

Chapter 3 Impact Analysis

This chapter provides environmental analyses of the physical impacts that could occur as a result of implementation of the program. The chapter is organized into separate sections for each resource analyzed, as listed below. Each section provides a description of the environmental and regulatory setting, significance criteria and methodology used in the impact analysis, and the potential impacts and required mitigation measures. For each potential impact, the impacts of each of the two program alternatives and the impacts of each of the proposed projects are presented at an equal level of detail.

Specific details of the Golden Hills and Patterson Pass Projects, as described in Chapter 2, were used for the analyses in this chapter. Design of future projects, for which applications have not yet been received by the County, including turbine layout and the size and number of turbines, are not yet known.

Program-level analyses related to ground disturbance were conducted using a set of assumptions developed through extrapolation from specific metrics provided for recent Altamont Pass repowering projects. Using these metrics and professional judgment, the standardized metrics reflecting the range of turbines commonly proposed are shown in Table 3-1 and were considered to be appropriate for analyses at the program level.

Table 3-1. Standardized Disturbance Area Metrics Used in the Program-Level Analyses

Project Element	Disturbance Area Metric	1.6 MW Turbines (50 turbines/project)	3.0 MW Turbines (27 turbines/project)
Road infrastructure ^a	Permanent <i>per turbine: 2.4 ac</i>	120 ac	64.8 ac
	Temporary <i>per turbine: 0 ac</i>	0 ac	0 ac
Laydown areas (including crane pad)	Permanent <i>Per turbine: 0 ac</i>	0 ac	0 ac
	Temporary <i>Per turbine: 0.5 ac</i>	25 ac	13.5 ac
Turbine foundations ^b	Permanent <i>per turbine: 0.06 ac</i>	3 ac	1.6 ac
	Temporary <i>per turbine: 0.05 ac</i>	2.5 ac	1.4 ac
Staging areas ^c	Permanent <i>per turbine: 0 ac</i>	0 ac	0 ac
	Temporary <i>per turbine: 1.2 ac</i>	60 ac	32.4 ac
Underground collection lines ^d	Permanent <i>per turbine: 0 ac</i>	0 ac	0 ac
	Temporary <i>per turbine: 0.28 ac</i>	45.8 ac	24.7 ac

Project Element	Disturbance Area Metric	1.6 MW Turbines	3.0 MW Turbines
		(50 turbines/project)	(27 turbines/project)
Electrical substation	Permanent <i>per project: 1 substation</i>	3 ac	3 ac
	Temporary <i>per project: 1 substation</i>	3 ac	3 ac
Meteorological towers	Permanent <i>per project: 4</i>	0.06 ac	0.06 ac
	Temporary <i>per project: 4</i>	0.02 ac	0.02 ac
Decommissioning old turbines	Permanent <i>per turbine: 0 ac</i>	0 ac	0 ac
	Temporary <i>per turbine: 1,600 sq ft</i>	-	-

Note: generic projects are assumed to consist of 80 MW nameplate capacity.

^a Assumes 1,999 linear ft per turbine; permanent disturbance width of 52 ft.

^b Based on 60-ft-diameter permanent disturbance area. Temporary disturbance area extends 20 feet beyond permanent disturbance area.

^c Up to six staging areas of 5–10 acres each per project.

^d Temporary disturbance of 20 x 600 ft per turbine.

The per-turbine and per-project metrics shown in Table 3-1 were averaged to arrive at a per-MW amount of permanent and temporary disturbance, which was then extrapolated to the nameplate capacities of the two program alternatives. Using the standardized metrics shown in Table 3-1, the two program alternatives would result in the estimated amount of permanent and temporary disturbance shown in Table 3-2.

Table 3-2. Extent of Disturbance Associated with the Program Alternatives

Description	1.6 MW Turbines		3.0 MW Turbines	
	Permanent	Temporary	Permanent	Temporary
Total disturbance per 80 MW project	126.1	111.32	69.5	75.0
Disturbance per MW	1.58	1.39	0.87	0.93
Alternative 1—417 MW	659	580	363	388
Alternative 2—450 MW	711	626	392	419

Note: all areas of disturbance are in acres. An 80 MW project using 1.6 MW turbines would entail 50 turbines. An 80 MW project using 3.0 MW turbines would entail 27 turbines.

Since the types of turbines that will be proposed as a part of future repowering projects are not known, the program analysis was structured to assess the greatest likely extent of impacts. Since a greater number of smaller nameplate capacity turbines would be required to achieve the total capacity of the repowering program, the program-level analysis assumed that 1.6 MW turbines would be used. That assumption is carried throughout the analyses in this chapter.

This chapter is organized into the following sections.

- 3.1, *Aesthetics*
- 3.2, *Agricultural and Forestry Resources*
- 3.3, *Air Quality*
- 3.4, *Biological Resources*
- 3.5, *Cultural Resources*
- 3.6, *Geology, Soils, Mineral Resources, and Paleontological Resources*
- 3.7, *Greenhouse Gas Emissions*
- 3.8, *Hazards and Hazardous Materials*
- 3.9, *Hydrology and Water Quality*
- 3.10, *Land Use and Planning*
- 3.11, *Noise*
- 3.12, *Population and Housing*
- 3.13, *Public Services*
- 3.14, *Recreation*
- 3.15, *Transportation/Traffic*
- 3.16, *Utilities and Service Systems*

Each impact discussion is divided into two program-level and two project-level impacts. For example, in Section 3.1, *Aesthetics*, the first impact is presented as shown below.

Impact AES-1a-1: Temporary visual impacts caused by construction activities—program Alternative 1: 417 MW (less than significant with mitigation)

Impact AES-1a-2: Temporary visual impacts caused by construction activities—program Alternative 2: 450 MW (less than significant with mitigation)

Impact AES-1b: Temporary visual impacts caused by construction activities—Golden Hills Project (less than significant with mitigation)

Impact AES-1c: Temporary visual impacts caused by construction activities—Patterson Pass Project (less than significant with mitigation)