

**PA SHPO**  
**Guidelines for Projects with Potential Visual Effects in Pennsylvania**

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**These guidelines are for projects with potential visual effects in the Commonwealth of Pennsylvania.**

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## Introduction

The Pennsylvania State Historic Preservation Office (PA SHPO) has developed guidance for the identification and assessment of effects of proposed transmission towers, cell towers, wind turbines, highways, solar farms, and other new construction on historic buildings, structures, and landscapes.

Under Section 106 and the State History Code, it is the role of our office to provide comments on the effects a project may have on historic properties. Some effects, such as demolition of a historic property or disturbance of an archaeological site, can be easily evaluated and determined to be adverse. However, assessing the impact of visual changes is often more subjective and may require more in-depth evaluation and discussion.

The purpose of this document is to outline the process necessary for the identification of those resources where the introduction of new visual elements would diminish integrity, thereby significance and a property’s National Register eligibility. Guidelines for the assessment of adverse visual effects are also included.

Avoidance of adverse visual effects on historic properties is the recommended course of action for projects. If adverse effects cannot be avoided, then it is necessary to work to minimize adverse visual effects through changes to the project’s location, scale, or design. If the adverse visual effects cannot be avoided or minimized, then it may be necessary to mitigate to compensate for the loss of integrity.

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### Integrity and Significance

Integrity is critical to the ability of a property to convey its historic significance. Therefore, when developing a survey, properties in the APE should be considered in light of the criteria for significance and aspects of integrity for which they are significant. Evaluation of whether the introduction of a new feature will adversely affect a property's aspects of integrity is critical.

Questions to be asked include:

- Is setting a character defining feature of the resource?
- Will the project introduce new features into the setting?
- Will the project remove existing features from the setting?
- Would the introduction of new features or the removal of old features in the setting of this property affect its integrity? If so, which aspects?
- Would changes to the identified aspects of integrity affect the ability of the property to convey its significance?

In assessing visual effects for historic properties, the criteria for significance and the aspects of integrity provide a qualitative method for determining visual effects on historic properties.

For example, integrity of setting is critical to a farm's (farm complex and associated lands) ability to convey its agricultural significance. The introduction of a tower or a field of solar panels in the view shed of the farmstead or the removal of associated landscape features, such as tree lines, woodlots, or field patterns, could alter integrity of setting and feeling. However, if the setting of a property is not critical to understanding its significance (resources significant for architecture alone), then the introduction of a new visual feature or removal of surrounding features may not diminish the integrity of the property.

### Identification of Historic Properties

This step of the review process begins with a Phase I or identification level survey. This includes field work and background research to delineate the Area of Potential Effect (APE) and identify resources previously evaluated for National Register eligibility as well as those that are more than 50 years of age and not previously evaluated for National Register eligibility within the APE.

### Delineation of APE

The delineation of the APE should take into account the view shed or those areas from which the project may be visible.



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For example, a tower, solar farm, or power line may not be located on a property but it could introduce new features into the landscape, thereby potentially affecting an adjacent historic property's relationship to its setting which may include surrounding features as well as view sheds.

The APE is based on a project's potential to effect above or below ground resources. Therefore, it is critical that the identification report include a well-developed project description with sufficient illustrations from multiple vantage points to justify the APE that is delineated. An initial APE should be delineated broadly and then refined based on site conditions, as outlined below.

#### *Initial APE*

##### Transmission Lines

If the proposed line will be constructed within the existing ROW and there are no new areas of vegetation proposed for clearing outside of the existing maintained ROW and there will be no substantial increase in tower height (<10% or 20' increase, whichever is greater), the initial APE will include those resources that are within and adjacent to the existing ROW.

If the proposed line to be constructed within the existing ROW and new areas of vegetation will be cleared outside the existing maintained ROW, the initial APE will consist of all resources that are within 0.5 miles on either side of the existing ROW.

If the proposed line to be constructed within a new ROW, the initial APE will consist of all resources that are within 0.5 miles on either side of the existing ROW.

##### Cell Towers

Two Nationwide Programmatic Agreements define the APE for visual effects for the construction of new cell towers and collocation of antennas on non-tower structures:

- Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission:  
[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-04-222A3.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-04-222A3.pdf)
- Nationwide Programmatic Agreement for the Collocation of Wireless Antennas:  
<http://wireless.fcc.gov/releases/da010691a.pdf>

For new cell tower construction:

- If the proposed new tower is 200 feet or less, the APE is one half mile from the tower site.
- If the proposed new tower is more than 200 feet but less than 400 feet, the APE is ¾ mile from the tower site.

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- If the proposed new tower is more than 400 feet, the APE is 1 ½ miles from the tower site.

For collocations on existing buildings or structures the APE is 250 feet from the tower location.

An alternative APE can be determined upon agreement between the FCC applicant and the PA SHPO.

### Wind Towers

The initial APE for wind turbine towers will be 5 miles.

### Solar Farms

Solar farms are large-scale solar installations of ground-mounted panels installed across large areas as well as associated infrastructure including transmission facilities, conduit, equipment pads, and substations.<sup>1</sup> The initial APE for solar farms will include the land area(s) where the solar farm and associated infrastructure is physically located and will extend within .25 mile from the outer edge of the installation(s).

### *Refined APE*

The initial APE of .25 mile radius from the edge of the solar farm installation and associated infrastructure can be refined through an examination of topography, changes in elevation and vegetative cover, using GIS based modeling, to include only the anticipated extent to which a project may be visible. The refined APE should be checked during the field survey and justified and fully documented in the identification report. As vegetative cover can change, the report should include meta-data on the date of the vegetative cover information used for the GIS analysis.

## **1) Background Research**

Once the APE has been established, it is necessary to conduct sufficient background research to determine the nature and extent of previously identified historic resources within the boundary.

This begins with an examination of Pennsylvania's online resource database, [CRGIS](#), and survey files available at the PA SHPO office in Harrisburg. In addition, topographic maps and aerial photography should be reviewed to identify areas of high archaeological site potential within the APE.

If the APE includes agricultural properties, the [Pennsylvania Agricultural Context](#) and its updates should be consulted to determine what types of properties can be anticipated within the APE. In addition, in those locations where the APE includes contiguous farmsteads and surrounding open space, current and historic aerials should be compared to determine if there is the potential for a rural historic district.

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<sup>1</sup> Solar farms are different from rooftop solar systems and commercial solar power systems that provide power to individual homes or businesses.

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### 2) Identification/Reconnaissance Report

#### a. *Research Design*

The methodology should justify the APE boundary and outline the background research and field survey methods. Recommendations for future survey efforts should be based on the potential of the project to affect the significance or integrity of identified property types.

Typical examples of projects and resources that could be affected by associated changes in setting include:

- Historic farms with associated woodlots, hedgerows, stone walls, and/or field patterns that would be affected by clear cutting in order to provide a transmission line right of way.
- Rural historic districts that would be affected by the location of a transmission line through the associated landscape.
- A twentieth-century estate designed to take advantage of prominent view sheds of a ridge line on which a wind tower is proposed.
- A historic farm whose associated farmland would be impacted by the construction of a solar farm on the farmland and within the viewshed of the farm complex.

#### b. *Survey Results*

The [Abbreviated Historic Resource Survey Form](#) should be used for initial identification of those resources 50 years in age or older that would be potentially affected by the introduction of the project.

A table of properties in the APE should be provided. The table should include name of property, address, previous survey documentation (including determinations of eligibility), and surveyor recommendations for future survey work.

#### c. *Mapping and Illustrations*

All mapping and illustrations must be of high quality and in color, of readable scale, and should include sources and dates. At a minimum, the following should be included to convey the project's potential to affect historic properties:

- Project location and APE boundary, shown on a 7.5-minute USGS quadrangle;

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- Aerial mapping showing the location of the proposed towers;
- Aerial mapping with all 50-year-old resources within the APE, showing the relationship of the resources to the project;
- Photographs and mapping of previously identified resources including rural historic districts;
- Pictures of the APE showing viewsheds to and from National Register listed and eligible resources and those areas where changes in the landscape will occur (tree cutting, access roads); and
- Illustrations of the type, size, and scale of the proposed towers.

The results of the identification/reconnaissance report should be reviewed and discussed with PA SHPO staff prior to the evaluation investigation. PA SHPO staff will work with the agency or their applicant to determine which properties require documentation beyond the Abbreviated Historic Resource Survey Form as well as the application of appropriate historic contexts.

For projects where there are relatively few resources that would be affected by a project, it may be possible to present the APE and document and evaluate National Register eligibility of resources in one submission rather than preparing separate identification/reconnaissance and evaluation/intensive survey reports.

#### Evaluation of Historic Properties

Properties identified as warranting further survey because of the potential of the project to affect their significance should be documented and assessed for National Register eligibility on the [Historic Resource Survey Form](#) (see [Guidelines for Architectural Investigations in Pennsylvania \(2014\)](#) for further guidance).

The [Pennsylvania Agricultural Context](#) and its updates should be consulted in the assessment of eligibility of agricultural properties. Documentation should include a discussion of those landscape features or viewsheds that are critical to the ability of a property to convey its historic significance.

#### Assessment of Effect

For those resources identified as eligible for listing in the National Register, the impact of the project should be assessed. If it is determined in consultation with PA SHPO that the proposed project will significantly and negatively impact a historic property, the agency should first propose measures for

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avoiding or minimizing the effect. Avoidance of adverse effects on historic properties is the recommended course of action for projects.

In assessing the potential effects of a project on historic properties, the criteria for significance and the aspects of integrity are factors that require evaluation. Assessments of effect should present the following information:

- Detailed project description.
- Property's historic significance. It is necessary to understand the property's historic significance and integrity in order to evaluate the project's effects on the property's eligibility for listing in the National Register of Historic Places. The focus of the analysis should be consideration of setting.
- Brief physical description of the property with a focus on natural topography, setting, and man-made or natural features that enhance a historic property's significance and integrity. This should also include a discussion of the nature and quality of the view to and from the historic property. For example, specific viewsheds that enable the property to convey its significance should be noted.
- Assessment of physical effects. This assessment should focus on how the project will affect those physical features that convey the significance and integrity of the historic property.
- Assessment of visual effects. The historic property's relationship to its setting, which may include surrounding features and open space, should be taken into account. This includes the view from the historic property as well as the view toward a historic property.

Findings of effect should be justified through relevant illustrations, all of high quality and in color, with mapping at a scale that is readable and source data identified:

- For each identified property, aerial photographs showing the boundaries of the property, location of primary and secondary resources, and landscape features should be provided. The aerial photograph should also show the location and direction of ground photographs, a depiction of line of site and distance from the resource to the project. The date of the aerial photograph should be noted.
- Photographs should include views from the entire property, including secondary resources and historic landscape features, not just the primary resource. Panoramic photographs or photograph montages are especially useful to visual analysis.
- Plans of proposed and existing (if applicable) designs, including elevations.



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- For those projects introducing new features or towers that will be substantially taller (>10% or 20' increase) within the view shed of a historic property, photosimulations of the new tower are warranted.

### Minimization Measures

If visual effects to historic properties cannot be avoided, then it is necessary to consult with the PA SHPO and other consulting parties, as applicable, to minimize adverse effects through changes to the project's location, scale, or design. Recommended measures for minimizing visual effects are addressed below, including specific recommendations for cell towers, wind farms, power lines, and solar farms.<sup>2</sup>

### General

- Site facilities outside of sensitive viewsheds or as far as possible from sensitive viewing locations as possible.
- Site facilities in previously developed landscapes.
- Use landforms, vegetation, or architectural screening.
- Color treat structures to reduce contrast with existing landscape.
- Preserve existing vegetation.
- Re-vegetate using native plants.

### Cell Towers

- Use of camouflage and/or disguise strategies in highly sensitive viewsheds.
- Collocation of towers on existing structures or buildings when the effect to historic properties will be lessened.

### Wind Farms

- Consider topography when siting wind turbines.
- Cluster or group to break up overly long lines of turbines.

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<sup>2</sup> The measures for minimizing visual effects outlined in this document are taken from the Visual Mitigation Measures Checklist included in the National Park Service's, [Guide to Evaluating Visual Impacts for Renewable Energy Projects](#). National Resource Report NPS/ARD/NRR-2014/836.

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### *Power Lines*

- Improvements to tower design to minimize visual effects.
- Removal of redundant poles.
- Burying lines underground.

### *Solar Farms*

- Screening solar collectors to avoid off-site glare through the use of vegetative buffers and other less visually obtrusive means.
- Avoiding complete removal of vegetation around solar collectors.
- Locate and operate solar collectors to avoid off-site glare.
- Use color-treated solar collectors and support structures.

### *Adverse Visual Effects*

In general, a project can be considered to have an adverse visual effect to a historic property if it diminishes the integrity of the resource to the point that it can no longer convey its historic significance. Examples of potential adverse effects include:

- Elimination of open space or a scenic view that is critical to the ability of a property to convey its historic significance.
- Elimination of a sufficient number of small-scale features (fence rows, tree lines, field patterns, etc.) that a property can no longer convey its historic use and significance.
- Introduction of a visual element that is incompatible, out of scale, detracts, or is out of character with the setting of a property or district.
- Blocking or intruding on a scenic view or blocking the view from one historic property to another.

If adverse effects cannot be avoided or minimized, then it may be necessary to mitigate to compensate for the loss of integrity, also in consultation with the PA SHPO and other consulting parties.

Projects subject to Section 106 of the NHPA review require execution of a Memorandum of Agreement by the Federal agency, PA SHPO, the project applicant, and any consulting parties in order to address the adverse effect of the project.