

E.2.15 Fire and Fuels Management

A fireshed approach to analysis is taken in this section. Firesheds are regional landscapes that are delineated based on fire history, fire regime, vegetation, topography, and potential wildfire behavior. Firesheds are useful assessment tools for identifying high fire risk areas and predicting future fire behavior with the objective of reducing fire risk and protecting communities. Fire and fuels impacts are analyzed using supporting information and fire behavior model results for each fireshed as defined in Section D.15.2. Section D.15.4.3 provides an explanation of how fireshed boundaries were delineated and presents a detailed description of the computer models and data inputs, and Appendices 3A and 3B present detailed information on field data collection techniques and data coding protocols.

Firesheds along the BCD Alternative route are described in Sections E.1.15.1 and E.2.15.1, and environmental impacts and mitigation measures for the BCD Alternative are presented in Section E.2.15.2, below. Figure D.15-2 (in Section D.15 Fire and Fuels Management) shows the boundaries of the firesheds along the Proposed Project and alternative project routes. The impact analyses and conclusions below summarize the results of fireshed modeling. Section E.2.15.3 presents environmental setting, environmental impacts, and mitigation measures for the BCD South Option.

E.2.15.1 Environmental Setting

The BCD Alternative passes through two firesheds: the Boulevard Fireshed and the La Posta Fireshed, described in Section E.1.15.1. The route passes overhead through the Boulevard Fireshed for 6.4 miles (between MP BCD-0 and BCD-6.4), and overhead through the La Posta Fireshed for 13.3 miles (between MP BCD-6.4 and BCD-19.7). Figure E.2.15-1 shows the BCD Alternative and the fireshed boundaries through which it passes.

E.2.15.2 Environmental Impacts and Mitigation Measures

Environmental impacts and mitigation measures are presented below for the BCD Alternative. The objective of the mitigation measures, when applicable, is to reduce the impacts to a less than significant level. Due to the large scale of the BCD Alternative and the very high fire risk in San Diego County one of these impacts are not mitigable to a less than significant level.

Table E.2.15-1. Impacts Identified – BCD Alternative – Fire and Fuels Management

Impact No.	Description	Impact Significance
BCD Alternative (with or without BCD South Option)		
F-1	Construction and/or maintenance activities would significantly increase the probability of a wildfire.	Class II
F-2	Presence of the overhead transmission line would significantly increase the probability of a wildfire.	Class I
F-3	Presence of the overhead transmission line would reduce the effectiveness of firefighting.	Class III
F-4	Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread.	Class II

Wildfire Model Results

Burn Probability Model Results

Construction-related ignitions within the BCD Alternative corridor have the potential to escape initial attack containment and become catastrophic fires. The areas with heavy fire fuels, steep topography, and exposure to the Santa Ana winds will have a higher burn probability and a higher potential for an ignition to escape. The burn probability along the BCD Alternative route within the Boulevard and La Posta Firesheds is modeled to illustrate regions within the border zone that have a high potential to experience recurring wildfire events (see Section D.15.4.3 for methods).

The model output indicates that 2% of the border zone area has a very high burn probability, 10% has a high burn probability, 23% has a moderate burn probability, and 65% has a low burn probability. Figures E.2.15-2 and E.2.15-3 show the relative burn probabilities of areas in the Boulevard and La Posta Firesheds within the BCD Alternative border zone.

The majority of high to very high burn probability areas occur where the corridor borders or crosses fuel-laden wildlands. The moderate to very high burn probability areas occur where the corridor crosses areas of dense vegetation within CNF and BLM lands. The model output for each fireshed and a route summary is presented in Table E.2.15-2.

Table E.2.15-2. BCD Alternative Burn Probability Route Summary

Fireshed	Low	Moderate	High	Very High
Boulevard	84%	15%	1%	0%
La Posta	65%	23%	10%	2%
Route Summary	65%	23%	10%	2%

Source: Forester's Co-Op Model Output

Fire Behavior Trend Model Results

The Fire Behavior Trend model indicates that during normal weather conditions, ignitions along the transmission line would burn primarily within the eastern half of the border zone and spread further into BLM and CNF land dependent upon the fuel load. A fire started along this section of this alternative route would burn eastward into the In-Ko-Pah Mountains which are categorized as an Area of Critical Concern by the BLM. Figures E.2.15-4 and E.2.15-5 show the fire behavior trend during normal weather conditions (Map A) compared to the fire behavior trend during extreme fire weather conditions (Map B) for the BCD Alternative in the Boulevard Fireshed and the La Posta Fireshed, respectively. Table E.2.15-3 summarizes the Fire Behavior Trend Model results.

Table E.2.15-3. BCD Alternative Fire Behavior Trend Model Summary

Fireshed	Normal Weather		Extreme Weather	
	Homes at risk	Acres at risk	Homes at risk	Acres at risk
Boulevard	0	1,967	8	6,518
La Posta	0	7,702	8	38,991
Total	0	9,669	16	45,509

Under extreme weather conditions, ignitions along the transmission line would burn to the southwest spreading through BLM and Cleveland NF lands, McCain Valley, and the Manzanita, La Posta and Campo Reservations. A fire started in the CNF section of the alternative route would threaten the towns of Boulder Oaks and Buckman Springs. Interstate 8 would potentially create a fire boundary, preventing a fire from burning further southwest into the town of Boulevard unless sparks or other conditions allowed the fire to jump the width of the interstate. A wildfire in this area would also obstruct this major transportation

Figure E.2.15-1. BCD Alternative Overview Map

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Figure E.2.15-2. Boulevard Fireshed BCD Alternative Burn Probability Model
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Figure E.2.15-3. La Posta Fireshed BCD Alternative Burn Probability Model

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Figure E.2.15-4. Boulevard Fireshed BCD Alternative Fire Behavior Trend Model

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Figure E.2.15-5. La Posta Fireshed BCD Alternative Fire Behavior Trend Model
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Wildfire Containment Conflict Model Results

Tactical firefighting management decisions made during wildfires are based on assessment of fire behavior and the ability of ground and aerial firefighters to safely attack a fire. The Wildfire Containment Conflict Model is used to identify areas along the transmission line where significant conflicts with wildfire suppression efforts would be created by the introduction of the proposed overhead transmission line, defined as segments with at least 1.5 consecutive miles of very high conflict ranking (see Section D.15.4.3 for methods). The model indicates that for the length of the BCD Alternative through the Boulevard and La Posta Firesheds, 33% would present a high conflict, 52% a moderate conflict, and 15% a low conflict (Table E.2.15-4 and Figures E.2.15-6 and E.2.15-7). No significant conflict areas are identified by the model, due to the alternative route being located in a largely indefensible landscape with steep topography, abundant fuels, and a low population density at the WUI requiring fire protection.

Table E.2.15-4. BCD Alternative Wildfire Containment Conflict Summary

Fireshed	Low	Moderate	High	Very High
Boulevard	0	14%	86%	0
La Posta	19%	62%	19%	0
Route Summary	15%	52%	33%	0

Construction Impacts

Impact F-1: Construction and/or maintenance activities would significantly increase the probability of a wildfire (Class II)

Construction activities associated with the BCD Alternative would include, but not be limited to, use of heavy equipment for vegetation removal and grading, the construction of transmission tower pads and towers, and the installation of conductors. Additional heavy equipment, vehicles and tools would be used for the construction of staging areas and many miles of new roads. The use of construction equipment such as earth movers, generators, vehicles, or chainsaws along with the personnel required to construct the transmission line introduces the potential for a variety of wildfire ignition sources to surrounding vegetation fuels or combustible materials associated with project construction. Construction-related ignitions within the corridor in the Boulevard and La Posta Firesheds have the potential to escape initial attack containment and become catastrophic fires. The areas with heavy fire fuels, steep topography, and exposure to Santa Ana winds would have a higher burn probability and a higher potential for an ignition to escape.

Transmission line maintenance activities would include the periodic use of vehicles and presence of personnel for line inspections, and could also include the use of heavy equipment for conductor repairs or replacement. These activities would be far less intensive than construction activities; however, they would recur periodically over the life of the project, supplying an ongoing source of ignitions for 50 years or more.

The BCD Alternative would include 19.5 miles of overhead transmission line. The Burn Probability Model for the BCD Alternative (Table E.2.15-1 and Figures E.2.15-4 and E.2.15-5) indicates that along the length of the BCD Alternative, a total of 12% of the border zone area has a high to very high probability of wildfire recurrence. The Fire Behavior Trend Model (Figures E.2.15-6 and E.2.15-7) indicates that a random fire ignition under normal weather conditions within the BCD corridor would be driven to the southwest by the prevailing Santa Ana winds, with the potential of burning extensive areas in and around the transmission corridor and into communities within the fire path., putting zero homes and 9,669 acres at risk in two burn periods. The potential area burned would be almost six times greater during extreme fire weather conditions, putting 16 homes and 45,509 acres at risk in two burn periods.

Wildfire risk is moderate in the Boulevard and La Posta Firesheds based on wildfire history and fuels present; however, many acres and at least 16 homes would be at risk if a project-related fire were ignited during Santa Ana wind conditions.

The BCD Alternative would require construction and maintenance activities and thereby create a significant risk of a fire with potentially damaging impacts to communities, firefighter health and safety, and natural resources in the Boulevard and La Posta Firesheds. This increase can be mitigated to a less than significant level (Class II) in these moderate-risk firesheds through the implementation of Mitigation Measures F-1a, Develop and implement a Construction Fire Plan, F-1b, Ensure coordination for emergency fire suppression, F-1c, Ensure coordination for emergency fire suppression, F-1d, Remove hazards from the work area, and F-1e, Contribute to defensible space grants fund.

Mitigation Measures F-1a, Develop and implement a Construction Fire Plan, and F-1b, Finalize and implement SDG&E 2006 Draft Fire Plan for Electric Standard Practice, would reduce the number of project-related ignitions in this fireshed by requiring personnel training, fire risk management oversight, and open communications with fire agencies. These measures would also reduce the potential impact to communities and natural resources by prohibiting project construction and maintenance activities during Red Flag Warning events, as issued by the National Weather Service, which would eliminate work during extreme fire weather and have the effect of substantially reducing the potential acres burned (from more than 45,509 acres to approximately 9,669 acres) and the number of homes at risk (from more than 16 to zero) in these two firesheds. This measure would reduce the risk of homes sustaining damage in a project construction- or maintenance-related fire to a less than significant level.

Mitigation Measure F-1c, Ensure coordination for emergency fire suppression, ensures open communication channels and unobstructed emergency access roads. This measure would reduce firefighting response time in the event of an ignition, which would have the effect of reducing the potential impact to communities and natural resources.

Mitigation Measure F-1d, Remove hazards from the work area, would reduce the severity of construction- and maintenance-related ignitions that escape initial containment efforts by minimizing fuel loads within the corridor. This would reduce the potential impact to communities and natural resources in the event of a project construction- or maintenance-related ignition. The full text of all mitigation measures can be found in Appendix 12.

Mitigation Measures for Impact F-1: Construction and/or maintenance activities would significantly increase the probability of a wildfire

- F-1a Develop and implement a Construction Fire Prevention Plan.**
- F-1b Finalize and implement SDG&E 2006 Draft Fire Plan for Electric Standard Practice.**
- F-1c Ensure coordination for emergency fire suppression.**
- F-1d Remove hazards from the work area.**

Operational Impacts

Impact F-2: Presence of the overhead transmission line would increase the probability of a wildfire (Class I)

The presence of the overhead transmission line would create an ongoing source of potential wildfire ignitions for the life of the project. Line faults can be caused by such unpredictable events as conductor contact by floating debris, gun shots, and helicopter collisions; these events are rare but would be

Figure E.2.15-6. Boulevard Fireshed BCD Alternative Wildfire Containment Conflict Model
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Figure E.2.15-7. La Posta Fireshed BCD Alternative Wildfire Containment Conflict Model
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unavoidable. The Boulevard and La Posta Firesheds are moderate risk firesheds due to the presence of patchy chaparral fuels (see Fireshed Summary and Model Results, above). However, any line faults that create sparks or ignite nearby vegetation could result in a large and catastrophic wildfire, putting 16 or more households and 45,509 or more acres at risk (see Fire Behavior Trend Model results, above) if transmission line ignitions were to occur during extreme weather conditions.

Impact F-2 is considered a significant impact because certain ignition sources are unavoidable. Due to the potential for unavoidable ignitions related to the presence of the overhead transmission line to occur during extreme fire weather, the presence of the project would significantly increase the likelihood of a catastrophic wildfire (Class I). The risk of ignitions and the risk of damage from a project-related ignition can be reduced, though not to a less than significant level, through implementation of adequate line clearances and by aiding in the creation of defensible space around homes at the WUI.

Mitigation Measure F-2a, Establish and maintain adequate line clearances, would reduce the risk of vegetation contact with conductors. This measure requires a higher performance standard than the CPUC's GO 95 (see Section D.15.3.2) justified by the regular occurrence in this area of extreme Santa Ana winds that have enough force to blow trees into conductors.

Mitigation Measure F-1e, Contribute to defensible space grants fund, would reduce the potential damage to homes from project-related wildfires; however, the creation of defensible space would not guarantee structure protection during severe fire weather, and the potential for the project to ignite a catastrophic wildfire would remain significant overall.

Mitigation Measures for Impact F-2: Presence of the overhead transmission line would increase the probability of a wildfire

F-2a Establish and maintain adequate line clearances.

F-1e Contribute to defensible space grants fund.

Impact F-3: Presence of the overhead transmission line would reduce the effectiveness of firefighting (Class III)

The 19.5 miles of overhead transmission line associated with this alternative route occur in a non-defensible landscape with rugged topography. Furthermore fuels are sparse, contributing to a low level of conflict identified for these overhead segments through Wildfire Containment modeling. This alternative would not create a significant linear obstacle to fire suppression, defined as 1.5 contiguous miles of very high conflict criteria. The overhead segment would therefore have an adverse but less than significant impact on firefighting (Class III). No mitigation is required.

Impact F-4: Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread (Class II)

Project activities create the potential for the introduction and spread of non-native, invasive plants. Non-native plants are often spread by human and vehicle vectors in areas of large-scale soil disturbance and importation. These actions along with the opening of the vegetation canopy through the clearing of trees and shrubs involved with the construction and maintenance of the Proposed Project will contribute to the introduction and proliferation of non-native, invasive plants. Certain invasive plants, like cheatgrass, medusa head and Saharan mustard, can contribute to changes in wildfire frequency, timing and spread (Cal-IPC, 2007). Cheatgrass and medusa head, for example, dry out earlier in the season than native grasses creating fine fuels that are easily ignited. These fine fuels contribute to wildfires igniting

earlier in the year and an increased level of fire recurrence. In addition, non-native grasslands have a 'spotting' effect during a wildfire, where embers from these grasslands are blown ahead of the fire line, contributing to an increased rate of fire spread. Invasive annual grasses also influence fire spread by creating a fine fuel continuum between patchy, perennial shrubs allowing wildfires to expand further into otherwise sparsely vegetated wildlands (USGS, 2007). Saharan mustard creates dense stands of dry vegetation in desert scrub and coastal sage scrub communities which increases the fire fuels in these otherwise low fire risk areas (Cal-IPC, 2007). The introduction and spread of specific invasive plants within the Proposed Project ROW will adversely influence fire behavior by increasing the fuel load, fire frequency and fire spread.

The introduction of non-native plants with an increased ignition potential and rate of wildfire spread is considered a significant impact (Class II) that can be mitigated by following the prevention and management protocol outlined in Mitigation Measure B-3a, Prepare and Implement a Weed Control Plan. The Weed Control Plan requires pre-construction and long-term weed surveys and implementation of control methods that require consultation and approval of the San Diego County Agriculture Commissioner and appropriate land-holding public agencies. Invasive weeds that influence wildfire behavior are considered a high control priority (such as cheatgrass [*Bromus tectorum*], Saharan mustard [*Brassica tournefortii*] and medusa head [*Taeniatherum caput-medusae*]) along with the priority species determined by the San Diego County Agriculture Commissioner and the California Invasive Plant Council (Cal-IPC, 2007). This measure also requires that proper actions are taken to prevent the introduction of invasive plants through materials and equipment used for the construction and maintenance of the BCD Alternative transmission line.

Mitigation Measure for Impact F-4: Project activities would introduce non-native plants, which would contribute to an increased ignition potential and rate of fire spread

B-3a Prepare and implement a Weed Control Plan.

E.2.15.3 BCD South Option

The BCD South Option would connect the BCD Alternative to the Modified Route D Alternative from MP BCD-13.5 through MP I8-51 to MP MRD-2.5 in the La Posta Fireshed (see Figures E.2.1-2 and E.2.15-1). This option would replace the last 5.5 miles of the overhead BCD Alternative with 5.4 miles of overhead transmission line.

Wildfire Model Results

Burn Probability Model Results

The model output indicates that the border zone contains 2% very high burn probability areas, 10% high burn probability areas, 22% moderate burn probability areas, and 66% low burn probability areas (refer to Figure E.2.15-8). The very high burn probability areas occur north of MP 5 where dense vegetation creates an elevated fire risk.

Fire Behavior Trend Model Results

The Fire Behavior Trend model indicates that during normal weather conditions, ignitions started within the corridor would burn to the northeast within sections of the border zone. Where the border zone crosses Cleveland National Forest land, potential wildfire ignitions will burn further to the northeast through the dense wildland fuels. Figure E.2.15-9 shows the fire behavior trend during normal weather condi-

Figure E.2.15-8. La Posta Fireshed BCD South Option Burn Probability Model
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Figure E.2.15-9. La Posta Fireshed BCD South Option Fire Behavior Trend Model
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tions (Map A) compared to the fire behavior trend during extreme fire weather conditions (Map B) for the BCD South Option through the La Posta Fireshed.

Extreme fire weather conditions would cause ignitions started within the corridor to burn extensive areas to the southwest towards Interstate 8 and Morena Reservoir affecting the communities of Boulder Oaks, Buckman Springs, and Morena Village. The potential burn area from a wildfire started along the BCD South Option would be more than ten times greater during extreme Santa Ana weather conditions compared to normal conditions.

Wildfire Containment Conflict Model Results

Tactical firefighting management decisions made during wildfires are based on assessment of fire behavior and the ability of ground and aerial firefighters to safely attack a fire. The Wildfire Containment Conflict Model is used to identify areas along the transmission line where significant conflicts with wildfire suppression efforts would be created by the introduction of the proposed overhead transmission line, defined as segments with at least 1.5 consecutive miles of very high conflict ranking (see Section D.15.4.3 for methods). The model indicates that for the length of the BCD Alternative through the La Posta Fireshed, 21% would present a high conflict, 72% a moderate conflict, and 7% a low conflict (Figure E.2.15-10). No significant conflict areas are identified by the model, due to the alternative route being located in a largely indefensible landscape with steep topography, abundant fuels, and a low population density at the WUI requiring fire protection.

Environmental Impacts and Mitigation Measures

Selection of this option would not change the severity of any of the impacts for the BCD Alternative, above, because the BCD South Option would not change the level of construction or maintenance activities (Impact F-1), the length of overhead transmission line (Impact F-2), the degree of conflict with firefighting operations (Impact F-3), nor the likelihood of introducing non-native plants to the work area (Impact F-4).

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Figure E.2.15-10. La Posta Fireshed BCD South Option Wildfire Containment Conflict Model
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