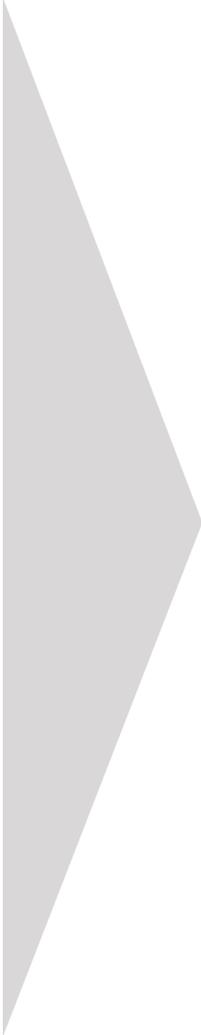




TIER 1 FINAL ENVIRONMENTAL IMPACT STATEMENT
VOLUME 1 (PREFERRED ALTERNATIVE)



7.10 Visual and Aesthetic Resources

7.10 VISUAL AND AESTHETIC RESOURCES

7.10.1 Introduction

This chapter identifies the visual and aesthetic resources in the Affected Environment and Context Area and assesses the effects of the No Action Alternative and Preferred Alternative on these resources. Due to the overlapping nature of the visual and aesthetic resources with other resources, this analysis relies on geographic information system (GIS) data and mapping generated for several other resources including Land Cover (Chapter 7.2), Parklands and Wild and Scenic Rivers (Chapter 7.4), Hydrologic/Water Resources (Chapter 7.5), Ecological Resources (Chapter 7.6), and Cultural Resources and Historic Properties (Chapter 7.9). Appendix AA, Mapping Atlas of the Preferred Alternative, provides the general locations of related resources identified as part of the visual and aesthetics resources analysis.

Visual and aesthetic resources include features of both the built and natural environments that together comprise the visual landscape. Examples of visual and aesthetic resources include parks, natural areas, scenic features, open vistas, water bodies, and other landscape features. Cultural resources, such as historic landmarks and historic districts, can also be visual resources.

Visual and aesthetic resources are often described in terms of their visual quality, which is an attribute or characteristic based on professional, public, or personal values and the intrinsic physical properties of the landscape. Effects on visual and aesthetic resources result from changes in the visual landscape and the viewer's response or sensitivity to those changes. Volume 2, Appendix E.10, provides more-detailed definitions of visual and aesthetic resources.

The Federal Railroad Administration (FRA) assessed visual and aesthetic resources within the 1-mile-wide Affected Environment that was centered along the Representative Route of both the Existing NEC + Hartford/Springfield Line and the Preferred Alternative. The qualitative assessment included identification of resources that would be affected in areas where a new rail corridor is proposed and areas where there is a proposed change to the type of infrastructure within an existing rail corridor. Volume 2, Appendix E.10, contains the detailed methodology.

7.10.2 Resource Overview

This visual analysis identified and considered resources that comprise the visual environment (such as parks, natural areas, scenic features, open vistas, water bodies) and cultural resources (such as historic landmarks and historic districts) documented as part of this Tier 1 Final Environmental Impact Statement (Tier 1 Final EIS).

The visual environment of the Study Area ranges from undeveloped agricultural areas and open spaces, and small towns to large-scale industrial development and vibrant urban districts. The Existing NEC + Hartford/Springfield Line and the Preferred Alternative traverse and connect large metropolitan areas—including Washington, D.C., Baltimore, Philadelphia, New York City, Hartford, and Boston—all of which are built on and around major water bodies such as the Atlantic Ocean and large rivers.

Cultural resources and historic properties are dispersed throughout, with higher numbers of sites found in urban areas such as Washington, D.C., Philadelphia, New York City, Providence, and Boston, which were heavily populated during the colonial era. Greater numbers of historic sites are typically associated with areas close to the Existing NEC + Hartford/Springfield Line or where new segments divert into these urban areas.

Parklands are also scattered throughout the Study Area with higher acreages found in Maryland, New York, Connecticut, Rhode Island, and Massachusetts. In addition, ecological resources are dispersed throughout the Study Area, with higher concentrations of ecological resources found in Maryland, New York, and Connecticut.

Key findings for the analysis of the Preferred Alternative are the following:

- ▶ **Benefits** – The Preferred Alternative is compatible with the existing visual and aesthetic resources in areas along the Existing NEC + Hartford/Springfield Line. Improvements to the Existing NEC + Hartford/Springfield Line under the Preferred Alternative include construction types that will generally not change from the existing construction type of the rail corridor and most improvements will occur within or adjacent to the existing right-of-way.
- ▶ **Impacts** – The Preferred Alternative introduces new visual elements and has the greatest potential for impacts along the new segments and along two areas (Old Saybrook to Kenyon new segment and Bayview to Wilmington new segment) where there is a potential change in construction type from the existing rail corridor. In general, new segments with elevated construction types—such as the major bridges and aerial structures located along the Bayview to Newport new segment, Wilmington new segment, New Rochelle to Greens Farms new segment, and Old Saybrook-Kenyon new segment—have the greatest potential for impact.

7.10.3 Affected Environment

The Affected Environment is densely developed in the metropolitan areas of Washington, D.C., Baltimore, Philadelphia, New York City, Hartford, and Boston—all of which are surrounded by large suburban areas. Large areas of Forest/Shrub and Wetlands land covers occur in Anne Arundel, Howard, and Cecil Counties, MD; Middlesex and New London, Counties, CT; Washington and Providence Counties, RI; and Bristol, Norfolk, and Worcester Counties, MA. Appendix EE.10 provides (by state and county) the identified visual and aesthetic resources for the Preferred Alternative.

Visual and aesthetic resources vary, consisting of cultural resources, developed park settings, and natural settings consisting of either water, wooded, or open views. Smaller, developed park resources are more prevalent south of New York City. Undeveloped resources like the Patuxent Research Refuge in Maryland are located within tributaries to larger watersheds or ecosystems such as the Chesapeake Bay. Larger, undeveloped resources are more common north of New York City (e.g., Cockaponset State Forest in Connecticut and Great Swamp Management Area in Rhode Island). Connecticut and Rhode Island have the most acreage of parks within the Study Area. The greatest numbers of cultural sites are typically found in municipalities that date from colonial times and contain older buildings and structures. Municipalities with a large number of cultural sites include Washington, D.C.; Wilmington, DE; Baltimore, MD; Philadelphia, PA; Newark, NJ; New York City, NY; New Haven and Hartford, CT; Providence, RI; and Boston, MA.

7.10.4 Environmental Consequences

Potential effects to visual and aesthetic resources would occur where new visual elements—such as elevated structures, water crossings, or new stations—would be introduced near or within sight of a visually sensitive resource. Potential effects would also occur where the Preferred Alternative would require the removal of an existing visual feature (such as clearing of wooded areas) and changes in existing topography (which would occur through land acquisitions or construction). Changes to visually sensitive areas—areas where the proposed rail infrastructure would have unique aesthetic qualities (such as embankments, aerial structures, and track improvements), ancillary facilities (such as stations, and parking structures), or service changes—are also considered an impact. Electrification of the Hartford/Springfield Line would introduce new visual elements such as catenary wires, poles, and traction power substations. Conversely, no impacts are expected to visual and aesthetic resources due to tunnel construction. Resources adjacent to or crossed by tunnel construction have not been included in the assessment. Construction types may be modified or changed as part of Tier 2 project studies.

Effects on visual and aesthetic resources at stations would be in the immediate vicinity of the station location. Stations are traditionally placed within communities in downtown areas or as part of a larger transportation hub serving the local population. Modified stations—existing stations where modifications to the tracks, platforms or parking might occur—would have minimal impacts to visual and aesthetic resources.

Table 7.10-1 provides a brief description of the potential visual and aesthetic impacts by county along the new segments of the Preferred Alternative. The table identifies National Historic Landmarks by name. Appendix EE.10 provides additional detail and identifies potential visual and aesthetic resources for related resource areas assessed by county, including additional National Register of Historic Places resources. Specific information about the related resources (such as parks, water bodies, natural areas, and cultural resources) can be found under their respective resource chapters and appendices.

In general, the counties crossed by the Existing NEC + Hartford/Springfield Line would see only minimal changes to visual and aesthetic resources resulting from the Preferred Alternative. Counties along the Existing NEC + Hartford/Springfield Line could be affected by widening of the corridor to increase the number of tracks or affected by modified or new stations. However, where new segments are proposed or where modifications to construction types would occur, new visual elements may be introduced. For example, minimal impacts would occur where existing at-grade tracks remain at-grade construction under the Preferred Alternative but the number of track increases from two to four. These counties have not been included in the tables.

A general trend related to land cover is that potential for impacts to visual and aesthetic resources is related to the type of existing land cover. In general, the land cover analysis defined land covers as developed and undeveloped. As developed land covers typically have a variety of urban infrastructure, there is a lower chance that there would be impacts to visual and aesthetic resources caused by the introduction of a new rail line to an area. Undeveloped land covers such as Wetlands, Open Water, Grassland/Cultivated, and Forest/Shrub are more likely to be affected by the introduction of a rail line to an area. Contrary to this trend, there is a potential to impact

specific resources such as cultural resources or parks regardless of the developed or undeveloped land covers. The text below for each element focuses on the general changes in land cover while Table 7.10-1 calls out the potential impacts to specific resources.

Table 7.10-1: Environmental Consequences: Visual and Aesthetic Resources

State	County	Change to Visual and Aesthetic Resources
ELEMENTS SOUTH OF NEW YORK CITY		
Maryland/Delaware – Bayview to Newport (new segment)		
MD	Baltimore City	Embankment and aerial structure would introduce new visual elements to Herring Run Park. New Station-13 (Bayview) would introduce new visual elements.
	Baltimore County	Aerial structure would introduce new visual elements to Gunpowder Falls State Park; Gunpowder Falls State Park would be bisected.
	Hartford	Eight parks would experience visual effects due to new construction; the Anita C. Leight Estuary Center would be bisected by a trench and embankment ; Belcamp Park is adjacent to embankment ; Perryman Park and North Deen Park would be bisected or adjacent to embankment and aerial structure .
	Cecil	Embankments and aerial structures would introduce new visual elements to Fletchwood Community Park, West Branch Community Park as they are both bisected; New Station 23 (Elkton) would introduce new visual elements to two cultural resources. Aerial structure adjacent to the Pulasky Highway (US 40) would introduce new visual element.
DE	New Castle	Minimal visual and aesthetic changes; New Stations 26 (Newport) and 28 (Edgemoor) would introduce new visual elements.
Delaware – Wilmington Segment (bypasses Wilmington Station)		
DE	New Castle	One National Historic Landmark, Fort Christina, is located near aerial structure and major bridge . New Stations 26 (Newport) and 28 (Edgemoor) would introduce new visual elements.
Pennsylvania – Philadelphia Segments (new segments)		
PA	Delaware	Aerial structure would introduce new visual elements near Pleasant Hills Park. New Stations 34 (Baldwin) and 44 (Philadelphia Airport) would introduce new visual elements near the Bicycle PA Route E trail.
	Philadelphia	Embankment and major bridge could introduce visual elements near The Woodlands, John Bartram House, Fairmount Waterworks, East Park (Fairmont Park) and West Park (Fairmont Park).
New Jersey – New Brunswick to Secaucus (new segment)		
NJ	Middlesex	New Stations 62 (North Brunswick) and 68 (Metropark H.S.) would introduce new visual elements.
	Union Essex Hudson	Minimal visual and aesthetic changes due to corridor widening with no change in construction type or changes to tunnel construction type.

Table 7.10-1: Environmental Consequences: Visual and Aesthetic Resources (continued)

State	County	Change to Visual and Aesthetic Resources
ELEMENTS NORTH OF NEW YORK CITY		
New York/Connecticut – New Rochelle to Greens Farms (new segment)		
NY	Westchester	Aerial structure and embankment running parallel to I-95 near the Byram River. New Station 87 (Cross-Westchester) would introduce new visual elements.
CT	Fairfield	Embankments, aerial structures, and a major bridge would bisect and introduce new visual elements to Mianus River Water Access, Norwalk River, Saugatuck River Water Access, and parallel to I-95. New Stations 94 (Stamford H.S.) and 107 (Barnum) would introduce new visual elements.
Connecticut/Rhode Island – Old Saybrook-Kenyon (new segment)		
CT	Middlesex	Trench and embankment would introduce new visual elements near I-95 and the Connecticut River, in the vicinity of Old Saybrook
CT	New London	Trench and embankment would introduce new visual elements along I-95 and north of the Connecticut River; a major bridge crosses the Thames River; aerial structure crosses the Groton Reservoir; embankment and major bridge bisect the Mystic Oral School and cross the Mystic River. New Station 124 (Mystic/New London H.S.) would introduce new elements.
RI	Washington	Potential visual impacts from embankment crossing Bradford/Bradford Dye / Grills Preserve; aerial structure near Kenyon RI and the Great Swamp Management Area.
Connecticut/Massachusetts – Hartford/Springfield Line (upgraded track/electrification of existing connecting corridor)		
CT	New Haven	Electrification introducing poles and catenary wires, New Stations 157 (North Haven) and 189 (Orange) would introduce new visual elements to seven cultural resources.
CT	Hartford	Electrification introducing poles and catenary wires, New Stations 161 (Newington), 186 (West Hartford), and 187 (Enfield) would introduce new visual elements to ten cultural resources.
MA	Hampden	Electrification introducing poles and catenary wires; Minimal visual and aesthetic changes due to corridor widening with no change in construction type.

Source: NEC FUTURE team, 2016

Elements South of New York City

- ▶ **Maryland/Delaware – Bayview to Newport (new segment)** – Land cover along this segment is generally developed through Baltimore County and Baltimore City, MD. There are larger areas of undeveloped land covers such as Forest/Shrub and Grassland Cultivated in Hartford and Cecil Counties, MD. These two counties along with Delaware County, PA, also have large areas of wetland land cover. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.
- ▶ **Delaware – Wilmington Segment (bypasses Wilmington Station)** – New Castle County, DE, is primarily developed land cover with minimal Forest/Shrub and Wetlands Land Cover where there are potential visual and aesthetic impacts. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.
- ▶ **Pennsylvania – Philadelphia Segments (new segments)** – Delaware and Philadelphia Counties are developed counties with minimal undeveloped land covers. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.

- ▶ **New Jersey – New Brunswick to Secaucus (new segment)** – The majority of Middlesex, Union, Essex, and Hudson Counties, NJ, are of a developed nature. Minimal impacts to visual and aesthetic resources are anticipated as related to this segment. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.
- ▶ **New Jersey – Secaucus/Bergen loop (new segment)** – Undeveloped land cover in this area includes several acres of Open Water and Wetlands. No additional resources were identified where there may be visual and aesthetic impacts.

Elements North of New York City

- ▶ **New York/Connecticut – New Rochelle to Greens Farms (new segment)** – Westchester County, NY, and Fairfield County, CT, are both counties with a predominance of developed land cover. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.
- ▶ **Connecticut/Rhode Island – Old Saybrook-Kenyon (new segment)** – Middlesex County, CT, has undeveloped Open Water and Wetlands with potential visual and aesthetic impacts. The majority of the undeveloped land in New London County is Forest/Shrub with some Open Water, Wetlands and Grassland/Cultivated. Washington County, RI, has Forest/Shrub, Grassland/Cultivated, and Wetlands that make up the undeveloped land area. This segment has the most undeveloped land in the corridor. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.
- ▶ **Connecticut/Massachusetts – Hartford/Springfield Line (upgraded track/electrification)** – New Haven and Hartford Counties, CT, and Hamden County, MA, have Forest/Shrub and Wetlands undeveloped land with potential for visual and aesthetic impacts. Table 7.10-1 identifies additional resources where there may be visual and aesthetic impacts.

7.10.5 Stations

Modifications of existing stations or new stations could result in visual impacts. While likely minimal, visual impacts could result from modifying an existing station with historic significance or changing exterior elements of a station. New stations would have a greater visual impact because a new visual element is added to the existing landscape and would change the visual setting. Impacts could also result from ancillary facilities related to the stations such as tracks, parking, and other infrastructure required to support the facility. New underground stations may result in minimal effects to visual and aesthetic resources since the majority of the station infrastructure would be underground. Underground stations may include above-ground features such as ventilation and entrances could result in limited visual impacts. Table 7.10-2 identifies the new stations that are part of the Preferred Alternative.

Table 7.10-2: Environmental Consequences: Preferred Alternative – Modified or New Stations – Visual and Aesthetic Resources

State	County	Station ID	Station Type	Station Name
MD	Anne Arundel	5	Modified	Odenton
	Baltimore City	13	New	Bayview
	Cecil	23		Elkton
DE	New Castle	26	New	Newport
		28		Edgemoor
PA	Delaware	34	New	Baldwin
		44		Philadelphia Airport
NJ	Mercer	61	Modified	Princeton Junction
	Middlesex	62	New	North Brunswick
		64	Modified	New Brunswick
		68	New	Metropark H.S.
Hudson	76	Modified	Secaucus	
NY	Bronx	78	New	Hunts Point
		79		Parkchester
		80		Morris Park
		81		Co-op City
	Westchester	87	New	Cross-Westchester
CT	Fairfield	94	New	Stamford H.S.
		101	Modified	Greens Farms
		107	New	Barnum
	New Haven	189	New	Orange
New London	124	Mystic / New London H.S.		
RI	Kent	127	Modified	TF Green
	Providence	130	New	Pawtucket
CT	New Haven	157	New	North Haven
	Hartford	161	New	Newington
		186		West Hartford
		163	Modified	Hartford
		187	New	Enfield

Source: NEC FUTURE team, 2016

7.10.6 Context Area

The Context Area consists of higher percentages of undeveloped land covers, such as Forest/Shrub, Grasslands/Cultivated, and Wetlands, than the Affected Environment. In addition, there are over 2,000 parks and over 3,600 cultural resources in the Context Area. This indicates that should the Representative Route of the Preferred Alternative shift, there would be a potential to affect a greater share of undeveloped land covers, which could be incompatible with transportation uses and result in more land cover conversions. Likewise, if the Representative Route were to shift, it is likely that a larger portion of a resource, such as a park acreage or cultural resource, in the Context Area would be encountered, which would cause more visual effects. See Chapter 7.2, Land Cover; Chapter 7.4, Parklands and Wild and Scenic Rivers; and Chapter 7.9, Cultural Resources and Historic Properties, for more information.

7.10.7 Comparison to the Action Alternatives

All alternatives introduce new visual elements into the Study Area and could result in aesthetic changes to sensitive visual settings, such as historic areas; natural areas; and rural and urban settings. The Preferred Alternative generally focuses on existing rail corridors and provides infrastructure consistent with what exists currently; however, it also includes new segments and improvements that would introduce new visual elements.

Similar to the Preferred Alternative, the Action Alternatives include improvements to existing rail corridors while also providing off-corridor routing. The off-corridor routing associated with Alternative 2 and the Alternative 3 route options would change the visual setting of areas by introducing rail in areas where rail may not exist today.

Alternative 1 includes the Old Saybrook-Kenyon segment. In the Tier 1 Draft EIS, the Old Saybrook-Kenyon segment included an aerial structure that generally started in Old Saybrook, crossing the Connecticut River and through Old Lyme, continuing north to reconnect with the NEC. During the public comment period, the FRA received input from residents of Old Lyme opposing the aerial structure through the historic district and natural setting of the Connecticut River. The FRA considered this input and while the Preferred Alternative includes the Old Saybrook-Kenyon segment, the proposed construction type for evaluation in the Tier 1 Final EIS considers a tunnel and avoids the use of an aerial structure in the historic district of Old Lyme, CT. Visual effects on the tunnel would be less than proposed with the aerial structure.

The Preferred Alternative minimizes off-corridor routing and therefore would introduce fewer new visual elements than Alternative 2 and Alternative 3. It changes the construction type of the Old Saybrook-Kenyon segment from what was proposed in Alternative 1 and therefore would have less of a visual impact.

Unlike the Action Alternatives, the Preferred Alternative includes upgrades and electrification of the Existing Hartford/Springfield Line. Electrification would add new visual elements through New Haven and Hartford Counties, CT, and Hampden County, MA. New visual elements would include catenary poles, wires, and traction power substations.

7.10.8 Potential Mitigation Strategies

An example of a programmatic mitigation measure for visual and aesthetic resources includes development of context-sensitive design measures of more visually prominent facilities, such as stations and bridges, to improve the aesthetic characteristics. In areas where cultural resources, parks, and/or residences are located, design of bridge abutments, retaining walls, and other structures will consider aesthetic treatments to be consistent with the environs and setting. Examples of these types of measures include development of visual barriers, creative landscaping to screen or enhance views, or innovative design features on ancillary facilities. There are cases where a change in the proposed construction type may be an appropriate mitigation measure. Examples include areas where the Representative Route crosses historic features, parks, and ecologically sensitive areas. Context-sensitive design measures will also be important for resources where new features related to the Preferred Alternative would be introduced to the visual environment. Consultation with agencies having jurisdiction over the cultural resources and parks, as well as area residents, will be performed, as appropriate, to obtain input into the development of project design concepts.

7.10.9 Subsequent Tier 2 Analysis

A more-detailed assessment of visual and aesthetic resources will be necessary as part of subsequent Tier 2 project studies, which could include field visits, identification of viewer groups, review of plan drawings and profiles to determine viewsheds, outreach focused on potential impacts, and visual simulations of future conditions. Visual and aesthetic resources from the perspective of the viewer and the viewer's sensitivity to changes in the visual character will also be evaluated as part of Tier 2 project analysis. Consultation with agencies having jurisdiction over the cultural resources and parks will be performed as appropriate. Development and redevelopment of property adjacent to the NEC is the responsibility of the individual jurisdictions adjacent to the corridor and will be addressed through their local zoning and design review process. A Tier 2 project analysis on visual and aesthetic resources will be necessary along the Existing NEC + Hartford/Springfield Line before electrification and catenary construction.