: 5.0 m for a roof and 3.0 m for an external wall along at least one longitudinal side.
 - 3) Minimum distance from the common boundary, road and path: 5.0 m.
- 2.2.5 The size of the plot
- 2.2.5(1) In the case of parcelling out, registration or transfer of land in connection with plots for detached single-family houses and holiday homes in designated "summer house" areas, the municipal council may not refuse to grant approval for properties with a plot size of:
- 1) no less than 700 m² in the case of detached single-family houses and
 - 2) no less than 1,200 m² in the case of holiday homes in designated "summer house" areas; see the Planning Act.
- 2.2.5(2) When determining the size of the plot in accordance with 2.2.5(1), the area of roads and/or other land which cannot be built on because of the radius of corners or building line requirements to protect the road layout must be excluded.
- 2.2.6 Garages, carports and similar ancillary buildings
- 2.2.6(1) The following buildings must comply with the provisions of 2.2.2 and 2.2.3, but may be erected closer than 2.5 m to a common boundary, road or path:
- 1) Garages and carports.
 - 2) Roofed-over terraces which are not raised above ground level.
 - 3) Greenhouses, sheds and similar ancillary buildings serving as outbuildings.
 - 4) Storage tanks for heating oil and similar installations which are necessary for running the building itself.
 - 5) Equipment houses for electronic communications networks or services.
- 2.2.6(2) If the building is erected closer than 2.5 m to a common boundary, road or path, the conditions in paras 1-4 must be satisfied:
- 1) Within a distance of 2.5 m from the common boundary, no part of the external walls or roof of the building, including any fire parapet, may be higher than 2.5 m above ground level or the level plane set for the building.
 - 2) The sides facing the common boundary may not exceed a total length of 12.0 m. Only the longest side of the buildings facing the common boundary is measured.
 - 3) No windows, doors or similar openings may be installed or formed facing the common boundary.
 - 4) Roof water must be retained within the building's own plot.
- 2.2.6(3) In respect of holiday homes in designated "summer house" areas, buildings covered by 2.2.6(1) must comply with the provisions of 2.2.4, but may be erected no less than 2.5 m from a common boundary, road or path if the conditions of paras 1-4 have been met.
- 1) Within a distance of 2.5 to 5.0 m from the common boundary, no part of the external walls or roof of the building, including any fire parapet, may be higher than 2.5 m above ground level or the level plane set for the building.
 - 2) The sides facing the common boundary may not exceed a total length of 12.0 m. Only the longest side of the buildings facing the boundary is measured.
 - 3) No windows, doors or other openings may be installed or formed facing the common boundary.
 - 4) Roof water must be retained within the building's own plot.
- 2.2.7 Small buildings of no more than 10 m²
- 2.2.7(1) Small buildings of no more than 10 m² are only subject to the provisions of 2.2.7, but see 2.2.6(2) paras 2-4.
- 2.2.7(2) Each title number entails entitlement to up to two small buildings if the conditions of paras 1-3 have been met.

- 1) The area of each building must not exceed 10 m².
 - 2) The distance from other buildings under the same title number must be no less than 2.5 m.
 - 3) No part of the external walls or roof of the building may be higher than 2.5 m above ground level.
- 2.2.7(3) Small buildings in designated “summer house” areas must not be built closer than 2.5 m to a common boundary or path and must comply with the provisions of 2.2.7(2) paras 1-3.
- 2.2.8 Agricultural buildings
- 2.2.8(1) Agricultural buildings serving agricultural and forestry holdings in rural zones, which do not require permission under the Planning Act or any notice, authorisation or approval under the Danish Livestock Farming Environmental Approval Act may be built to a height of up to 12.5 m.
- 2.2.8(2) Silos erected as part of a large building of the type listed in 2.2.8(1) and having a cross section of no more than 80 m² may be erected to a height of up to 20 m.
- 2.2.8(3) Market gardens and nurseries are also subject to the rules specified in 2.2.8(1) for properties which it has not been possible to register as agricultural properties in the land register.
- 2.3 Overall assessment
- 2.3(1) The municipal council determines the total footprint of a building and its impact on the surroundings, see 2.1(1), by making an overall assessment in compliance with the building control provisions of 2.3.2-2.3.5, taking account of the general criteria set out in 2.3.1.
- 2.3(2) The municipal council only makes an overall assessment of building control provisions which are not wholly or partly regulated by or do not wholly or partly satisfy the provisions in respect of building rights set out in 2.2.
- 2.3.1 General criteria
- 2.3.1(1) In the case of modifications in respect of one or more of the building control specifications set out in 2.3.2-2.3.5, the deliberations of the municipal council must take the following points into account:
- 1) The overall footprint of the building must be appropriate for the function of the building.
 - 2) The total footprint of the building must be consistent with the norm for the block, the neighbourhood or the area or with that which is envisaged for the area.
 - 3) Taking account of the use of the property, satisfactory lighting conditions must be provided for buildings on the property and adjacent buildings and measures must be taken to prevent an unreasonable degree of overlooking (i.e. visual invasion of privacy) in relation to other buildings on the same plot or adjoining plot(s).
 - 4) In accordance with 2.4, sufficient open spaces must be provided in relation to the use of the property, including recreation areas for residents, users and employees.
 - 5) In accordance with the requirements of 2.4 and taking account of the use of the property, satisfactory pedestrian and vehicular access must be provided for the users of the property, including access for the disabled and the emergency services; sufficient parking areas also must be provided.
 - 6) In the case of buildings on the edge of dense, built-up urban areas adjacent to an unzoned area or developments for detached houses, holiday homes or allotments, or a development of dense low-rise housing, determination of the total footprint of the building must take account of the character of adjacent areas and the footprint of any development.
- 2.3.2 The size of the plot
- 2.3.2(1) In the case of parcelling out, registration or transfer of land, the size of the plot must be determined in accordance with the criteria specified in 2.3.1 and 2.3.2(2).
- 2.3.2(2) On the basis of an overall assessment, to include the ratio between any existing buildings and the plot size, a plot size must be determined which is adequate for a building and the use of the property in accordance with the requirements of 2.3 and 2.4, and which allows for vehicular access under highways legislation and ensures that the unbuilt areas comply with the requirements of Part 2.
- 2.3.3 Separation distances
- 2.3.3(1) The distance of the building from common boundaries, roads and paths must be determined in accordance with the criteria set out in 2.3.1 and the requirements of 2.3.3(2).
- 2.3.3(2) The distances determined in accordance with 2.3.3(1) must be sufficient to ensure that:
- 1) Roof water is retained within the building’s own plot.
 - 2) Windows, balconies, etc. do not provide an unreasonable degree of overlooking in relation to other buildings on the same plot or adjoining plot(s).
- 2.3.3(3) If an area consists predominantly of dense housing, the municipal council may decide that new buildings must be erected so as to abut the road boundary or building line and extend to the boundary with the adjacent plots.
- 2.3.4 Number of storeys and heights
- 2.3.4(1) The height of the building and number of storeys must be determined in accordance with the criteria set out in 2.3.1 subject to the allowances and limitations specified in 2.3.4(2).
- 2.3.4(2) The height and number of storeys of the building must be determined in accordance with 2.3.4(1), taking into account the ratio between the height of the building and the distance from other buildings and open spaces on the same plot and from the buildings on adjacent plots and their open areas, and from roads and paths, in order to provide satisfactory light conditions and to prevent unreasonable overlooking.
- 2.3.5 Floor area
- 2.3.5(1) The floor area of the building must be determined in accordance with the criteria specified in 2.3.1 and 2.3.5(2).
- 2.3.5(2) When determining the floor area for residential purposes in existing buildings, including existing unused roof spaces, the municipal council must give due weight to the need to provide up-to-date dwellings of a reasonable size in relation to the total area that is intended to be used.

2.4 Unbuilt areas

2.4(1) The areas specified in 2.4 may be shared by several properties. The registration of the properties concerned must be such as to secure the layout, landscaping and use of such communal open spaces.

2.4.1 Recreation areas for the building

2.4.1(1) Any building must be provided with recreation areas of an appropriate size for the use, footprint and location of the building.

2.4.1(2) Such recreation areas must be at ground level, but may be provided in a covered or raised courtyard or may extend to roof areas or large-scale balconies.

2.4.1(3) For blocks of flats and dense low-rise housing, developments including terraced and linked houses etc., an appropriate part of the recreation area must be laid out as a playground area. The size of the playground area must be determined by the municipal council and must be specified in the building permit.

2.4.1(4) The building permit may set a deadline in respect of the layout of recreation areas and playground areas.

2.4.2 Parking areas

2.4.2(1) Sufficient parking areas must be provided (reserved) for the residents of or employees in the building, visitors, customers, suppliers, etc. to park cars, motorcycles, mopeds, bicycles, etc. on the property.

2.4.2(2) The municipal council must determine how large a proportion of the plot area is to be provided (reserved) for parking areas and when the area is to be laid out; this must be specified in the building permit.

2.4.2(3) The layout of parking areas must include an appropriate number of parking spaces which cater for disabled people. This requirement does not apply to detached single-family houses or holiday homes in designated "summer house" areas.

2.4.3 Pedestrian and vehicular access areas

2.4.3(1) Pedestrian and vehicular access must be provided from roads to entrances to the buildings on a property and to the unbuilt areas of the property. The layout of such pedestrian and vehicular access must be in keeping with the nature of the building. Lighting must be provided for pedestrian and vehicular access routes. Stairs and ramps must be most brightly illuminated.

2.4.3(2) Pedestrian and vehicular access must be laid out so as to enable the disabled to use the building. Access from roads, including from car parks to the unbuilt area of the property and to entrances to buildings must be no less than 1.3 m wide and have firm, even surfacing.

Differences in levels must be compensated for by contoured landscaping or by means of ramps, and ramps must be supplemented by steps with a rise of no more than 150 mm and a going of no less than 300 mm. Ramps may not have a gradient of more than 1:20, and there must be a horizontal area of no less than 1.3 m x 1.3 m at both ends of the ramp.

Ramps with a gradient of more than 1:25 must also have landings every 12 m. Graspable handrails must be provided at a height of approx. 0.8 m on both sides of ramps and steps.

2.4.3(3) Footways to the building must be separated from other types of traffic by a contrasting tactile feature. Above steps on access routes, there must be a change in the colour and texture of the surfacing 0.9 m before the staircase starts and across the full width of the staircase. The edges of the treads and nosings must be highlighted in a contrasting colour.

2.4.3(4) Doors, gates, passages or openings required by 2.4.3(1) must be designed so as to provide easy access for emergency vehicles.

2.4.3(5) Detached single-family houses used only for residential purposes and holiday homes in designated "summer house" areas are not subject to the provisions of 2.4.3(1)-(3).

(20) The *explanatory comments* to Appendix I, 2, shall have the following wording:

»(2.1(1)) The provision describes the conditions applicable to Part 2, both in relation to building rights set out in 2.2 and in relation to an overall assessment made in compliance with 2.3.

Building control specifications may be included as conditions in the building permit.

(2.1(3)) The provisions of the Planning Act take precedence over the building control provisions of Part 2. The provisions of Part 2 are exclusively of a complementary nature in relation to buildings in a rural zone.

(2.2(1)) If a building cannot be erected in compliance with the provisions of 2.2, the total footprint of the building and its impact on the surroundings must be determined on the basis of an overall assessment under the provisions of 2.3. A permit in respect of works which are subject to building control as set out in Part 2 may be notified in the form of conditions laid down in the building permit.

(2.2.1(1)) The plot ratio is calculated in accordance with the rules specified in Appendix 1, B.1.1.1, the plot area in accordance with Appendix, B.1.1.2, and the floor area in accordance with Appendix 1, B.1.1.3.

(2.2.1(1) para 5) Other buildings mean multi-storey domestic buildings in an area not designated for multi-storey domestic buildings as well as buildings not covered by paras 1-4.

(2.2.2(1)) Heights are calculated in accordance with the rules specified in Appendix 1, B.1.1.4, and the number of storeys is calculated in accordance with Appendix 1, B.1.1.6.

The provision applies to the horizontal height-limiting plane. No part of the external walls or roof of the building may exceed 8.5 m; but see Appendix 1, B.1.1.4(3).

(2.2.3(1)) The height and separation distances of the building are calculated in accordance with the rules specified in Appendix 1 B.1.1.4 and Appendix 1 B.1.1.5.

(2.2.3(1) para 1) The provision applies to the inclined height-limiting plane. No part of the external walls or roof of the building may exceed 1.4 x the distance to the common boundary and path; but see Appendix 1, B.1.1.4(3)).

(2.2.3(1) para 2) The distance requirement applies equally to elevated recreation areas outside the building (more than 30 cm above natural ground level), conservatories, external staircases, balconies, chimneys, roof terraces, solar photovoltaic arrays or solar collectors and to swimming pools.

(2.2.4(1) para 1) If the existing buildings in the area are predominantly non-compliant with the provisions of 2.2.4(1) paras 1-3 in respect of building height and use of loft spaces, new buildings may then be erected which are in keeping with the character of the area as determined by the overall assessment indicated in 2.3.

(2.2.4(1) para 2) This provision applies to the horizontal height-limiting plane.

(2.2.4(1) para 3) The distance requirement applies equally to elevated recreation areas outside the building (more than 30 cm above natural ground level), conservatories, external staircases, balconies, chimneys, roof terraces, solar photovoltaic arrays or solar collectors and to swimming pools.

(2.2.5(1)) In connection with plots for buildings other than detached single-family houses and holiday homes in designated "summer house" areas, land must be parcelled out, registered or transferred in accordance with the provisions of 2.3.2.

(2.2.6(1)) This provision covers buildings which serve as outbuildings, including boiler rooms and storage tanks for heating oil and similar installations which are necessary for the operation of the building itself, and other outbuildings which normally take the form of detached buildings.

The provision only applies to garages, carports and similar ancillary buildings erected in connection with a primary building.

The provision does not apply to buildings used for residential purposes, kitchens, sanitary conveniences or bathrooms.

(2.2.6(2)) If the building does not comply with all the conditions of paras 1-4 of this provision, an overall assessment as indicated in 2.3 must be applied.

The provision applies to all secondary buildings erected on a boundary, including buildings covered by 2.2.7.

(2.2.6(2) para 1) Within 2.5 m of the boundary, the buildings may not exceed 2.5 m in height. Beyond 2.5 m and further into the plot, the height may not exceed 1.4 x the distance to a path or common boundary.

(2.2.6(2) para 2) Overhangs in excess of 0.5 m must be added to the length of the building. The length of a carport must be measured 0.5 m inside the limit of the roof surface.

(2.2.6(3)) Holiday homes may not be built closer than 5.0 m to a common boundary, road or path.

(2.2.7(1)) Up to two small buildings which comply with the provisions of 2.2.7 may be erected without a building notice or permit, see 1.6(1) para 4.

It should, however, be ascertained whether there are any private easements, declarations or public building lines, local plans or town planning by-laws etc. that may affect the erection of such buildings.

(2.2.8(1)) Heights are measured in accordance with the provisions of Appendix 1, B.1.1.4.

(2.2.8(2)) The provision also applies to free-standing silos built as part of a feeding system connected to the production building via a transport system. Cross sections are measured as the horizontal plane at the widest point of the silo.

(2.3(1)) An overall assessment means the municipal council's specific assessment in compliance with the provisions of 2.3.2.-2.3.5 of the total footprint of the building and its impact on the surroundings in respect of plot size, plot ratio, height and separation distances, number of storeys and the layout of the unbuilt areas, see 2.1(1). This assessment is made, in accordance with the general criteria set out in 2.3.1, by taking into account the appropriateness of the footprint of the building for its function and by ensuring that the building is consistent with the norm for an area and that the building and its surroundings are provided with satisfactory lighting conditions and protected against an unreasonable degree of overlooking.

(2.3.1(1)) The criteria listed in 2.3.1(1) paras 1-6 are an expression of the legally binding limits on the municipal council's assessment of building control specifications and thus express the substantive factors which the municipal council can and must legally take into account in its overall assessment.

(2.3.1(1) para 1) An evaluation of whether the footprint of the building is appropriate for its function will take into account the individual provisions set out in 2.3.2-2.3.5. The individual provisions will not apply equally to all types of buildings. For example, recreation areas will be weighted more heavily in determinations of the plot ratio of a domestic building than of a commercial building, which might therefore be permitted a greater floor area. In the case of commercial buildings to which the public has access, the requirement for parking will, on the other hand, be weighted more heavily than in the case of a domestic building.

(2.3.1(1) para 2) Area means an area designated by the municipality, such as a "summer house" area, a housing estate or development of single-family houses, an industrial zone or a development whose character defines it as a designated area.

In the case of development of a vacant property, an assessment must be made of what is the norm for the neighbourhood, and/or, alternatively, for the area. If the norm for a neighbourhood or area cannot be determined in such circumstances, or in the case of buildings erected in a newly designated area, due consideration must be given to the proposed character of the area. Framework provisions on plot size, floor area, number of storeys, height and separation distances specified in a local plan may be used as guidance for what is usual or proposed for the area.

(2.3.1(1) para 6) The provision covers a number of "conflicting cases" in which the evaluation must take the character of specified adjacent areas into account in the same way as the other considerations indicated in 2.3.1(1) paras 1-5, which otherwise only provide for weight to be attached to the character of buildings in the block of flats, quarter or area itself, therefore not including the stated geographically conflicting cases.

(2.3.2(1)) When establishing the size of the plot, all the factors specified in 2.3 may legally be taken into consideration, including in cases where the plot is sub-divided, to allow for a continued lawful use of the property.

The municipal council may by the same token refuse to approve the size of a plot if, once sub-divided, it would be inadequate for accommodating buildings which conform to the building control requirements for unbuilt areas, including access to the property and separation distances, particularly the ratio between the height of a building and its distance from adjacent buildings.

(2.3.3(1)) The distances defined in accordance with 2.3.3(1) must provide for a satisfactory ratio between the height of the building and its distance from roads, paths and common boundaries in accordance with 2.3.4. See Appendix 1, B 1.5 for the rules for calculating separation distances.

Note the fire safety precautions in Part 5.

(2.3.4(1)) The provision applies to both the so-called horizontal and inclined height-limiting planes. See Appendix 1, B.1.1.4 for the rules for calculating the height of the building. See Appendix 1, B.1.1.6 for the rules for calculating the number of storeys in the building.

(2.3.5(2)) The provision of new (further) dwellings in an existing property may be subject to a requirement to provide parking spaces and open spaces in accordance with 2.6.

A contemporary dwelling means a dwelling which, as a minimum, meets the requirements set out in 3.3.

(2.4(1)) Unbuilt areas laid out in accordance with the provisions may not be used for purposes other than those for which they were provided. See section 7 of the Danish Building Act.

(2.4.1(3)) The safety requirements for playground equipment are stated in Part 4. Structures.

(2.4.1(4)) The provision gives scope for residents' input in respect of the layout of recreation areas and playground areas.

(2.4.2(3)) Disabled parking spaces should have a usable area of 3.5 x 5 m, be located as close to the entrance as possible and have firm, even surfacing. At least one disabled parking space should have a usable area of 4.5 x 8 m to allow for a minibus with a tail lift. Drops/rises in any stepped access from the parking area to other areas must be of no more than 2.5 cm.

DS manual 105, "Outdoor areas for all - Planning and design - Guidelines for providing access for disabled persons" contains instructions for laying out the physical environment so as to allow the disabled greater independence, freedom of movement and safety. See also "Færdselsarealer for alle" [Traffic areas for all] issued by the Danish Road Directorate.

(2.4.3(1)) Lighting of pedestrian and vehicular access areas must be directional and not glaring. See also the rules on private roads set out in the Danish Act on Private Roads, according to which the municipal council may decide that lighting must be provided on publicly accessible roads.

(2.4.3(2)) The DS publication, »Outdoor areas for all - Planning and design - Guidelines for providing access for disabled persons« contains guidelines for laying out the physical environment so as to give disabled people greater independence, freedom of movement and safety.

Ramps with a gradient of between 1:25 and 1:20 may be fitted with guarding instead of handrails or may be contoured so as to eliminate any danger of falling sideways.

(2.4.3(3)) To prevent collision with free-standing staircases from the side or underside, the staircase should be fitted with guarding/safety railings to give headroom of 2.2 m. For the sake of the visually impaired, tread surfaces with open mesh grating, holes etc. should be avoided, or be so constructed as not to trap white canes or injure the claws of guide dogs.

(2.4.3(4)) Emergency vehicles require an entrance with a clear width of no less than 2.8 m and headway of no less than 3.4 m. In narrow streets it may be necessary to widen the route.

(2.4.3(5)) Detached single-family houses which are partly used for commercial purposes are subject to the provisions of 2.4.3(1)-(3).«

(21) In *Appendix I, 4.7*, the following shall be inserted as 4.7(3):

»4.7(3) Structures on building sites must be sufficiently far from common boundaries, roads or paths or must be so built as to eliminate the risk of the spread of fire to buildings on other plots. Structures that are not on a building site, but where the location of the structure is directly connected to the building work in progress, must also be so placed and built as to eliminate the risk of the spread of fire to other buildings.«

(22) As *explanatory comments* to Appendix I, 4.7(3), the following shall be inserted:

»(4.7(3)) The provision on the spread of fire to buildings on other plots is found in 5.5.3(1).«

(23) In the *explanatory comments* to Appendix I, 5.5.3(1), the following shall be inserted after the second paragraph:

»Structures used for the performance of building work are also regulated by 4.7.«

(24) In the *explanatory comments* to Appendix I, 5.4(13), the following shall be inserted after the first sentence:

»Dwellings that have their own burners should also have a smoke detector installed in the room where the burner is placed. Smoke detectors should be interconnected.«

(25) In *Appendix I, 5.4*, the following shall be inserted as 5.4(19):

»5.4(19) In a building in which the floor of the uppermost storey is more than 22 m above ground level, the choice of fire safety installations must take particular account of the possibility of evacuation from the building, the intervention time needed by the emergency services, access to storeys, the fire load and the structural factors of the building.«

(26) As *explanatory comments* to Appendix I, 5.4(19), the following shall be inserted:

»(5.4(19)) Installations in connection with tall buildings can for example include fire service lifts, warning systems, automatic fire alarm systems, automatic sprinklers, riser pipes, etc..«

(27) In the *explanatory comments* to Appendix I, 6.3.1.2(2), »Occupiable rooms« shall be amended to: »Habitable rooms«.

(28) In the *explanatory comments* to Appendix I, 6.4.2(1), the following shall be inserted after »Table I of Guidance no. 5/1984 issued by the Danish Environmental Protection Agency«: »The recommended limit values apply within the building's own plot and in respect of adjacent buildings.«

(29) As *explanatory comments* to Appendix I, 6.4.2(3), the following shall be inserted:

»(6.4.2(3)) The windows of the building mean windows to habitable rooms and kitchens.«

Recreational areas mean primarily outdoor occupiable areas such as balconies, terraces, roof terraces and seating spaces, but not footways, staircases, flower beds and planted grounds, etc.«

(30) In *Appendix I, 6.5.2(1)*, the following shall be inserted after »habitable rooms«: »and kitchens«.

(31) The *explanatory comments* to *Appendix I, 6.5.2(1)*, shall have the following wording:

»(6.5.2(1)) In workrooms etc., habitable rooms and kitchens, daylight can usually be taken to be sufficient if the glass area of side lights corresponds to a minimum of 10% of the room floor area or, in the case of rooflights, no less than 7% of the room floor area, assuming that the light transmittance of the pane glazing is no less than 0.75. The 10% and 7% are guidelines assuming a normal location of the building and a normal layout and fitting-out of the rooms. If the type of window is not known at the time of design, the frame clear area can be converted to the glass area by multiplying the clear frame area by a factor of 0.7. The glass area must be increased in proportion to any reduction in light transmittance (for example solar control glazing) or reduced light ingress to the windows (for example in the case of nearby buildings).

In habitable rooms and kitchens, daylight can alternatively be taken to be sufficient if a calculation can show that there is a daylight factor of 2% in half of the room. Daylight may similarly be taken to be sufficient if a calculation or measurement can show that there is a daylight factor of no less than 2% in the working zone of the room. This can be measured with a grid covering the room or working zone. The grid starts 0.5 m from the walls and contains measurement points at an equal distance of no more than 0.5 m. The distance between the measurement points should be the same.

Daylight in workrooms etc. may similarly be taken to be sufficient if a calculation or measurement can show that there is a daylight factor of 2% at the workspaces. When determining the daylight factor, account must be taken of actual conditions, including the design of the windows, the light transmittance of the pane and the nature of the room and of the surroundings.

See *By og Byg (SBI) Guidelines 203: "Beregning af dagslys i bygninger"* [Calculation of daylight in buildings] and *SBI Guidelines 219: "Dagslys i rum og bygninger"* [Daylight in rooms and buildings].«

(32) In *Appendix I, 7.2.5.1(6) and (7)*, »glazed area« shall be amended to: »glass area«.

(33) In *Appendix I, 7.3.2(1)*, »more than 5 K« shall be amended to: »of 5 K or more«.

(34) *Appendix I, 7.4.1*, shall have the following wording:

»7.4.1. General

7.4.1(1) For conversions and other alterations to buildings, cost-effective energy savings under 7.4.2(1) and Part 8 must be implemented. The provisions relate to insulation of external walls, floors, roof structures and windows, etc. as well as alterations to installations. The requirement only applies to the building element or installation that is covered by the alteration. Appendix 6 contains guidance on the specification of works that are cost-effective.

7.4.1(2) For replacement of building elements or services, the provisions of 7.4.2(1) and 7.4.2.(3)-(6) and Part 8 must be observed regardless of their cost-effectiveness.

7.4.1(3) Churches, listed buildings and buildings which form part of a scheduled ancient monument are excluded from the provisions of 7.4.2 and 8.6.2(2). Buildings worthy of preservation and covered by a protective town planning by-law, a local preservation plan or a registered preservation order, buildings designated in the municipal plan as worthy of preservation and buildings which the Danish Minister for Cultural Affairs has decided to designate as worthy of preservation under section 19(1) of the Building Protection Act are likewise excluded from the provisions of 7.4.2 and 8.6.2(2) if compliance with these requirements would contravene the plan or designation concerned.

7.4.1(4) In particular cases of complex building structures, the measures described in Appendix 6 cannot be carried out cost-effectively. In such cases the financial unviability must be verifiable.

7.4.1(5) Depending on the structural form and the extent of insulation of the building, there may be solutions which cannot not be carried out without detriment to moisture-proofing. Such works are not to be carried out.

7.4.1(6) Structural alterations that increase energy consumption may be carried out provided that compensatory energy savings are made.

7.4.1(7) Conversion work which is necessitated by significant change of use is covered by 7.3 and must satisfy these requirements even if the alterations may not be cost-effective.«

(35) The *explanatory comments* to *Appendix I, 7.4.1*, shall have the following wording:

»(7.4.1(1)) Article 7 of Directive 2010/31 of the European Parliament and of the Council of 19 May 2010

on the energy performance of buildings (recast) is observed by the provisions of Part 7. Painting, rendering of facades, patching of holes in roof cladding and cavity wall insulation are alterations that do not result in a requirement for cost-effective energy savings.

(7.4.1(2)) Replacement means for example a brand new facade, a new roof structure, including roofing, rafters, insulation and attic, and the replacement of a window, circulation pump or boiler.

(7.4.1(3)) The Planning Act only allows for planning to preserve the external appearance of a building. The exclusion for buildings worthy of preservation applies to building works that will have a visual impact on the external elements of a building covered by the protective plan or designation.

Energy-saving measures should be made without impairing the value of the preservation-worthy building concerned.

It appears from 7.4.2(3) that constructional factors may render it impossible to achieve energy savings in a cost-effective or moisture-proof manner. If energy-saving improvements can be achieved only through internal post- or retro-insulation, but where such insulation cannot be performed in a technically proper manner or where such insulation will result in an indoor climate that does not live up to the rules and regulations in force, energy-saving improvements will not be required in the specific situation.

Section 22 of the Building Act provides that exemption from the provisions of 7.4.2 and 8.6.2(2) may be granted if deemed compatible with the intentions of the provisions. Exemption may for example be granted if compensatory energy savings can be achieved by other means. Energy Guide for Listed Buildings and Buildings Worthy of Preservation, Bygningkultur Danmark 2010, provides examples of energy-saving solutions which do not compromise on the historical and cultural qualities of the house.

(7.4.1(4)) Structural measures may be deemed to be cost-effective if the annual saving multiplied by the lifetime divided by the investment is greater than 1.33. This corresponds to the measure concerned paying for itself within 75% of its expected lifetime. For example, if work performed has a lifetime of 40 years, the investment must be recouped in 30 years. The design lifetimes are given in Appendix 6.

(7.4.1(5)) In terms of moisture-proof insulation works, see SBi Guidelines 224, *Fugt i bygninger* [Moisture in buildings] and various construction experience of different solutions from BYG-ERFA [Construction Experience Sharing].

(7.4.1(6)) The provision applies, for example, to a proposal to fit new windows to a facade or roof. The reduced energy performance is compensated for by, for example, extra insulation, solar heating, a heat pump or solar cells.«

(36) The *headline* to Appendix I, 7.4.2, shall have the following wording:

»Requirements for conversions and other alterations to the building«

(37) *Appendix I, 7.4.2(1)* shall be repealed.

7.4.2(2)-(8) shall then become 7.4.2(1)-(7).

(38) In *Appendix I, 7.4.2(2)*, which becomes 7.4.2(1), »more than 5 K« shall be amended to: »of 5 K or more«.

(39) In *Appendix I, 7.4.2(5)*, which becomes 7.4.2(4), »skylight domes« shall be amended to: »rooflights«.

(40) The *explanatory comments* to Appendix I, 7.4.2(1)-(6), shall have the following wording:

»(7.4.2(1)-(6)) Cost-effective thermal insulation must be fitted in connection with conversion and alterations to building elements. Examples of works where cost-effective insulation can be installed are:

- Laying of new roof felt in the form of new roofing membrane or top felt on an existing roof.
- A new tiled roof or similar.
- A new steel sheet roof on an old felted roof or a roof of fibre cement sheets.

The requirements of 7.4.1(1) apply to the actual sizes of external doors, hatches, secondary windows and skylight domes.

”Secondary windows” here means new or renovated windows with extra frame. External doors include glazed external doors.

Linear losses are significant factors in relation to energy-efficiency and minimisation of indoor climate nuisances. The provisions relating to linear losses on replacement of windows, improvement of external walls or floor constructions currently only apply if improvements are made at the same time to the elements that are causing the linear losses.

Examples of retro-fitted insulation that is normally cost-effective can be found in Appendix 6 and at www.bygningsreglementet.dk.

Constructional factors may prevent compliance with the requirements of 7.4.2(1), see therefore 7.4.2(2).

If it is decided to replace floors, external walls, doors, windows or the roof structure, 7.4.2(1) and 7.4.2(3)-(6) apply regardless of cost-effectiveness; but see 7.4.1(2).«

(41) In the *explanatory comments* to Appendix I, 7.4.2(7), which becomes 7.4.2(6), »7.4.2(4)-(6)« shall be amended to: »7.4.2(3)-(4)«

(42) In *Appendix I, 7.4.2(8) para 2*, which becomes 7.4.2(7) para 2, »through the rooflight« shall be deleted:

(43) In *Appendix I, 7.4.2(8) para 3*, which becomes 7.4.2(7) para 3, »rooflights« shall be amended to: »skylight domes«.

(44) In the *explanatory comments* to Appendix I, 7.4.2(8), which becomes 7.4.2(7), »7.4.2(6)« shall be amended in two places to: »7.4.2(5)«

(45) In *Appendix I, 7.6(1)*, »more than 8 K« shall be amended to: »of 5 K or more« and »more than 5 K« shall be amended to »of 5 K or more«.

(46) As *explanatory comments* to Appendix I, 8.1(5), the following shall be inserted:

»(8.1(5)) Due to thermal radiation from the flue, a sheet of glass is not suited as a cladding sheet.«

(47) In *Appendix I, 8.1*, the following shall be inserted as 8.1(13) and 8.1(14):

»8.1(13) If a server room is established in a building, the power consumption of servers must be measured. Similarly, power consumption or cooling output for cooling the server room must be measured. The provisions apply to new buildings.

8.1(14) Electricity meters must comply with the Danish Safety Technology Authority's Executive Order on metering technology control of meters used for measuring electricity consumption with regard to conformity assessment or type approval marking and first-time verification. Cooling meters must comply with the Danish Safety Technology Authority's Executive Order on metering technology control of meters used for measuring heat consumption in district heating systems with regard to conformity assessment or type approval marking and first-time verification.«

(48) *Appendix I, 8.2(4)*, shall have the following wording:

»8.2(4) Cooling systems and heat pump systems must incorporate automatic regulation of the cooling or heating output according to the demand. Moreover, the cooling output must be controlled according to the demand in each individual room.«

(49) In *Appendix I, 8.3*, the following shall be inserted as *8.3(14)-(16)*:

»8.3(14) Ventilation systems where the power consumption of fans exceeds 3,000 kWh/year must be fitted with electricity meters for measuring power consumption. The provision applies to new buildings and to new installations in existing buildings.

8.3(15) In ventilation systems where heat consumption for heated surfaces exceeds 10,000 kWh/year, heat consumption must be measured. The power consumption of electricity-heated surfaces where total consumption exceeds 3,000 kWh/year must be measured. The provisions apply to new buildings and to new installations in existing buildings.

8.3(16) Electricity meters must comply with the Danish Safety Technology Authority's Executive Order on metering technology control of meters used for measuring electricity consumption with regard to conformity assessment or type approval marking and first-time verification. Heat energy meters for measuring heat consumption in heated surfaces must comply with the Danish Safety Technology Authority's Executive Order on metering technology control of meters used for measuring heat consumption in district heating systems with regard to conformity assessment or type approval marking and first-time verification.«

(50) The *explanatory comments* to Appendix I, 8.3(14) and (15), shall have the following wording:

»(8.3(14) and (15)) The provision does not apply if, for example, an existing ventilation system is extended to cover other premises in the building.«

(51) *Appendix I, 8.4.1(6)*, shall have the following wording:

»8.4(6) Factory-made products used in or connected to permanent plumbing or drainage systems up to and including the draw-off point - in terms of properties affecting the quality of drinking water, see the Executive Order on water quality and supervision of water supply systems issued by the Danish Ministry of the Environment - are subject to approval by the Danish Energy Agency unless the product concerned is excluded in accordance with the Executive Order on the issuance of certifications for building materials in contact with drinking water.«

(52) The *explanatory comments* to Appendix I, 8.4.1(6), shall have the following wording:

»(8.4.1(6)) The administration of the certification scheme for building materials in contact with drinking water has, in compliance with section 28(2) of the Danish Building Act, been delegated to a private business enterprise and is regulated by the Executive Order on the issuance of certifications for building materials in contact with drinking water.«

(53) As *explanatory comments* to Appendix I, 8.4.1(11), the following shall be inserted:

»(8.4.1(11)) In respect of growth of bacteria in hot water installations, see 8.4.2.2.«

(54) As *explanatory comments* to Appendix I, 8.4.2.2(1), the following shall be inserted:

»(8.4.2.2(1)) In regard to the prevention and, if applicable, control of Legionella, see guidance note: Rørcenter-anvisning 017 Legionella - Installationsprincipper og bekæmpelsesmetoder [Pipe Centre guidance 017 Legionella - Installation principles and control methods].«

(55) In *Appendix I, 8.4.2.2*, the following shall be inserted as *8.4.2.2(5)* and *8.4.2.2(6)*:

»8.4.2.2(5) The total heat consumption for hot water heating and circulation must be measured if such heat consumption exceeds 10,000 kWh/year. The provision applies to new buildings and to new installations in existing buildings.

8.4.2.2(6) Heat energy meters for measuring the heat for hot water production must comply with the Danish Safety Technology Authority's Executive Order on metering technology control of meters used for measuring heat consumption in district heating systems if the meter is used for apportioning the cost of hot water heating. Meters for other purposes, however, are only regulated by the provisions on conformity assessment or type approval marking and first-time verification.«

(56) The *explanatory comments* to Appendix I, 8.4.2.2(5), shall have the following wording:

»(8.4.2.2(5)) The provision does not apply if an extension or altered premises are supplied from an existing installation.«

(57) The *explanatory comments* to Appendix I, 8.4.3.1(1) para 2, shall have the following wording:

»(8.4.3.1(1)) See guidance note: Rørcenter-anvisning 016 - Anvisning for håndtering af regnvand på egen grund [Pipe Centre guidance 016 - Guidance for dealing with rainwater on site], and guidance note: Rørcenter-anvisning 009 - Nedsivning af regnvand i faskiner [Pipe Centre guidance 009 - Seepage of rainwater into soakaways]. When rainwater is dealt with on site, a permit is required in accordance with environmental legislation.«

(58) In *Appendix I, 8.4.3.1*, the following shall be inserted as *8.4.3.1(5)*:

»8.4.3.1(5) If an anti-flood valve is installed to protect against flooding, the anti-flood valve must be constructed in accordance with DS 432 Code of practice for sanitary drainage, table 4.6.1. The provision applies regardless of whether the anti-flood valve is installed inside the building or in a well on the owner's plot outside the building.«

8.4.3.1(5) shall then become 8.4.3.1(6).

(59) In the *explanatory comments* to Appendix I, 8.5(1), the following shall be inserted after the last sentence:

»With regard to emissions from combustion plants, see the relevant requirements issued by the Danish Environmental Protection Agency.«

(60) In *Appendix I, 8.5.1.1*, the following shall be inserted as *8.5.1.1(6)-(8)*:

»8.5.1.1(6) In connection with the erection of new buildings, central heating boilers designed for firing with natural gas or fossil oil are not allowed to be installed for heating the buildings, but see 8.5.1.1(7).

8.5.1.1(7) The provision of 8.5.1.1(6) does not apply to central heating boilers designed for firing with natural gas if the municipal council, pursuant to the Danish Heat Supply Act, has decided conclusively prior to 1 January 2013 that buildings in the area should be given the option of individual natural gas supply. If the municipal council made its decision prior to 15 June 1990, the provision of 8.5.1.1(6) does not apply correspondingly if a natural gas grid has been established in the area.

8.5.1.1(8) Exemption from 8.5.1.1(6) may only be granted if, subject to a specific assessment, circumstances exist which make alternatives to central heating boilers designed for firing with natural gas or fossil oil unsuitable for the building in question. In granting exemption, the municipal council may emphasise, for example, that one or more of the following factors make the installation of an alternative to central heating boilers designed for firing with natural gas or fossil oil unsuitable for the building in question:

Plot size.

The location of the building on the plot.

Neighbour considerations.

Local development plans for district heating.

Intended building use.»

(61) As *explanatory comments* to Appendix I, 8.5.1.1(6)-(8), the following shall be inserted:

»(8.5.1.1(6)) The provision applies to the erection of new buildings, see section 2(1)(a) of the Danish Building Act, and thus has effect in relation to all buildings. The provision also applies to extensions where the new building element involves the installation of a new central heating boiler. Whether the extent of a conversion project is comparable with the erection of a new building depends on a specific assessment in pursuance of section 2(1)(b) of the Building Act. Big buildings may in some circumstances be fitted with collective heat supply systems, which are regulated by the Danish Heat Supply Act. Such collective heat supply systems are not covered by this provision. The provision enters into force on 1 January 2013. The provision applies to applications for building permits submitted after 1 January 2013.

(8.5.1.1(7)) An exclusion from the prohibition against the installation of natural gas burners applies in areas where the municipal council has decided conclusively prior to 1 January 2013 that buildings should be given the option of individual natural gas supply. In these areas, the installation of natural gas burners will thus be allowed in new buildings, see section 2(1)(a) of the Danish Building Act. Since the implementation of the project system in 1990, the municipal council must decide to introduce individual natural gas supply in an area in compliance with the requirements of the project order issued under the Heat Supply Act. Before the implementation of the project system in 1990, an area could also be designated for collective heat supply under a general municipal heat plan or local plans. In such areas, the exclusion provision only applies if the area has already established a natural gas grid.

(8.5.1.1(8)) Exemption may only be granted when all relevant alternatives have been examined and found unsuitable. Relevant alternatives can for example be heat pumps, wood pellet burners or district heating. Exemption may for example be granted in the event of the re-erection of a building without access to district heating where the size of the plot is too small for geothermal heating, where noise considerations make it inappropriate to install an air/water heat pump, where there is insufficient space for installation of a wood pellet burner, or where the location of the building on the plot precludes the use of solar energy.

In assessing the different factors, the following may be taken into account:

–Plot size.

The plot is too small for installing underground piping for a geothermal heating system.

–The location of the building on the plot.

The building must be located in a way that would prevent solar collectors and solar cells from generating a sufficient yield to meet the energy consumption of the building. There may, for example, be local plans that preclude the building from being located anywhere on the plot.

–Neighbour considerations.

The building is located so close to neighbours that air/water heat pumps cannot be installed without causing noise nuisance to the neighbours. This may be the case of buildings where the boundary is close to the building.

–Local development plans for district heating.

The area in which the building is to be located will, within a few years, be supplied with district heating, which will be more beneficial than installing, for example, geothermal heating in the building.

–Intended building use.

The use of the building involves, for example, the consumption of large quantities of very hot water, which cannot be met by renewable energy sources. Another situation could be a new building of a temporary nature (for example a temporary cabin for a school) which will be removed after a few years.«

(62) In *Appendix I, 8.5.1.3(2) and (7)*, »Wood-burning stoves« shall be amended to: »Wood-burning stoves, massive stoves and fireplaces«.

(63) In the *explanatory comments* to Appendix I, 8.5.1.4(1), the following shall be inserted as the *second to fourth sentences*:

»Carbon monoxide accidents resulting from firing with oil or solid fuels may be prevented by establishing a wire mesh birdguard or a chimney cowl over brick chimneys and by establishing an automatic shut-off device, which will stop combustion if the chimney/flue is blocked. For boilers with overpressure combustion systems, however, automatic shut-off devices cannot be used.

A carbon monoxide alarm can provide additional safety to users of the system. Only CE-marked carbon monoxide alarms should be installed.

The chimney sweep can provide advice on the installation of wire mesh birdguards, flue terminals and automatic shut-off devices.«

(64) As *explanatory comments* to Appendix I, 8.5.1.4(6), the following shall be inserted:

»(8.5.1.4(6)) Two or more oil burners arranged in a cascade may be connected to the same flue.«

(65) *Appendix I, 8.5.1.4(7)*, shall have the following wording:

»8.5.1.4(7) Boilers stoked by coal, coke, bio-fuels and biomass must at least comply with the useful efficiency and safety requirements for boiler class 5 in DS/EN 303-5 Heating boilers for solid fuels, hand or automatically stoked, nominal heat output of up to 500 kW – Terminology, requirements, testing and marking.«

(66) In the *explanatory comments* to Appendix I, 8.5.1.4(7), the *first sentence* shall have the following wording:

»(8.5.1.4(7)) It is a prerequisite that the boiler and burner have been tested together. Other detachable, readily replaceable burners therefore cannot be used.«

(67) In *Appendix I, 8.5.1.6(1) and (3)*, »bio-fuelled« shall be amended to: »special bio-fuelled«.

(68) The *explanatory comments* to Appendix I, 8.5.1.6(1), shall have the following wording:

»(8.5.1.6(1)) Special bio-fuelled systems mean, for example, dryers for grain, seeds and green crops, flue plants and hot oil plants.«

(69) In the *explanatory comments* to Appendix I, 8.5.3.1(1), the following shall be inserted after the last sentence:

»See DS/EN 1443 Chimneys - general requirements and relevant product standards.«

(70) In the *explanatory comments* to Appendix I, 8.5.3.1(2), »or automatic bio-fuelled« shall be deleted.

(71) In *Appendix I, 8.6.4(4) and (5)*, the following shall be inserted after the table:

»If the manufacturer instead has documentation of the SCOP value, then $SCOP \times 0.85 =$ nominal power factor.«

(72) In *Appendix I, 8.6.4(6)*, the following shall be inserted as the new *second sentence*:

»If the manufacturer instead has documentation of the SCOP value, then $SCOP \times 0.90 =$ nominal power factor.«
The second sentence shall then become the third sentence.

(73) In *Appendix I, 8.6.4(6)*, the following shall be inserted as the *fourth sentence*:

»If the manufacturer instead has documentation of the SCOP value, then $SCOP \times 0.90 =$ nominal power factor.«

(74) *Appendix I, 8.6.4(7)*, shall have the following wording:

»8.6.4.4(7) The efficiency of air/air heat pumps must at least be equivalent to a SCOP value of 3.4 in heating mode, corresponding to the minimum EU requirement as from 1 January 2013.«

(75) In the *explanatory comments* to Appendix I, 8.6.4(4)-(6), the following shall be inserted as the *second sentence*:

»The SCOP value is a measure of the annual performance of heat pumps, calculated on the basis of tests in a number of operating modes as specified in DS/EN 14825 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Testing and rating under partial load conditions and based on the average temperature in the standard.«

(76) The *explanatory comments* to Appendix I, 8.6.4(7), shall have the following wording:

»(8.6.4(7)) The energy labelling scheme is set out in EU Commission Regulation No. 206/2012/EU on ecodesign requirements for air conditioners and comfort fans. The provisions will be tightened as from 1 January 2014.«

(77) In *Appendix I, 8.6.4*, the following shall be inserted as *8.6.4(9)* and *8.6.4(10)*:

»8.6.4(9) The power consumption of heat pumps and cooling systems with an annual power consumption exceeding 3,000 kWh must be measured. Electric cartridge heaters, if applicable, must be fitted with hours-run meters or electricity meters. The provision applies to new buildings and to new installations in existing buildings.

8.6.4(10) Electricity meters must comply with the Danish Safety Technology Authority's Executive Order on metering technology control of meters used for measuring electricity consumption with regard to conformity assessment or type approval marking and first-time verification.«

(78) The *explanatory comments* to Appendix I, 8.6.4(9), shall have the following wording:

»(8.6.4(9)) The provision does not apply if an existing system is extended to supply an extension or existing premises.«

(79) *Appendix I, 8.8*, shall be inserted as Appendix 1 to this Executive Order.

(80) The *explanatory comments* to Appendix I, 8.8, shall have the following wording:

»(8.8(1)-(7)) See the executive order on the use and installation of lifts etc. issued by the Danish Working Environment Authority. Attention is directed to 3.2.2(6) on accessibility.

The provisions apply to new buildings and to new installations in existing buildings.

Expectations are that all new lifts, from 2015, must meet the specific energy consumption requirements for energy class A in accordance with VDI 4707 Aufzüge Energieeffizienz, März 2009. When the European standard, EN ISO 25745 Energy efficiency of lifts and escalators, has been finalised, this standard is intended to serve as a basis for amending the provisions.

(8.8(2)) Mechanical ventilation can be extraction or balanced mechanical ventilation.

(8.8(3)) The power consumption of lifts does not include power consumption for heating and, if applicable, cooling lift shafts and power consumption for ventilation of shafts. Power consumption for these purposes is covered by the other provisions of Parts 7 and 8. Nor does power consumption include lighting in front of shaft doors on each storey.

(8.8(4)) In Denmark usage categories 4 and 5 will be rarely used. Table 5 of Appendix 6 provides examples of the classification of buildings into the 5 categories.

(8.8(5)) The provision means that the lift meets the specific energy consumption requirement for energy class B in accordance with VDI 4707 Aufzüge Energieeffizienz, März 2009.

The specific energy consumption can be determined on the basis of a measured reference trip as described in Appendix 6. The specific energy consumption is derived by dividing the measured consumption with the rated load and the trip distance.

(8.8(6)) The provision means that, for example, goods lifts and large bed passenger lifts are excluded from the provisions.

(8.8(7)) The specific energy consumption can be determined on the basis of an energy consumption measurement as specified in VDI 4707. The lift installer is responsible for ensuring and be able to document that the lift complies with the provision of 8.8.(5). Energy consumption may advantageously be measured in connection with an end inspection in compliance with the rules of the Danish Working Environment Authority.

Regardless of documentation, it must be possible to measure consumption as specified in VDI 4707.«

(81) The *explanatory comments* to Appendix I, B.1.1.2(1), second sentence, shall be repealed.

(82) In *Appendix 1, B.1.1.2*, the following shall be inserted after B.1.1.2(1) as a new clause:

»B.1.1.2(2) The area of roads and/or other land which cannot be built on because of the radius of corners or building line requirements which protect the road layout must be included in the plot area for calculation of the plot ratio.«

B.1.1.2(2) shall then become B.1.1.2(3).

(83) In *Appendix 1, B.1.1.4*, the following shall be inserted after B.1.1.4(1) as a new clause:

»B.1.1.4(2) Buildings on sloping ground may be erected without determining level planes if the height, measured vertically from the natural ground level, does not exceed the building height limits set out in 2.2.2(1) and 2.2.6(1) and the distance from boundaries set out in 2.2.3(1) paras 1 and 2.«

B.1.1.4(2) shall then become B.1.1.4(3).

(84) As *explanatory comments* to Appendix I, B.1.1.4(2), the following shall be inserted:

»(B.1.1.4(2)) The provision is designed to relieve municipal councils of their duty to determine the level planes of buildings on sloping ground, which unquestionably lie within the horizontal height-limiting plane in accordance with 2.2.2 and 2.2.6.«

(85) *Appendix 3, 3.2, second sentence* shall have the following wording:

»Members are appointed for terms of 4 years and are eligible for reappointment twice for a maximum term of office of 12 years in total.«

(86) In *Appendix 3, 5.1*, the following shall be inserted as the *second sentence*:

»A certified structural engineer from outside Denmark must work within the terms of reference for certified structural engineers in Denmark as specified by the recognising body.«

(87) *Appendix 3, 5.2-5.5* shall have the following wording:

»5.2 Temporary employment as or practice as a locum c.s.e. as certified structural engineer

Certified structural engineers from outside Denmark (see 1.2) are entitled to provide services on a temporary or occasional basis as certified structural engineers in Denmark subject to confirmation by the recognising body in accordance with Article 7(1), (2) and (4) of Directive 2005/36/EC of the European Parliament and of the European Council on the recognition of professional qualifications. The certified structural engineer must notify the certifying body of any temporary or occasional work undertaken. Before the certified structural engineer provides actual services for the first time in Denmark, the recognising body may check the professional qualifications of the certified structural engineer in accordance with Article 7(4) of the directive. The notification must be renewed once a year.

5.3 Permanent appointment as certified structural engineer

Certified structural engineers from outside Denmark (see 1.2) may be authorised to work on a permanent basis as a certified structural engineer in Denmark subject to the decision of the recognising body, see Title III, Chapter I, Articles 10-15 of Directive 2005/36/EC of the European Parliament and of the European Council on the recognition of professional qualifications. Applications for such authorisation must be sent to the certifying body. Within three months after the date on which the application with full and complete evidence of qualifications was submitted, the recognising committee must present the applicant with its duly substantiated decision. This deadline may in special cases be extended by one month.

5.4 Competences

Persons who fall within 5.2 and 5.3 and practise as certified structural engineers in Denmark must possess

–professional qualifications corresponding to the requirements in this Appendix and

–sufficient linguistic proficiency for proper practice as a certified structural engineer in Denmark in accordance with the Building Regulations.

The certifying body may verify qualifications and test knowledge.

5.5 Adaptation period or aptitude test

In accordance with Article 14(1) and (2) of Directive 2005/36/EC of the European Parliament and of the European Council on the recognition of professional qualifications, the recognising body must offer applicants who cannot provide evidence of the required professional qualifications the choice between an adaptation period and an aptitude test and, in that manner, prove that they possess the required professional qualifications. The duration and elements of the probationary period and the aptitude test are at the discretion of the certifying body.«

(88) In the *introduction* to Appendix 6, the following shall be inserted before the headline »Cost-effective energy savings« as *item 4*: »4. Lifts«

(89) In *Appendix 6*, the headline »Cost-effective energy savings« shall be amended to »1. Cost-effective energy savings«.

(90) In *Appendix 6* the following section shall be deleted: »Combined energy supplies« and replaced by:

»Individual RE units

RE units in or connected to the building are factored into the energy performance framework for the building concerned.

Electricity production from solar cells and wind power may, for example, be factored into the energy performance framework to the extent that electricity production meets the annual electricity demand for building operations that are included in the energy performance framework. Thus, negative annual electricity consumption for building operations cannot be used. On a monthly basis, electricity production can be factored in to the extent that it meets electricity consumption for building operations and other energy consumption in the building. This means that electricity consumption for building operations on a monthly basis may be negative to a limited extent.

The same applies to the factoring-in of solar heating, for example.

Combined types of energy

Most buildings are provided with at least two different types of energy supply. Different factors are used for combining these types of energy supply. A factor of 2.5 for electricity combined with heat is used for buildings erected in accordance with the minimum requirements of BR10.

An electricity factor of 2.5 and a district heating factor of 0.8 are used for buildings erected as low-energy buildings 2015. A factor of 1.0 and the relevant fuel use efficiency are used for other heating forms.

An electricity factor of 1.8 and a district heating factor of 0.6 are used for buildings erected according to Building Class 2020. A factor of 1.0 and the relevant fuel use efficiency are used for other heating forms.«

(91) In *Appendix 6*, in the section »Extensions«, »145 kWh/m²« shall be amended to: »135 kWh/m²«.

(92) In *Appendix 6*, after the section »Tall buildings«, the section »Basements« shall be inserted as Appendix 2 to this Executive Order.

(93) In *Appendix 6*, Appendix 3 to this Executive Order shall be inserted as *section 4*.

2.

(1) This Executive Order shall come into force on 1 January 2013.

(2) Section 1, paras 34-35, para 47, para 49, para 55, para 65 with regard to energy efficiency, and para 77 shall come into force on 1 July 2013.

(3) Section 1, paras 79-80 and para 93, shall come into force on 1 January 2014.

(4) Section 1, para 65 with regard to safety, shall come into force on 1 July 2014.

(5) The Executive Order shall apply to applications for building permits or notices submitted after the commencement of the provisions. If the building work does not require a permit or notice, the provisions are mandatory for all works that are commenced after the provisions have come into force.

Danish Energy Agency, 12 December 2012

Ib Larsen

/ Mette Odgaard Mylin

Appendix 1

»8.8. Lifts

8.8(1) Lifts must be appropriately installed in terms of safety.

8.8(2) Lift shafts must have natural or mechanical ventilation. Plant rooms must be ventilated.

8.8(3) The expected daily hours of use or the expected usage category must be stated by the building owner. The power consumption of lifts based on the expected daily hours of use must be stated. Standby consumption must also be stated. Consumption must be measured.

8.8(4) Lifts are divided into the following five usage categories based on daily hours of operation:

Category	1	2	3	4	5
Frequency	Low	Rare	Occasional	Frequent	Very f
Daily hours of use	0.2 0 < t < 0.3	0.5 0.3 < t < 1	1.5 1 < t < 2	3 2 < t < 4.5	6 4.5 < t

8.8(5) For lifts in new buildings and in connection with the installation of new lifts in existing buildings, the total specific energy consumption may not exceed Class B in Table 9 of Annex 6, regardless of usage category.

8.8(6) The provision of paragraph 5 does not apply to lifts where the car has a rated load of more than 1,600 kg.

8.8(7) Measurement of the total specific energy consumption must be performed as specified in VDI 4707 Aufzüge Energieeffizienz, März 2009.«

Appendix 2

»Basements

For heated or partially heated basements that are not included in the floor area, a percentage of the basement area is factored into the energy performance framework. The percentage depends on whether the basement is heated to between 5 °C and 15 °C or whether it is heated to at least 15 °C. The area allowance is unchanged, regardless of whether the building is erected in accordance with BR 10, as a low-energy building 2015, or as Building Class 2020. There is no area allowance for unheated basements and underground car parks.

Table 3. Area allowance as a percentage of basement area included in the energy performance framework:

Heating	None	5 < temp. < 15 °C	15 °C
Area allowance in %	0	35	50

The energy demand in the basement is calculated in the same way as in the building. However, heat loss from the basement is only taken into account at a basement room temperature of 15 °C if the basement has been heated to between 5 °C and 15 °C. For unheated basements, only heat loss from the basement is taken into account. The building elements in the basement must be insulated, corresponding to the chosen room temperature.

Presentation of input data and results

The design assumptions and input data used for calculating the energy performance framework must be clearly stated in the calculations.

Specification of input data

Calculated input data and relevant input data stated by manufacturers are listed here.

For a number of construction products, the information can be found alongside the CE marking of the construction product.

For windows, however, the issue is more complex. The information used in the calculations is the U value of the actual window. It is therefore not enough only to obtain information on a standard dimension window in accordance with the European standard for windows (the standard includes 1230 mm x 1480 mm windows). Information is also needed on the solar heat transmittance through the window and possibly the daylight transmittance.

For skylight domes, information on the correct U value may be based on calculations in accordance with DS 418.

Specification of results

In addition to the necessary energy supply to the building per m² heated floor area, the results of the calculation must include sufficient information in support of the result. In addition to the demand for supplied energy included in the energy performance framework, the results must show a specification of the calculated power consumption, heat usage and consumption of domestic hot water, including losses from the systems.

In addition, the assumed U-values and linear losses must be stated such that compliance with 7.6 of the Building Regulations can be demonstrated, and the calculated transmission loss through the building envelope, excluding doors and windows, must be stated in the results.

3. Temporary portable cabins

Temporary portable cabins are cabins erected in connection with, for example, renovation of a school or children's institution or to meet an acute demand for space. Temporary here means 0-3 years. Permanent cabins or cabins used for more than 0-3 years must comply with the current requirements for new buildings.

Temporary portable cabins must comply with the provisions of the Building Regulations. The provisions of Table 3 apply to insulation of the building envelope. In addition, temporary portable cabins may have electric heating up to 2015.

It is expected that the requirements for the building envelope of temporary portable cabins will remain unchanged after 2015. Thereafter, electric heating will have to be replaced by another heat supply, or the power consumption must be compensated for by provision of a corresponding sustainable energy source. An alternative heat supply could be, for example, heat pumps. The heat pumps must comply with the relevant requirements of the Building Regulations.

It is a precondition of the use of the U values and linear losses in Table 3 that the total area of windows and doors does not exceed 22% of the heated floor area.

U values and linear losses can be altered and window areas etc. increased, provided that heat loss from the portable building is not greater than if the requirements of Table 3 were satisfied.

Table 4. U values and linear losses for temporary portable cabins

Table of U values for cabins	W/m ² K
External walls	0.20
Partition walls adjoining rooms that are unheated or heated to a temperature which is more than 5 K below the temperature in the room concerned.	0.40
Ground slabs and suspended upper floors above open air or a ventilated crawl space.	0.12
Ceiling and roof structures, including jamb walls, flat roofs and sloping walls directly adjoining the roof.	0.15
Windows, including glass walls, external doors and hatches to the outside or to rooms/spaces that are unheated or heated to a temperature which is more than 5 K below the temperature in the room/space concerned (does not apply to ventilation openings below 500 cm ²).	1.50
Rooflights and skylight domes.	1.80
Linear loss	W/mK
Foundations.	0.20

«

Appendix 3

»4. Lifts

The provisions on lifts in 8.8 are based on the German standard, VDI 4707 Aufzüge Energieeffizienz, März 2009. It is not a condition that a manufacturer has the energy consumption of lifts certified by a third party, but if the manufacturer has had a lift certified and it complies with the provisions of 8.8(5), there will normally be no need for documentation of measured electricity consumption.

It appears from 8.8 of the Building Regulations that energy consumption during standby and operation must be measured in a way to ensure that the total specific electricity consumption can be calculated. Measurements will therefore be made for lifts that have no labelling or where consumption is higher than expected. The potential recovered energy must also be included in energy consumption measurements to ensure that the energy consumption is adjusted correspondingly.

ISO standards 25745-1 and 25745-2 Energy performance of lifts, escalators and moving walks are being prepared. In future, the energy provisions are expected to refer to these standards after they have been adopted.

Hours of use

The applied German standard divides lifts into five usage categories, based on daily hours of use.

Table 5. Usage categories by average daily hours of use, determined as average number of trips and average duration of a trip (Excerpt)

Category	1	2	3	4	5
Frequency	low	rare	occasional	frequent	very frequent
Hours of use	0.2	0.5	1.5	3	6
Area	0 < t < 0.3	0.3 < t < 1	1 < t < 2	2 < t < 4.5	4.5 < t
Standby time (hours)	23.8	23.5	22.5	21	18
Typical buildings	Up to 6 dwellings.	Up to 20 dwellings.	Up to 50 dwellings.	More than 50	Offices over 100 m tall.

	Small offices or administrative buildings with limited traffic	Small offices with 2 to 5 storeys. Small hotels. Goods lifts with limited traffic	Small offices with up to 10 storeys. Medium-sized hotels. Goods lifts with medium traffic	dwelling. Large offices, more than 10 storeys. Large hotels. Small and medium-sized hospitals. Goods lifts included in a production process with daytime production	Large hospitals. Goods lifts incl production proc 24/7 production
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As it appears from Table 5, usage categories 4 and 5 will be rarely used in Denmark.

Energy demand during operation

The standard is determined by a reference trip comprising the following complete cycle:

- 1) The door is open
- 2) The door closes
- 3) Going up (or down) at full lifting height
- 4) Opening and closing of lift door
- 5) Going down (or up) at full lifting height
- 6) Opening of door
- 7) End of trip

Table 6. Load range

Load as percentage of rated load	Travel factor in %
0	50
25	30
50	10
75	10
100	0

The reference trips can be made with empty lift cars for lifts with a counterweight equal to the weight of the lift car and an additional weight equal to 40-50% of its rated load and for lifts with a counterweight of less than 30%.

To adjust the values of the load range in Table 6 to measurements with empty lift cars, the values are multiplied by the following load factors:

0.7 for lifts with a counterweight (weight of the car and 40-50% of the rated load) and

1.2 for lifts without a counterweight or with a counterweight that is less than 30% of the weight of the car.

The corrective factors are not used when energy demand is determined by the reference load in Table 6.

The potential recovered energy must also be included in energy consumption measurements to ensure that the energy consumption is adjusted correspondingly. Energy demand is determined by the reference trip in Wh by adding together the individual energy consumptions. This is divided by the rated load and the length of the trip. To ensure representativeness, the reference trip is made several times.

Energy consumption can depend on temperature conditions. Testing should therefore be performed under average temperature conditions.

Measurement of energy consumption

Measurements are performed as specified in 4.3 and 4.4 of VDI 4707.

Energy demand in standby mode

Standby energy demand is calculated as $E_{\text{Standby}} = P_{\text{Standby}} \times t_{\text{Standby}}$

Table 7. Standby energy class is listed as power P

Power (W)	< 50	< 100	< 200	< 400	< 800	<1600	>1600
	A	B	C	D	E	F	G

E_{Standby} is energy demand during standby in Wh.

P_{Standby} is standby power demand in W.

T_{Standby} is standby duration in hours h.

Energy demand during operation:

Table 8. Specific energy consumption during operation, by energy class

Specific energy consumption mWh/(kg m)	<0.56	<0.84	<1.26	<1.89	<2.80	<4.20	>4.20
Class	A	B	C	D	E	F	G

Specific energy consumption during operation is expressed in mWh/(kg m).

Overall labelling

Total specific energy consumption of lifts in each usage category calculated as:

$$E_{\text{spec}} = E_{\text{spec, operation max}} + (P_{\text{Standby}} \times t_{\text{Standby}} \times 1000) / (Q \times v \times t_{\text{operation}})$$

Where:

E_{spec} is the specific energy consumption during operation in mWh/(kg m),

Q is the rated load in kg,

v is the nominal velocity in m/s and

t is the travel time.

Example of overall labelling.

For example, the limit for the entire energy class A in usage category 1:

$$E < 0,56 + (50 \times 23,8 \times 1000) / (Q \times v \times 0,2 \times 3600) = 0,56 + T1.$$

$$T1 = (50 \times 23,8 \times 1000) / (Q \times v \times 0,2 \times 3600).$$

$$T2 = (50 \times 23,5 \times 1000) / (Q \times v \times 0,5 \times 3600).$$

$$T3 = (50 \times 22,5 \times 1000) / (Q \times v \times 1,5 \times 3600).$$

$$T4 = (50 \times 21 \times 1000) / (Q \times v \times 3 \times 3600).$$

$$T5 = (50 \times 18 \times 1000) / (Q \times v \times 6 \times 3600).$$

The labelling is thus based on the overall labelling for standby mode and during operation by calculating the limits shown below:

Table 9. Overall energy labelling based on VDI 4707

Category	1	2	3	4	5
A	0.56+T1	0.56+T2	0.56+T3	0.56+T4	0.56+T5
B	0.84+2T1	0.84+2T2	0.84+2T3	0.84+2T4	0.84+2T5
C	1.26+4T1	1.26+4T2			
D	1.89+8T1		1.89+8T3		
E	2.80+16T1			2.80+16T4	
F	4.20+32T1				4.20+32T5
G	4.20+32T1				

Lifts that comply with class B may be installed up to 2015, regardless of usage category.

In connection with installation of lifts in existing buildings, new lifts must also comply with energy class B. The requirements for all usage categories of class A are expected to be tightened in 2015.”

Official notes

¹⁾ The Executive Order implements parts of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, Official Journal of the European Union 2012 no. L 315, p. 1, parts of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, Official Journal of the European Union 2010 no. L 153, p. 13, and parts of Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications, Official Journal of the European Union 2005, no. L 255, p. 22, as amended most recently by Commission Regulation (EU) no. 623/2012 of 11 July 2012, Official Journal of the European Union 2012 no. L 180, p. 9.