

Section 2

Introduction

As oil and gas activity in La Plata County continues to increase, so does the awareness of the associated visual impacts. The La Plata County Land Use Code requires that a visual mitigation plan be part of all new minor and major facility development. The code also recommends visual mitigation techniques that can be utilized on a site-specific basis.

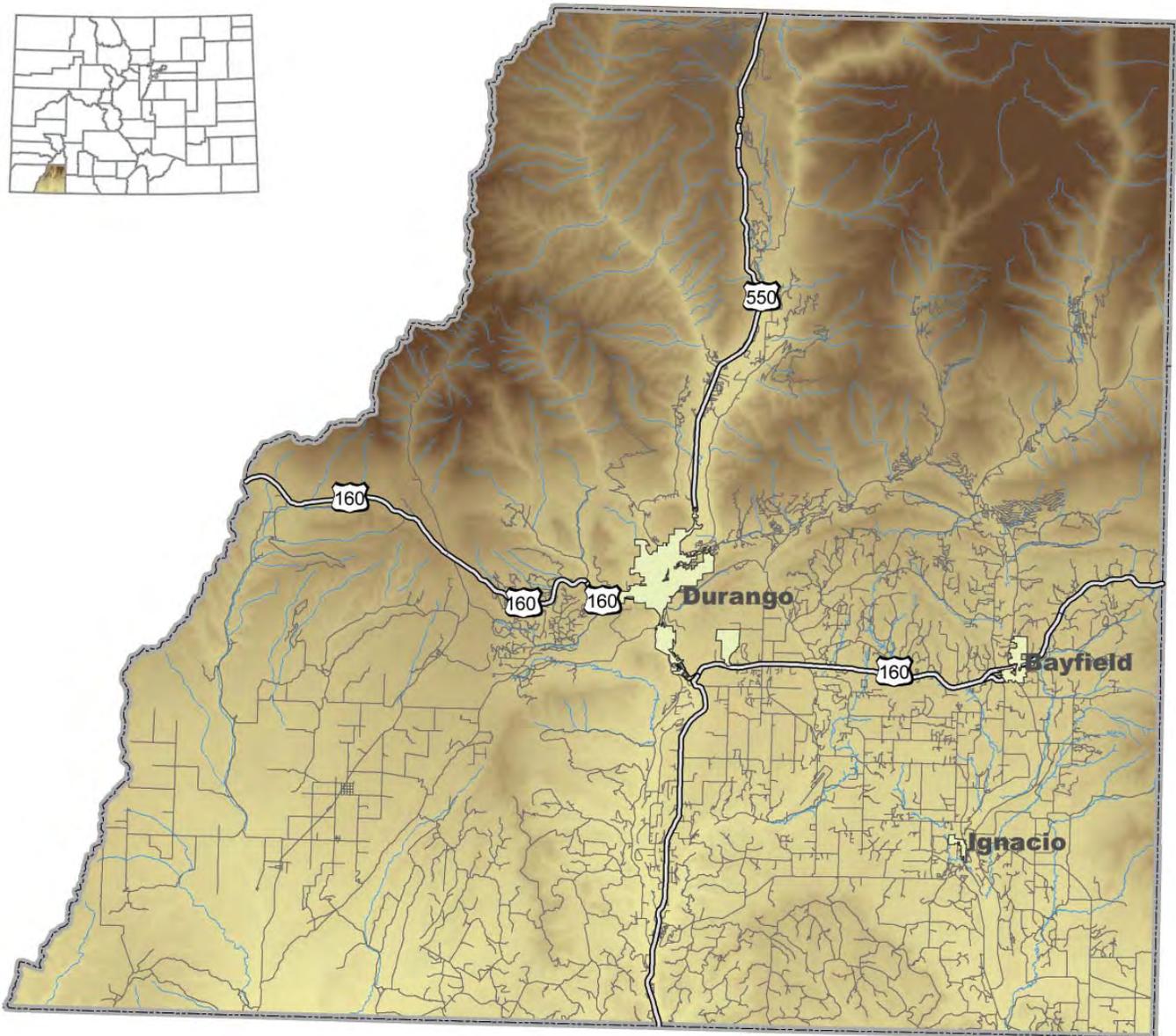
This guidance document will aid landowners, operators, agents, planners, and other stakeholders in making educated decisions on which combination of BMPs would be the most effective to mitigate the visual impacts associated with oil and gas facilities that are located on private lands within La Plata County and subject to county development code and regulations. The Visual Mitigation Guidance Form in Section 5 is included as a tool to facilitate the decision-making process.

The reader should keep in mind that the proper siting of facilities from the beginning of the planning process will often reduce or solve visual mitigation issues.



La Plata County

La Plata County covers approximately 1,690 square miles (1,081,616 acres). The northern portion is mainly comprised of U.S.D.A. Forest Service (USFS) land in the San Juan National Forest; the central portion contains the majority of the county's private lands and the southern portion is occupied by sections of the Southern Ute Reservation. Public land comprises 444,678 acres of the county's total area. La Plata County government regulates the approximately 636,938 acres of private lands residing within its boundaries.



La Plata County Landscape Types

The landforms of La Plata County range from the mountainous, steep slopes of the San Juan Mountain Range in the north to the plateaus, ridges, and rolling hillsides of the south. The land cover varies from the Rocky Mountain alpine and sub-alpine vegetation of the San Juans to the agricultural and sagebrush flats of the southern region.

Oil and gas activity currently takes place in the central and southern portions of La Plata County. These landscapes are comprised of suburban residential, rural residential/ agricultural, and areas of native vegetation and exposed rock. The native vegetation includes Ponderosa pine, pinyon-juniper woodlands, sage flats, wetlands, and shrublands.



Ponderosa Pine



Rural Residential /
Agricultural lands



Pinyon-Juniper Woodlands



Exposed rock outcrops
with pinyon-juniper

Ponderosa Pine Forest

Ponderosa Pine is found in elevations between 6,000-8,000 feet. A common understory consists of grasses, mountain forbs, and shrubs such as wild rose and currant. At lower elevations, Gambel oak can also be found, while at higher elevations pine, fir, and aspen can be associated.

Rural Residential / Agricultural

Rural residential/agricultural areas are defined as 10+ acre units. They include homes and agrarian structures, as well as crop and livestock areas.

Pinyon-Juniper Woodlands

Pinyon-pine and juniper woodlands are widespread on the Colorado Plateau between about 5,000 feet and 7,000 feet in elevation. Colorado pinyon pine (*Pinus edulis*) is the most common pine species in this woodland type, and Utah juniper (*Juniperus osteosperma*) is the most common juniper. One-seed (*J. monosperma*), Rocky Mountain (*J. scopulorum*), and alligator (*J. deppeana*) junipers can be abundant in different areas of the Plateau.



Sage flats



Shrublands



Wetlands

Sage Flats

Sage flats are found in drainage bottoms and intermixed with pinyon-juniper stands, and are usually located at elevations under 7,000 feet. Common plant species include sagebrush, rabbitbrush, saltbush, western wheatgrass, and Indian ricegrass.

Shrublands

Common vegetation found in shrublands includes Gambel oak, serviceberry, and Mountain mahogany.

Suburban Residential

Suburban residential development in La Plata County is defined as one single-family residence per lot of less than 10 acres, and is typically organized into subdivisions. Industrial and agricultural uses may also be intermixed between subdivisions.

Wetlands

Wetlands, also known as Riparian, are found adjacent to waterways where the soil is often saturated with water. Common vegetation found in wetlands include cottonwoods, willows, birch, alder, reeds, and sedges.

Facility Descriptions



Major Facilities

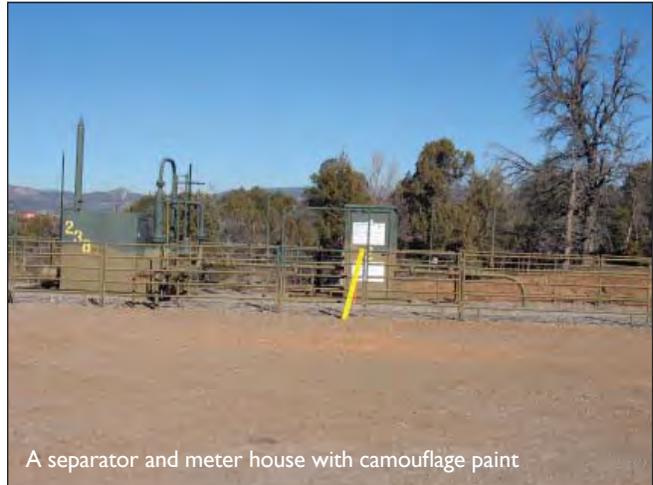
Major oil and gas facilities include:

- Compressor stations and associated facilities which serve multiple wells
- Water injection stations and associated facilities
- Storage yards and construction staging yards occupying an area of one acre or more
- Facilities related to the production of oil or gas which contains engines or motors with a cumulative horsepower of 200 brake horsepower (bhp) or more
- Interstate pipelines for which the power of eminent domain is available
- Gas treating facilities which serve multiple well or gathering systems





Pumpjack



A separator and meter house with camouflage paint

Minor Facilities

Minor oil and gas facilities are defined as:

- Individual well sites, including auxiliary production equipment
- Gas gathering and water collection lines and associated facilities serving minor oil and gas facilities, including trunk and lateral lines
- Individual and multiple well-head compression facilities powered by motors or engines with a cumulative horsepower rating of less than 200 bhp
- Storage yards or construction staging yards occupying one acre or less

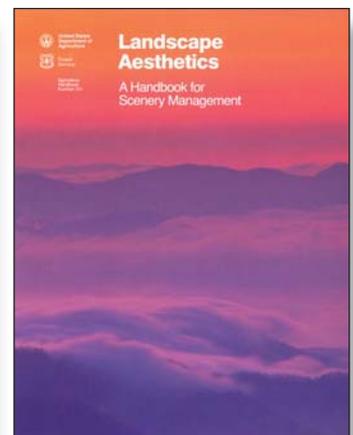
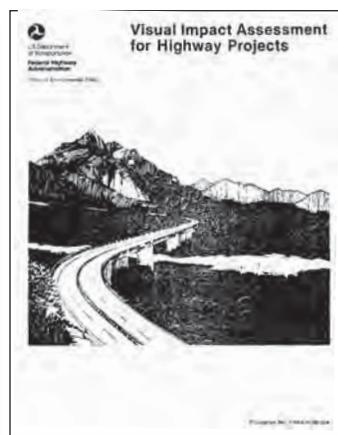


Typical well pad

Existing Guidance Documents

Multiple Federal agencies have developed guidelines to reduce the contrast of improvements with the existing surrounding landscapes. Although the Bureau of Land Management (BLM) and the United States Forest Service (USFS) are the two agencies most often referenced, the Natural Resources Conservation Service (NRCS) and the United States Department of Transportation (USDOT) also have aesthetic guidelines. The documents pictured below may be downloaded from the links provided:

- *Visual Resource Management* (BLM)
<http://www.blm.gov/nstc/VRM/index.html>
- *Visual Impact Assessment for Highway Projects* (U. S. Dept. of Transportation, Federal Highway Administration, 1990)
<http://www.contextsensitivesolutions.org/content/reading/visual-impact-2/resources/visual-impact-assessment/>
- *Landscape Aesthetics, A Handbook for Scenery Management* (U.S.)
<http://www.esf.edu/es/via/> (bottom of the page)



La Plata County code requires operators to mitigate the visual impacts of new oil and gas wells and development facilities. Chapter 90, Section 123 of the La Plata County Land Use Code outlines criteria for proper facility location as well as other visual mitigation standards. An interactive map of the region is available on the La Plata County website, www.laplata.co.us

Landscape Characteristics

The eye's viewing field is made up of negative and positive space. The eye is trained to recognize and focus upon the positive space first, which is usually the most dominant feature of the landscape. Dominance is generally created by a sharp contrast in one or more of the four basic landscape characteristics: form, line, color, or texture. Dominance creates a visual anomaly—an object with elements of color, form, line, or texture that differ from the surrounding landscape. When the eye detects such an anomaly, the brain immediately begins trying to identify it as a known object. The most effective visual mitigation will address these characteristics collectively.

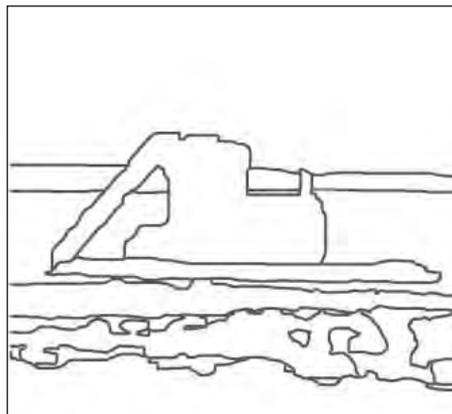
Form

Form is the figure of an object or the collective mass of similar objects. Visual contrasts in form result when the figure of an introduced or altered object is significantly different from existing figures in the landscape. In this example, the figures in the existing landscape consist primarily of low vegetation with hills in the background. The form of the tanks creates a sharp visual contrast to the vegetation and landform.



Line

Line is the edge where dissimilar forms, colors, or textures meet. Visual contrasts in line result when the existing landscape edges are altered by introduced forms, colors, and textures that are apparently non-native to the existing landscape, causing interruption or augmentation to the existing lines. In



this example, the hard edges of the tank are dissimilar to the soft, irregular edges of the landscape.

Color

Color is the reflection of visually perceptible light from objects. Visual contrasts in color arise when introduced or altered objects in the landscape reflect color in patterns or wavelengths that are dissimilar to what is found in the native landscape. In this example, the clear-cutting of trees for installation of a pipeline creates a color contrast between forested and clear-cut areas.



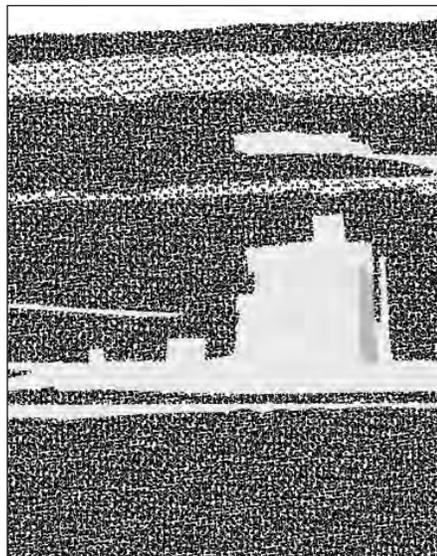
Seasonal Variations

The changing of seasons will have an effect on some visual mitigation measures. Deciduous vegetation such as grasses, chokecherry, aspen, cottonwood, Gambel oak, three-leaf sumac, and serviceberry will change colors and most will drop their leaves. Snow may pile up on horizontal surfaces, such as the tops of tanks. It would be best to plan for the season with the greatest number of viewers.



Texture

Texture is the pattern created by the forms of different colors. The forms of color do not appear as individual objects, but are part of the overall scene. In this example, the forms of color in the foreground vegetation create a different texture than the background and the hills. Together, these textures create a pattern that is distinct to this type of landscape. Visual contrasts in texture arise when the introduced or altered features of the landscape have dissimilar pattern grain, density, direction, or irregularity. Seasonal variations will also affect texture, as discussed above.



Observation Variables

Specific viewer variables have an effect on how a facility is observed.

Distance

The viewer's distance from an object affects how the object is seen, and which element of form, line, color, or texture is most dominant. The further away an observer is from the object, the more the characteristic of texture begins to fade into forms of color.

In La Plata County, viewing distances are defined as:

- Near Ground: 0–660 feet
- Middle Ground: 660–1,320 feet
- Far Ground: 1,320+ feet



Near Ground: 0–660 feet



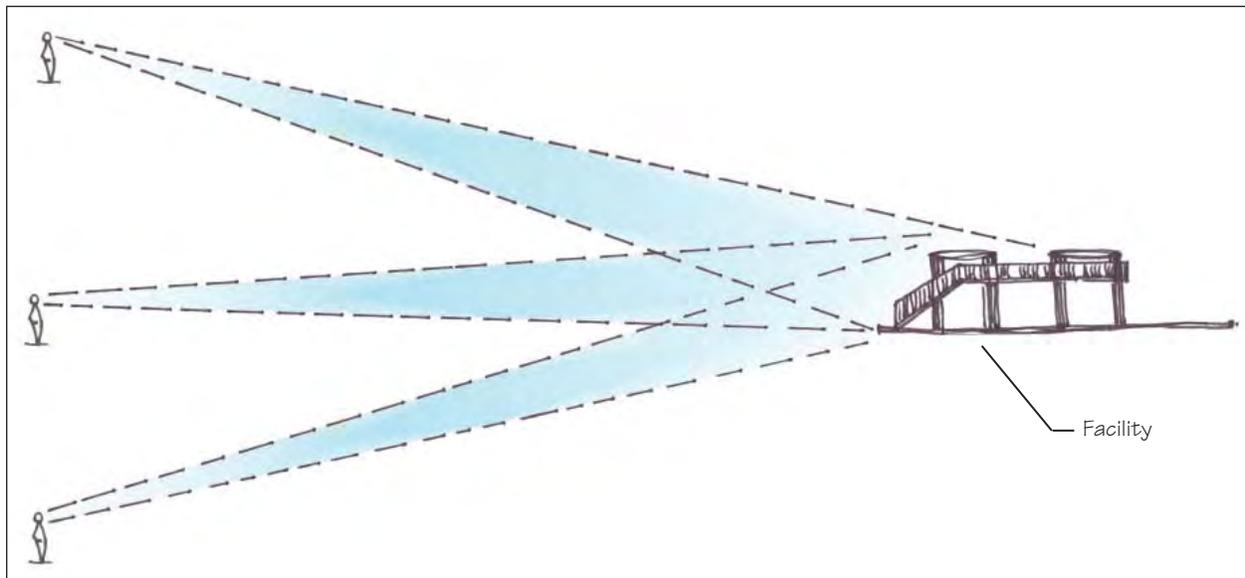
Middle Ground: 660–1,320 feet



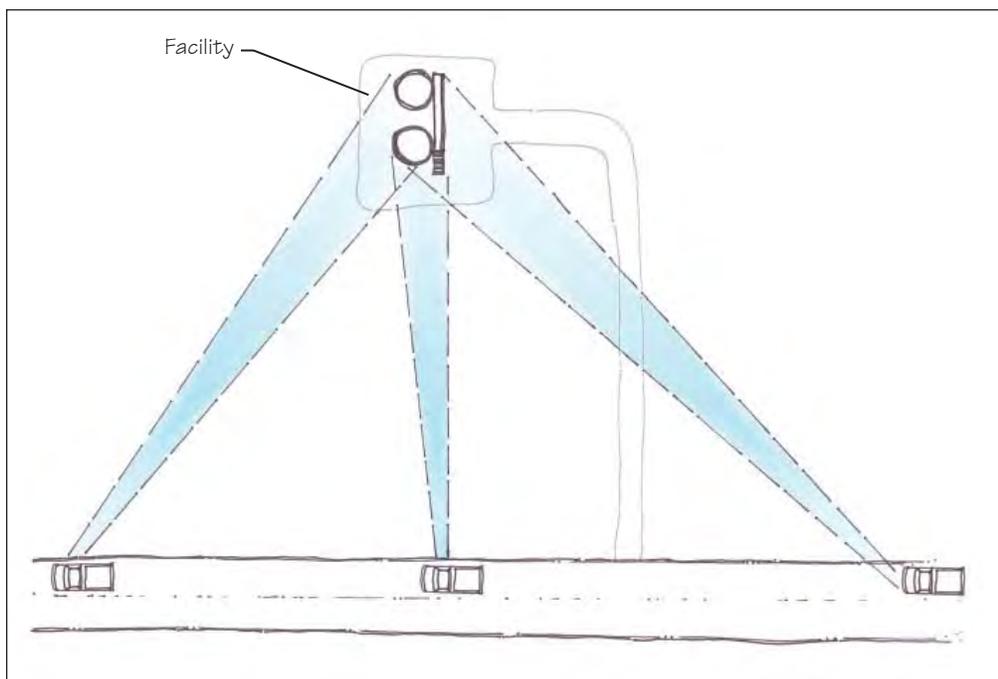
Far Ground: 1,320+ feet

Viewing angle

The angle of view also needs to be considered. The vertical angle and the horizontal angle from which a viewer observes the facilities determine which characteristics of the facility are most dominant, and will aid in defining which mitigation techniques will be the most effective. Some angles will be more sensitive than others.



Vertical viewing angles

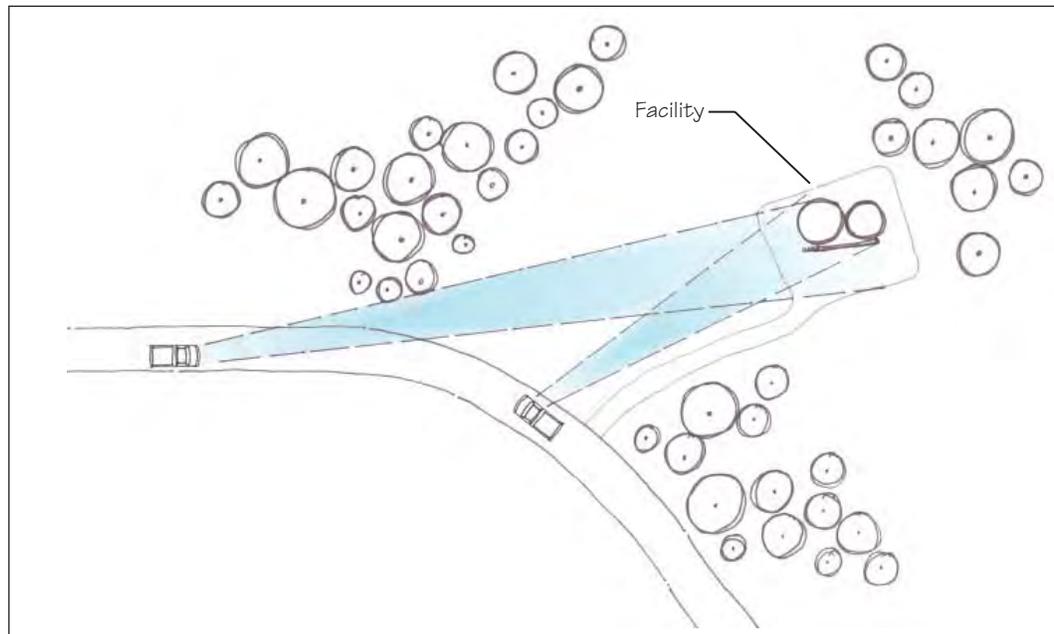


Horizontal viewing angles

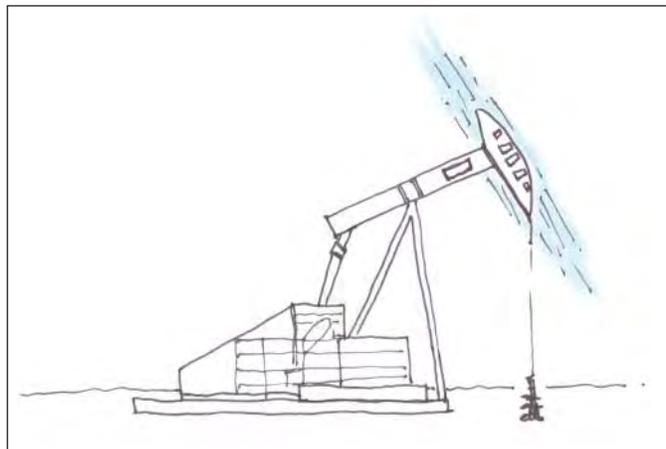
Motion, speed, and length of time in view

Motion and speed affect the viewer's perception of a facility in the landscape. If the viewer is in motion it means that the facility can potentially be seen from multiple distances and angles as the viewer travels past. **All views should be taken into consideration when planning for visual mitigation.** If the facility itself is in motion (a pumpjack, for example), more attention will be drawn to it, especially its active parts.

When the viewer is in motion, the length of time a facility is in view may be greatly diminished. The effects of speed, the period of viewing time, and the angle of view should be considered when deciding on effective visual mitigation techniques.



Viewer in motion



Facility in motion