

# PHOTOVOLTAIC SYSTEMS IN HERITAGE PROTECTION

Methodological Guidelines for the assessment of photovoltaic and other solar installation projects (hereinafter as “PV Installations”) on cultural monuments, protected heritage sites and in conservation areas and their buffer zones

**National Heritage Institute – 2022**

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## Introduction

The professional organisation in the field of heritage protection is fully aware of the increasing burden posed by climate change and sees the transition to alternative sources of energy as an important and necessary global trend. For this reason, the National Heritage Institute is also aware of the fact that the erection of renewable energy installations meets the needs of today's society and therefore it provides these Methodological Guidelines on the assessment of the photovoltaic and other solar power installation projects (hereinafter referred to as "PV installations") on designated heritage properties, their buffer zones and in conservation areas.<sup>1</sup>

Historic buildings, architectural heritage and cultural landscape represent an integral part of the legacy of our past, they are an important component of the living ecosystem and as such must be adequately protected. Projects including the erection of photovoltaic and other solar installations in conservation areas and on historic buildings and heritage sites must therefore be based on long-term sustainability principles, in the spirit of the idea that addressing climate change must not lead to the degradation of cultural heritage. In the quest for a systematic, society-wide implementation of PV installations, we must not abandon the protection and preservation of architectural heritage and its cultural values.

Immovable cultural heritage (hereinafter referred to as "cultural heritage") and conservation areas account only for a small fraction of the total area of the Czech Republic<sup>2</sup>, however, they require special treatment due to their importance for society. Equally important is the **economic capital of the architectural heritage** because it has retained its historical character. The Methodological Guidelines formulate the key prerequisites and underline the necessary case-by-case approach to cultural monuments and conservation areas. However, it is essential that similar projects across the Czech Republic are assessed in a consistent manner.

**The aim of these Methodological Guidelines is to contribute to objective assessment of possible PV installations from the aspect of cultural heritage and conservation areas and to harmonise the practice of assessment in the Czech Republic and to set the rules for the assessment of spatial planning tools.**

## I. Legal Premises

**The State shall protect cultural monuments as an inseparable part of the cultural heritage of the people, evidence of their history, a significant factor in the environment and an irreplaceable treasure of the State. (Section 1 of Act no. 20/1987 Coll.).**

The obligation to discuss the possibility of installing PV systems stems directly from Act no. 20/87 Coll. on State Monument Care (National Heritage Protection Act), Section 14, (1), (2), (4) and (5)<sup>3</sup>. The National Heritage Act distinguishes between the protection of buildings (listed buildings and monuments) and the protection of heritage sites (Conservation Areas - /památková rezervace/ PR, Conservation Zones /památková zóna – PZ/). The cultural and historical values which constitute the reason for the protection of monuments and heritage sites (legal protection) are not always the same. The cultural and historical values of an area

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<sup>1</sup> To date the document cannot cover all types of PVE installations and their development including the development in this area after the document publication. For this reason, the document must be considered a living document actively reflecting the present situation in general and the current knowledge in the area of PVE installations.

While drafting this document the National Heritage Institute not only drew from its own expertise in the field of heritage protection, but it also used the opinions of foreign and Czech specialists in other areas of expertise.

<sup>2</sup> According to the latest data the conservation areas in total account for 2.5% of the total area of the Czech Republic.

<sup>3</sup> Section 14 (1) stipulates the following: "If the owner of a cultural monument intends to perform maintenance, repair, reconstruction, restoration or any other modification of the cultural monument or its environment (hereinafter "renewal"), he shall be obliged to first request a binding opinion from the municipal authority of the municipality with extended competence and, for a national cultural monument, the binding opinion of the regional authority."

are jointly formed by the designated heritage assets (e.g. listed buildings) and other assets with no protective designations, but situated on the same site. The fact that the law includes the area-wide protection implies that not just the values of the designated heritage assets are protected but the area's overall values are also protected. By the same token, most properties in the conservation area contribute to its values. In the case of the assessment of projects in conservation areas, it is necessary to base the primary consideration on the cultural and historical values of the entire conservation area. It is not enough to assess the property concerned in isolation.

Buffer zones are established to protect monuments and heritage sites and their surroundings. They guarantee, among other things, the protection of vistas of the protected property as well as views from it to its surroundings. Therefore, such vistas may be compromised by the installation of solar systems.

The methodologies covering heritage protection are not legally binding. Therefore, the rejection of a proposed PV installation cannot be justified solely by stating that it does not comply with the Methodological Guidelines. The justifiable reason for a rejection lies in the protected cultural and historical values that would be adversely affected by the implementation of a proposed PV installation. In the case of conservation areas and buffer zones, the justification should reflect the wording of the legal acts by which they were designated. If these designations do not contain conditions that can be applied to the PV installations, it is necessary to resort to the general provision of Article 14(3) of Act No. 20/1987 Coll., on National Heritage Protection, specifically to its provision that the conditions shall reflect the present state of knowledge of cultural and historical values. The law states that the proof of the present state of knowledge of cultural and historical values is provided in the form of a written statement of a professional organisation engaged in heritage protection. Evidence of the present state of knowledge is also provided by international charters, namely the Washington Charter (Charter for the Conservation of Historic Towns and Urban Areas, ICOMOS, WASHINGTON 1987), the methodologies of the National Heritage Institute dealing with historic settlements and their environment, and other documents and facts on the site's cultural and historical values and their knowledge.

For the World Heritage Sites, the obligation of the Czech Republic resulting from its accession to the Convention concerning the Protection of the World Cultural and Natural Heritage must be taken into consideration, namely the obligation contained in Article 4 of the Convention: *"Each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage referred to in Articles 1 and 2 and situated on its territory"*.

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Section 14 (2) stipulates that *"The owner (administrator, user) of a real estate that is not a cultural monument, but is located in a monument reservation, in a monument zone or in the protective zone shall be obliged..... prior to the intended placement or removal of equipment to request the binding opinion of the municipal authority of the municipality with extended competence, unless this obligation is excluded under this Act or on the basis of this Act (Section 17 (6a))."*

Under Section 14 (4) *"In the land-use proceedings on installation or removal of a structure in connection with changes in the area in which the national heritage protection asserts its interest or in connection with restoration of an immovable cultural heritage or with installation or removal of a structure on a property under Section (2 ) above, the building authority shall make its decision in line with the binding position of the municipality with extended power and, for an immovable national cultural heritage, with the binding position of the regional authority"*

An argument can be the reference to the Convention for the Protection of the Architectural Heritage of Europe, particularly the provision of Article 4 of this Convention under which each Party undertakes *1. to implement appropriate supervision and authorisation procedures as required by the legal protection of the properties in question, 2. to prevent the disfigurement, dilapidation, or demolition of protected properties.* Then Article 11 of this Convention stipulates the following: *Due regard being had to the architectural and historical character of the heritage; each Party undertakes to foster the use of protected properties in the light of the needs of contemporary life and the adaptation when appropriate of old buildings for new uses.*"

The arguments can also be supported by the reference to the **Architecture and Building Culture Policy of the Czech Republic, adopted by the Resolution No. 22 of the Government of the Czech Republic on 14 January 2015** as far as the landscape is concerned in the context of the Czech Republic's commitment resulting from its accession to the **European Landscape Convention 13/2005 Coll. m. s.** In this respect we can refer to the methodology developed by the Ministry of Regional development in the form of self-explanatory tables and addressing siting, licencing and commissioning of solar panels in compliance with the applicable Building Code.<sup>4</sup> Then we also refer to the position of the Ombudsman (Public Defender of Rights) published in the Records of Ombudsman's Positions (Evidence stanovisek ombudsmana) who provided his position on PV installations on residential buildings, in which, among other things, he stated that such PV installation can have significant legal, fire safety and other impacts on the building on which it is installed.<sup>5</sup>

## II. Methodological Premises

PV installations represent a new historical layer which will become a visible and at the first sight identifiable part (of a property). The key prerequisite is a comprehensive assessment of the matter in question to ensure that the PV installation will not compromise the relevant values of the protected properties and sites. The assessment must also consider the reversibility of the planned intervention.

PV installations to be located on buildings or sites enjoying a protective designation of any form must be primarily assessed considering the following aspects:

1. Protected cultural and historical values.
2. Type of protective designation (cultural monument/listed building/heritage site, conservation area/zone).
3. Structural changes of the property under consideration.
4. Visual changes of the building or area.
5. To what extent the area of a settlement and landscape under consideration will be impacted.
6. Additional parameters.

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<sup>4</sup> <https://mmr.cz/cs/ministerstvo/stavebni-pravo/stanoviska-a-metodiky/uzemni-rozhodovani-a-stavebni-rad/umistenipovoleni-kolaudace-fve>

<sup>5</sup> <https://eso.ochrance.cz/>

## 1. Protected Cultural and Historical Values

**Cultural and historical values<sup>6</sup> are the reason for safeguarding historical monuments and heritage sites.** This also applies when assessing PV installation projects. An adverse impact on cultural and historical values is a reason for rejecting a proposed PV installation. If the installation does not pose any risk in this respect, then it can be accepted. As the identification of the specific cultural and historical values is the key when assessing the envisaged PV installation, adequate attention must be paid to it.

**It is necessary to focus on the following:**

- **Value of architectural heritage** which, among other things, stems from the fact that the architectural heritage is different from contemporary building production; it differs in its materials, designs, and forms of expression. Safeguarding these values safeguards production of traditional materials, workmanship, and techniques. The existence of historic environments creates freedom of choice - if they exist then there is a possibility of choice.

If we abandon preserving this distinctiveness and treat the architectural heritage in the same way as we treat contemporary production, it will soon disappear.

- **Vistas, views from top, views of landmarks and long-distance vistas** (squares, street views) are usually a part of established and recognised values of historical settlements.<sup>7</sup> These vistas and views have their own hierarchy - the more significant the view, the more important its preservation without any compromise becomes. But equally important as the significant views is the **environment of historic settlements**, including rural ones. Again, the more valuable the monument or settlement, the greater the value of its surrounding.
- **Historical roofscape** is a part of architectural heritage and co-creates the identity of historical settlements and regions; the environment of historical settlements, including their roofscape, is a part of the social ecosystem and contributes to its diversity; any roof represents an important component in the architectural design of the façade and the roofscape forms an integral part of settlements' vistas and views in general, particularly of those from top down.
- **Historical façades** are the visible face of architecture as many people look at them and they shape public spaces; a great deal of attention has always been paid to their appearance; the same applies to their values as in the case of roofscape.
- **Public spaces (town and village squares, streets, public green spaces, etc.)** form the urban fabric of a settlement and in some rare cases even of rural landscape and their role is to serve the public. They co-create the identity and environment of historical settlements, the more valuable the settlement is, the more valuable is its environment and all public spaces.

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<sup>6</sup> Architectural Policy: "Quality of building culture is directly proportional to our commitment to preserve certain values, such as cultural heritage sites and monuments, urbanistically valuable areas and architecturally valuable buildings and sites, public spaces or undeveloped land - open countryside.

<sup>7</sup> For example these can be views from Charles Bridge to the Lesser Town (Malá Strana), Hradčany and Prague Castle, view from Petřín down to the Lesser Town and vistas of the chateau at Český Krumlov from the town and vice versa, from the chateau to the town, views from Svatý kopeček towards Mikulov, street views in the Jewish Quarter at Třebíč, views of the town from the Monastery Gardens at Litomyšl or the view of the panorama of Telč over the Ulický Lake.

## 2. Types of Protective Designation

### a) Cultural Monuments (kulturní památky - KP)

**In general, PV system installations on cultural monuments are not desirable.**

Any PV installation project on a cultural monument will always be considered case-by-case and viewed as an exception.

Such an installation will only be allowed in rather specific circumstances – typically on modern/contemporary parts of historical buildings and heritage sites for purely utilitarian reasons or on newly built facilities on such sites. The key condition to be satisfied by the installation is its “invisibility” both in short-distance and long-distance vistas.

Special cases for consideration may be the unusual application of PV systems as part of modern building restoration projects (e.g. buildings with lightweight external walls) and industrial building conversions. In this case, the prerequisite is a high quality of the design when the installation is naturally integrated into the building and the area in which it is located.

### Protected Areas (chráněná území - CHRÚ)

**The starting point for assessing PV and other solar installations in protected areas is the scope of protection and type of the protected area.**

Protected areas do not represent a uniform set, but they differ in their cultural and historical values depending on the character, type and structure of settlements, their age, degree of preservation, homogeneity, terrain configuration, visual exposure in vistas and views from top, existence and significance of landmarks, prevailing type of roofs and roof coverings used, type and composition of landscape segments and many other characteristics. The approach to individual protected areas or their parts must therefore take their specific features into account.

**The assessment criteria for PV installations in protected areas are the following:**

- ***Impact on cultural and historical values of the entire set of protected historical settlements*** and the protection of their environment and its components.  
Consider whether it is a homogeneous area, which requires to be approached as a whole, or a heterogeneous area, where each part can be approached differently.  
Consider the possibility of allowing exceptions, which may apply both to uniform subsets of the area and to certain types of buildings.
- ***Impact on cultural and historical values of protected cultural landscape*** (landscape features according to the type of landscape – landscape scenery, visual exposure of a specific feature in a panorama or its exposure as a landmark, context, links in the landscape, land plots arrangement pattern or size of functional land plots).
- ***Visual exposure within the area*** applies both to a settlement and cultural landscape including spatial and communication links. It includes for example visual exposure of a dominant feature of a landscape, important vistas, panoramas and skylines of a settlement, character of the landscape scenery and spatial features of a landscape scenery.
- ***Spatial links between components:***
  - Intangible links (vistas, important views, interlinked vistas etc.)
  - Tangible links (buildings, vegetation components such as lines of trees, solitary trees, tree alleys, sunken lanes, *traces of old ploughed fields, traces of historical mining activities etc.*);
- ***Cultural and historical value*** of certain buildings.

### *Urban Conservation Areas – Historic Town Centre (Památkové rezervace - PR)*

The main role of Urban Conservation Areas (PR) is to protect the most important historic city and town centres which have a high share of cultural monuments and a high degree of integrity and authenticity. First, this applies to the sites inscribed on the World Heritage List.

**PV installations are not generally desirable in Urban Conservation Areas and on World Heritage Sites.** Exceptions, if any, may apply to rare and specific cases of a new built or unconventional restoration projects of modern era architecture. All such installation projects will be assessed and discussed case-by-case and each PV installation design considered from the aspect of its integration into the building and the area. In these cases, a PV installation will only be allowed if there is no justifiable reason for its rejection as the cultural and historical values will not be compromised by such installation. In those areas which are listed World Heritage Sites, or they are a part of a World Heritage Site this approach is not generally desirable.

### *Conservation Zone (Památková zóna - PZ)*

**In case of a Conservation Zone a higher level of tolerance is acceptable if a PV installation does not compromise cultural and historical values for which a particular area is protected including important vistas and panoramas.** In justifiable cases PV installations are generally acceptable in conservation zones if they do not compromise their cultural and historical values. Nevertheless, the character of the area plays the key role– whether it is heterogenous or homogenous. Potentially, PV installations are acceptable on sites or parts of conservation areas that do not exhibit all characteristics of a full-fledged conservation area and where such installations are not in conflict with the criteria set out in this document (e.g. buildings with flat roofs). Examples include new buildings, precast concrete buildings, high-rise buildings, industrial sites (including brownfields), large-scale agricultural and warehouse sites, single-storey garages in courtyards and other generally intrusive buildings. Consideration may also be given to away-facing slopes of pitched roofs, which are not dominant and visually not exposed.

### *Landscape Conservation Area (Krajinná památková zóna - KPZ)*

**In this context, Landscape Conservation Areas enjoy a high level of protection depending on their type and features.** In justifiable cases, PV installations are acceptable, and only in such places where they will not compromise the cultural and historical values for which the landscape is protected, including significant vistas and overall views. Each PV installation will always be considered case-by-case and will be only allowed in exceptional cases. Areas and structures that are not visually exposed may be considered for such installations.

In case of the areas which are listed World Heritage Sites, or they are a part of a World Heritage Site this approach is on principle not desirable

### *Buffer Zone (Ochranné pásmo - OP)*

**In buffer zones PV installations may be considered acceptable except for those cases in which the visual integrity of a conservation area or protected property is affected.**



Some buffer zones can be vast areas as they help, for example, to regulate the height of buildings. In such cases PV installations may be acceptable, however only if they do not interfere with the visual qualities and appearance of the protected property (e.g. they do not interfere with the close distance vistas, main composition axes etc.).

In those instances when physical check of cultural and historical values of the protected property is not feasible due to the distance, terrain configuration, nature of the property protected and its environment or for any other reason, PV installation may be accepted on the condition that its position has been adequately verified.

### 3. Structural and Other Modifications of Buildings Assessed

When assessing structural and other modifications to the property not only the photovoltaic source of power shall be assessed (photovoltaic panels, photovoltaic roof tiles etc.) but also all other accessories which form the PV installation and may interfere with the building structure and its overall design.

**When assessing the structural and other modifications** which may be induced by the PV installation the heritage protection body will assess the following:

- extent and degree of the structural modification, interference with the mass substance
- Possibility of reverting to original appearance (reversibility)
- Extent of the visual change associated with the installation

**To determine the extent of the interference between a PV installation and the building or area structure as well as the extent of modifications and changes associated with PV installations, the heritage protection body divides the installations into the following groups:**

#### - *Lean-to Systems*

These are systems which do not form an integral part of a building, but they are close to it (pergolas, stand-alone PV panels etc.)

The advantage is a simple design, structurally non-invasive and they do not change the mass substance of buildings.

Their disadvantage is that they change the visual perception of a building as well as area (for this reason, the level of invasiveness should be adequately verified and assessed).

#### - *Partially Embedded Systems* (*Building Applied Photovoltaics, Building Attached Photovoltaics - BAPV, CSN EN 50583 Photovoltaics in Buildings, CENELEX 2016*)

These are systems installed on the building external walls replacing original building materials.

Their installation shall be assessed on case-by-case basis and the spacing shall respect the area on which the generating units are installed (the lines of PV elements should respect the architectural lines of the building; PV installation sloping should copy the sloping of pitched roofs (with a possible exception of flat roofs with a parapet) and the façade plane; PV installations should not exceed the height of the building; the overall design of a PV installation including its colour should be as little in contrast to the roofscape colour as possible.

The advantage is minimal (but not zero) intrusion into the mass substance of the building and the degree of reversibility.

The disadvantage is the change in the building's volume, its silhouette, and the need to develop the visual impact study.

- **Embedded Systems** (*Building Integrated Photovoltaics - BIPV, CSN EN 50583 Photovoltaics in Buildings, CENELEX 2016*)

These are systems when the original materials of a building are replaced with new PV elements and such PV element replace (fully or partly) the building mass. These can be PV power generation systems in various forms of roof coverings, such as roof tiles or their imitations, thin-film installations etc. Their positioning shall be assessed case by case and should respect the area on which these generating devices are located; they should not be installed in irregular, hotchpotch patterns; the boundaries of areas with these PV devices shall follow the architectural lines of the building; the colour of the PV installation should be in the least possible contrast to the colour of the roofscape.

The embedded systems can be divided into three groups:

- o **Systems replacing the entire structural element** of a building (e.g. roof)  
The advantage is that these systems follow the building existing mass, and both the volume and silhouette of the building are preserved.  
The disadvantage is that the project cannot be duly assessed without an adequate visual impact assessment and the intervention is most likely to be irreversible.
- o **Systems replacing a part of a building**  
The advantage is that they follow the existing mass, and the building volume is preserved.  
The disadvantage is that without an adequate visual impact assessment the project cannot be duly assessed and the intervention at the part of the building affected is most likely irreversible

#### **Semi-transparent Systems**

These are systems which are part of glazed openings of different purpose and size. The advantage is that the building volume is preserved, and the intervention is reversible.

The disadvantage is that it changes the original transparency of glass and without an adequate visual impact assessment such project cannot be duly assessed.

## 4. Visual Changes

When assessing visual changes, it is necessary to assess not only the photovoltaic power generation components (photovoltaic panels, photovoltaic roof tiles, etc.), but also other accessories, including all parts that form the entire system and affect the overall appearance of the property when installed.

**When assessing visual changes**, induced by PV installations, the heritage protection body considers the following:

- Total area and size of PV elements (modules installed and the total area affected)
- Colour on the surface of a PV installation (how close it is to the colour of the original surface or whether it deviates from it)
- Visibility of PV components installed (their location vis-à-vis the building, its environment and the adjacent area and its preserved values; panels sloping against the building's external walls, sloping of panels vis-à-vis the area in question).

## 5. Impact Assessment in the Context of Settlements and Landscapes Affected

The spatial planning documents are the key when deciding on the possible location of a PV installation. Therefore, when setting conditions for PV installations in spatial planning documents consideration must be given to the value and visual integrity of development sites and established developed areas including impacted buildings, purposely designed landscapes, areas of similar type<sup>8</sup>, World Heritage Sites and their buffer zones.

With respect to urban areas, settlements and historic landscapes, the conditions for possible installation of solar parks (either connected to the grid or island systems) and community energy systems must also be considered and set. When assessing projects (both the location of PV installations on buildings and on the ground), it is necessary to consider the visual criterion and the criterion of categories according to the types and features of protected landscapes, which take into account landscape structures, composition of designed landscapes and their identity.

When assessing interventions in landscape conservation areas the “*Methodology of Impact Assessment on Landscape Conservation Areas (Metodika hodnocení vlivů na krajinné památkové zóny)*”<sup>9</sup> can be used as it provides guidance for impact assessment of interventions, including location of PV installations, on the specific features of landscape conservation areas.

## 6. Additional Parameters

In all cases where PV systems are to be installed on historic buildings, it is essential to point out the associated risks which may arise from the following (including cost/benefit analysis):

- Physical interference with the roof structure and other parts of the buildings caused by the PV installation,
- The structural analysis report,
- Fire protection specific requirements and fire brigade intervention schemes<sup>10</sup>,
- Increased maintenance requirements for historic structures due to possible moisture build-up in the building structure caused by the reduced breathability of surfaces,
- Cost/benefit analysis results to assess the benefits of an envisaged PV installation,
- The issue of warming up and formation of heat islands and the future disposal of PV installations in an environment-friendly way
- The impact of PV reflective surfaces and the related issue of visual pollution

## III. Conclusions

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<sup>8</sup> “In the context of heritage protection any installation of photovoltaic and solar panels as a standard feature of expression on cultural monuments or in conservation areas and conservation zones is unacceptable. On the other hand, with respect to the Constitutional Court judgment ref. no. III. ÚS 709/19 of 12 May 2020, the use of the statement that photovoltaic panels are never and nowhere allowed must be avoided. In this judgment the Constitutional Court stated that the blanket ban on the installation of solar panels on the roofs of buildings with the aim to protect the conservation area cannot, in the opinion of the Constitutional Court, be justified even by a simple reference to the precautionary principle, which is known from environmental law. Restricting the possibility of installing photovoltaic and solar panels on cultural monuments and in conservation areas and zones is necessary to fulfil the purpose of the Act on State Monument Care (Heritage Protection Act) and to meet the Czech Republic's obligation arising from its accession to the Convention on the Protection of the Architectural Heritage of Europe and the preservation of the cultural values of architectural heritage. However, we must be able to argue by referring to specific circumstances and situations to avoid the above criticism.” (Analysis made by the Heritage Protection Inspectorate of the Plzeň Regional Office meeting held on 29 June)

<sup>9</sup> *Metodika hodnocení vlivů na krajinné památkové zóny*, ISBN: 978-80-7509-360-8, Mendel University in Brno 2015, Ing. Jozef Sedláček, doc. Dr. Ing. Alena Salašová and Ing. Lenka Trpáková. The Methodology is certified by the Czech Ministry of Culture (Certificate no. 138 came into effect on 21 April 2016) and it is the outcome of a research project under the NAKI Programme (National and Cultural Identity Programme).

<sup>10</sup> The principles of fire protection can be found in the publication “*Fire Protection Principles for PV Installations on Roofs and Fire Prevention Measures*” (Zásady protipožárního zabezpečení střešních instalací FVE a opatření požární prevence) published by the Fire Rescue Service of the Czech Republic and available at the following link: <https://www.hzscr.cz/soubor/firefve-brozura-a5-final-web-pdf.aspx>

The Methodological Guidelines build on the ideas presented in the “Position on the Issue of Supporting Measures Towards Energy Conservation in Historic Buildings” jointly adopted by the Czech Chamber of Architects, the National Heritage Institute and the State Environmental Fund published on 18 May 2009.<sup>11</sup> With respect to the currently available technology the Methodological Guidelines focus mainly on PV installations on roofs, facades, and protected areas.

The methodology provides general guidance and cannot cover all possible situations. What matters is the idea driving the methodology which is the protection of cultural and historical values of protected properties. In less common situations the only way to proceed is the analysis of the specific protected/conservation area and the project and allow exceptions. The requirement of case-by-case assessment, justification and adequacy applies to both parties. When defining the approach to projects containing PV installations coordinated effort within the National Heritage Institute is necessary as its written positions shall document the current degree of knowledge as stipulated by law.

How individual conservation zones are to be treated is formulated by the relevant Regional Offices of the National Heritage Institute (NPÚ). In the case of more complex or questionable situations this is then done jointly with the NPÚ Directorate General. The NPÚ Directorate General coordinates the NPÚ Regional Offices’ efforts with the aim of harmonising the approach nationwide across the Czech Republic.

If other types of PV or solar installations are to be assessed this can be done on a case-by-case basis. However, if similar projects and similar situations are assessed it must be done in a consistent and comparable way across the country. Therefore, the coordination within the National Heritage Institute is a must when reviewing and formulating the approach to every single protected area. The PV or other solar installations should not be rejected without providing the relevant rationale.

At the same time, it is evident that not only the technology itself will develop, bringing new types and forms of PV and solar installations, but also the heritage protection professionals will become more experienced and will formulate more targeted rules. Therefore, these Methodological Guidelines have a limited shelf-life, and we are aware that it will be necessary to act upon the changing circumstances and experience acquired.

As for PV installations in the context of architectural heritage, the National Heritage Institute is aware of the importance of raising public awareness and communicating this issue with the public both at the central level and regional level represented by the NPÚ Regional Offices which oversee the relevant sites.

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<sup>11</sup>*Historical buildings are part of the established image of our towns and villages, our cultural landscape. They are built of different materials from contemporary buildings. They have different forms. That is what is valuable about them. Their cultural value lies not only in the richness of their preserved forms, but also in what we can learn about the past from them. The Czech Republic has recognised all these values by acceding to the Convention for the Protection of the Architectural Heritage of Europe and has thereby undertaken to protect monuments, architectural ensembles, and sites on its territory.*

*If we resign ourselves to protecting the specific form of cultural heritage and buildings in conservation areas and zones, we risk destroying the very quality that is important to society.*

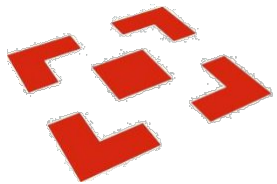
*The architectural heritage is endangered by dilapidation and insensitive modifications. But it is also endangered by applying, without any further consideration, the requirement to adapt historic architecture to the technical standards of contemporary building production. Society's interest in energy conservation is undeniable. Measures leading to energy conservation are needed.*

*We agree that reducing the energy consumption of buildings and the interest in protecting architectural heritage can be reconciled, at least in some cases. However, this requires tailor-made requirements for a specific area of architectural heritage. Modifications that are inherently conflicting should not be encouraged and, instead, those measures that can achieve energy savings without compromising cultural values should be supported.*

<https://www.archiweb.cz/n/domaci/prohlaseni-k-problematice-podpory-opatreni-smerujicich-k-energetickym-usporam-historickych-staveb>

It is in the public interest to provide everyone, the general as well as informed public, with expert support and regular information on conservation approaches in relation to PV installations. In this respect the National Heritage Institute has its own website, where the most up-to-date information is available.

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## **Schematics of Visually Acceptable and Unacceptable Location when under the Methodological Guidelines a PV Installation might be considered<sup>1</sup>**

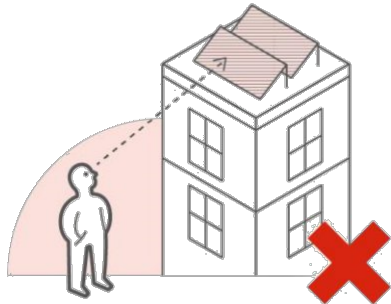
The heritage protection authority looks at several criteria when assessing the acceptability of every single PV installation. The most important are the cultural and historical values of the monument or conservation area concerned, the form of their legal protective designation, the cultural and historical values of the building concerned, the visual exposure of the envisaged installation and the impact of the installation on the building overall mass. The outcome of each assessment cannot be prejudged. However, in the light of the above criteria the Methodological Guidelines set out adequate general principles for addressing similar situations. If according to the Methodological Guidelines a PV installation is acceptable for consideration, then both the acceptability of its design and its respect to the surrounding environment will be important factors for the acceptability of such installation.

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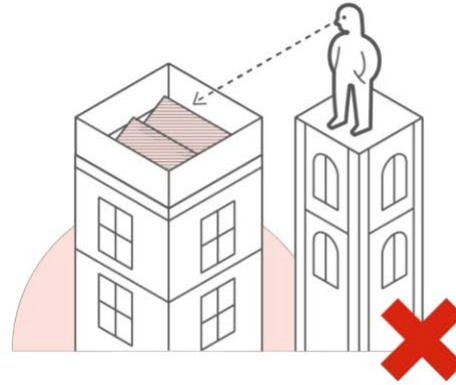
1 Graphic examples of panel locations provide a simplified assessment principle. The idea is to show visually acceptable and unacceptable designs and, in this way, help the owners to come up with suitable designs in particular situations when PV installation is not in conflict. The annex neither substitutes the text part of these Methodological Guidelines nor the written position to the land-use planning documents and on individual projects.

2 The expert opinion of heritage professionals on PV installation will evolve further depending on the development of this source of power and its technical parameters as well as on the experience acquired in practice.

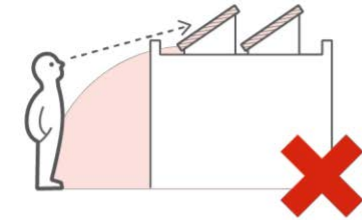
# 1. Partially Embedded PV Installations on Flat Roofs



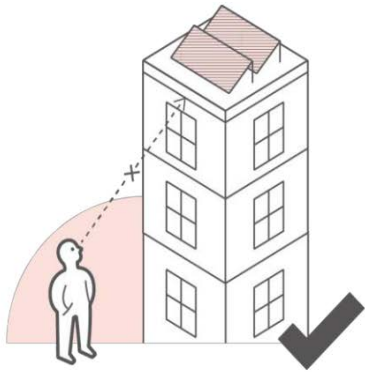
The flat roof of a buildings is visually exposed from higher situated grounds and public spaces (e.g. elevated ground next to the building or the building is in a valley etc.).



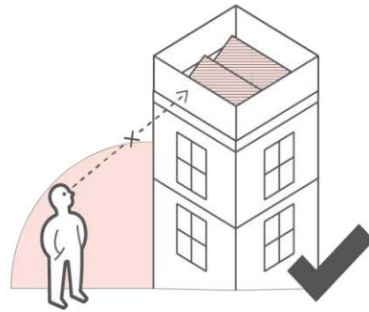
The flat roof is visually exposed in views from higher situated grounds, buildings open to the public, church spires and towers, terraces, viewing towers etc.



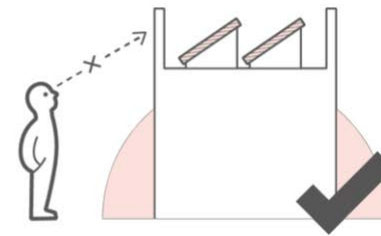
A flat roof has no parapet, or the parapet is not high enough.



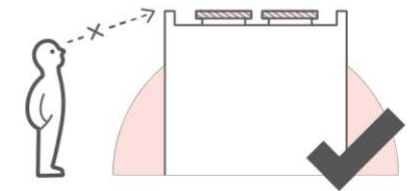
The flat roof of a building is visually exposed neither from the ground level nor higher situated grounds (e.g. because of the height of the building, terrain profile with no elevated places or buildings are close to each other and none of such landmarks is open to the public).



The flat roof of a building is visually exposed neither from ground level nor higher situated grounds (e.g. because of the parapet).

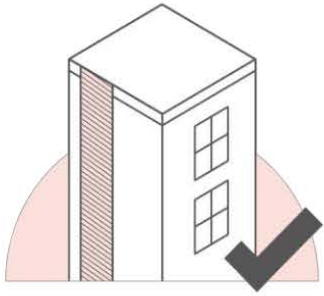


A flat roof with the existing, sufficiently high parapet hiding a sloping PV installation where its plane is in an angle with the roof planes.

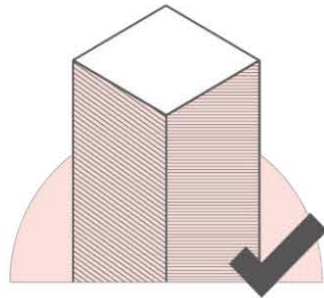


A flat roof with the existing, sufficiently high parapet hiding a PV installation the plane of which is parallel with the roof plane.

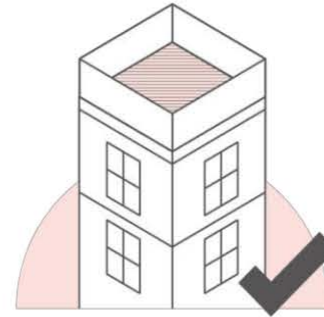
## 2. Embedded PV Installations on Flat Roofs and Façades



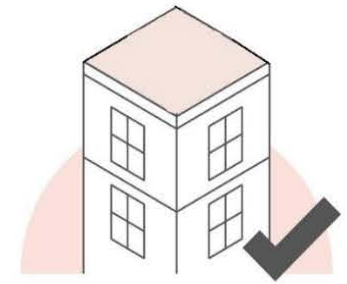
Flat roof on a contemporary building.



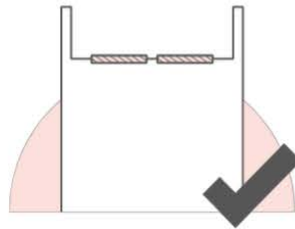
Semi-transparent façade system on a contemporary building with an embedded façade system.



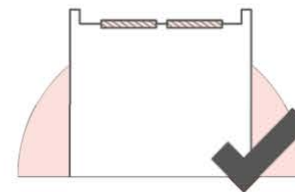
Flat roof on a contemporary building with an existing parapet.



Flat roof with no parapet on a contemporary building.



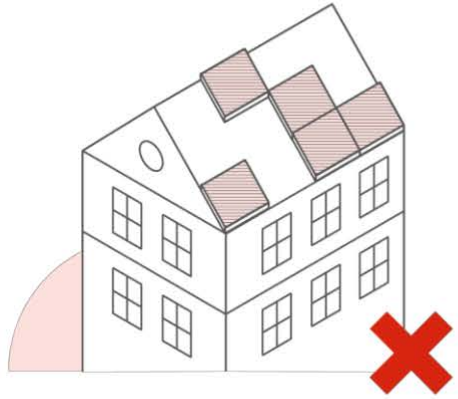
Flat roof with an existing parapet.



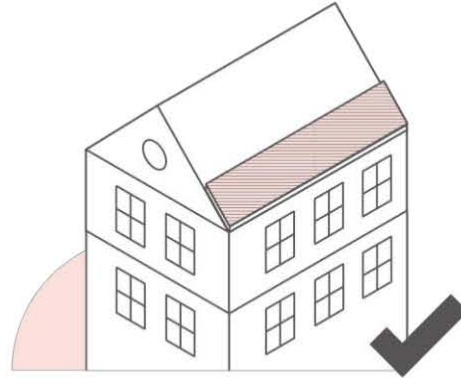
Flat roof with no parapet.



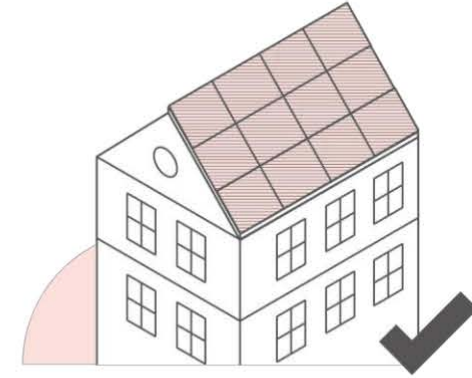
### 3. Partially Embedded PV Installations on Pitched Roofs



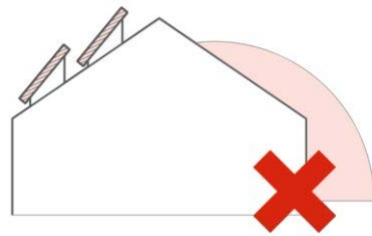
Pitched roof with panels of various sizes and types installed in a hotchpotch way.



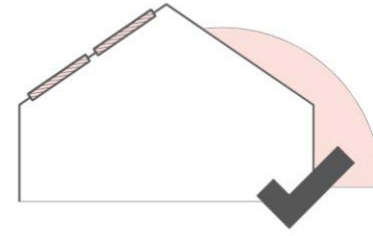
Pitched roof covered with panels installed on the existing roof covering, unconventional arrangement and colour, not visually exposed from the public and semi-public spaces, and public lookouts situated higher.



Pitched roof covered with panels installed on the existing roof covering, unconventional arrangement and colour, not visually exposed from the public and semi-public spaces and from public spaces situated above, and higher public lookouts.

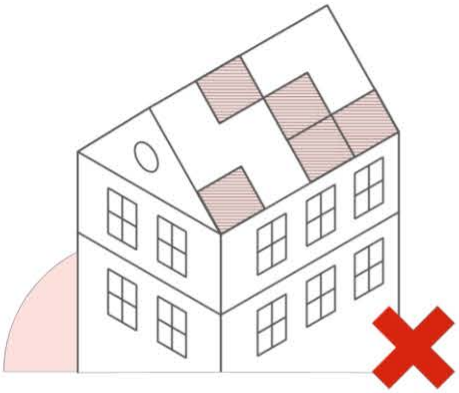


Pitched roof with panels installed in a different angle than the existing roof plane angle.

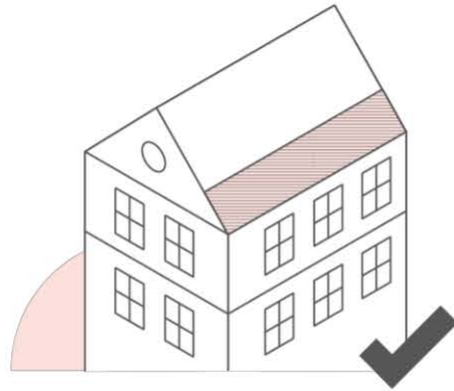


Pitched roof with panels installed in the same angle with the roof plane.

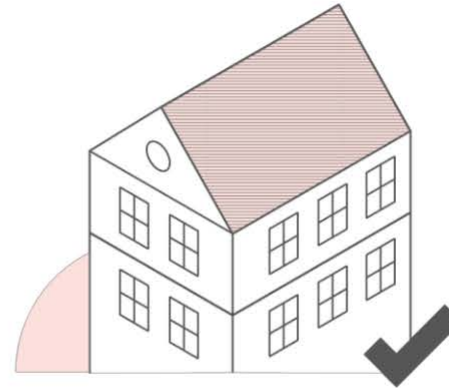
## 4. Embedded PV Installations on Pitched Roofs



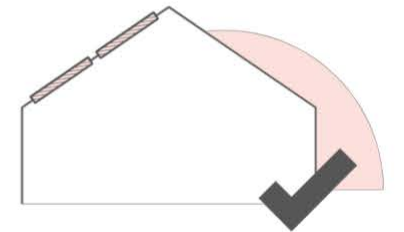
Pitched roof with embedded PV panels of various sizes and types installed in a hotchpotch way.



Pitched roof with a later addition of an embedded PV installation (e.g. solar roof tiles) neatly arranged, in colour and size not contrasting with the traditional roof covering in the area and not visually exposed from a public and semi-public spaces.



Pitched roof whose entire area is made of PV installation in a built-up area where the existing roof coverings are of non-traditional style and colours with no visual exposure from public and semi-public spaces.



Pitched roof with PV panels embedded in the existing roof plane; the installation is reversible, and the former type of roof cover can be used.