

Santa Fe, New Mexico: A Coordinated Approach To Protecting The Escarpment

Leaders in Wildfire Adaptation

Introduction

The City of Santa Fe is well known for its historic resources, unique architecture, and boundless recreational, and cultural opportunities. Its arid climate makes Santa Fe prone to extreme heat, drought, and wildfire, among other natural hazards. City planners in Santa Fe are balancing several competing priorities, such as protecting community aesthetic values, managing long-term growth, improving economic development, and preserving Santa Fe's natural landscape.

Climate projections showing upward trends in the frequency and intensity of wildfire have planners and other city officials pressing to integrate climate preparedness strategies into city policies and regulations. With limited funding available, city employees have made significant headway in this regard, largely due to a culture of innovation and collaboration. The Santa Fe Fire Department is interested in how land use planning affects their ability to



Development in and around the City of Santa Fe escarpment presents challenges to planning and wildfire mitigation efforts. Photo credit: Clarion Associates

OVERVIEW

Wildfires across the American West are increasing in frequency, size, and severity. The impacts from climate change and increasing growth within the region's Wildland-Urban Interface (WUI), further exacerbate the risks from wildfires.

Urban areas in the West are increasingly responding to the challenges of wildfire risk management through unique land use planning tools which affect the pace, pattern, and scale of development. Santa Fe, New Mexico is one of five communities profiled by Headwaters Economics in a report identifying some of these innovative land use planning strategies, including:

- The establishment of an overlay district within the city's escarpment area—proposed development within the escarpment overlay district are subject to heightened building regulations and landscape wildfire risk reduction measures.
- A forest treatment program in the Santa Fe National Forest—following major wildfires in 2002, a partnership between public and private groups launched a fuels reduction project to reduce fuel loading in portions of the watershed, managing more than 5,500 acres of treatment work.

protect the citizens of Santa Fe, especially within the Wildland-Urban Interface (WUI). City planners actively integrate wildfire mitigation into their decision making framework, continually reviewing planning mechanisms through a lens of protecting people, property, and the environment from the damaging impacts of wildfire.

The city's escarpment (where the foothills climb sharply into the neighboring plateaus), is one of the city's leading priority areas to implement wildfire protection efforts. WUI specialists work side-by-side with city planners and emergency management personnel to ensure future development within this pristine landscape addresses the competing interests of protecting views and reducing wildfire risks. Through zoning tools, mitigation projects, and interdepartmental coordination, the City of Santa Fe is a leader in a unified approach to reduce the risks from wildfires.

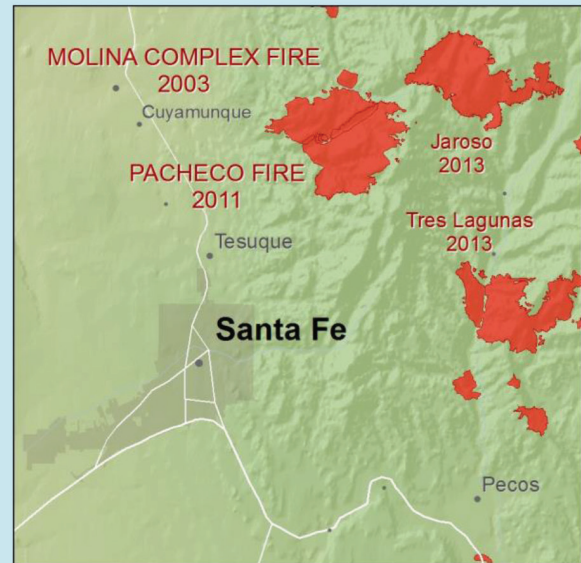
History of Wildfire in Santa Fe

Wildfire is an inherent component of Santa Fe's natural environment. The Santa Fe National Forest borders the city to the east, and is also approximately five miles to the west of the city. Because of its close proximity to forested lands, the City of Santa Fe is susceptible to wildfires and to the indirect impacts of fires that occur outside the city limits. The city has been fortunate to have avoided major wildfires within its municipal boundaries; however, it has experienced the impacts of wildfires within Santa Fe County and beyond. Though not explicitly within the city boundaries, there have been more than a dozen fires, each burning more than 100 acres, on record within Santa Fe County since 1970.

Nearly 20 miles west of the City of Santa Fe, two of the largest fires in New Mexico history burned more than 200,000 acres collectively. The 2011 Las Conchas Fire alone burned 156,593 acres and destroyed 63 homes.¹ The Cerro Grande Fire, in 2000, burned more than 47,000 acres, destroyed 280 homes, and 40 lab buildings at the Los Alamos National Laboratory. That fire was also recognized as the first in U.S. history with more than \$1 billion in documented economic impacts. In 2003, the Molina Complex Fire burned within 10 miles of the City of Santa Fe. Started by lightning, the fire burned nearly 7,000 acres and threatened around 300 structures.²

With its increasing temperatures and more severe droughts expected in the future, the City of Santa Fe expects wildfire to remain one of its most immediate concerns. The city has taken a systematic view to

SANTA FE, NM Major Wildfires, 2000-2013



The two largest wildfires are described below.

MOLINA COMPLEX FIRE, 2003

6,804 Acres

Total Cost	\$4M	Structures Threatened	248
Total Personnel	351	Structures Damaged	0
Firefighters Injured	3	Evacuations Caused	No

The Molina Complex fire was caused by lightning and threatened the Nambe Pueblo watershed and sacred tribal sites.

PACHECO FIRE, 2011

10,114 Acres

Total Cost	\$10M	Structures Threatened	34
Total Personnel	728	Structures Damaged	0
Firefighters Injured	8	Evacuations Caused	No

An escaped campfire caused the Pacheco fire, which threatened the City of Santa Fe Watershed. The fire also threatened the Nambe and Tesuque tribal land, communication sites, power lines, Santa Fe ski area, and closed a state highway and park.

managing wildfire risk, including remarkable interdepartmental coordination, creation of task forces and citizen advocate committees, and continual review and maintenance of its policies, procedures, and regulations.

Impacts of Wildfire on the City of Santa Fe

Hundreds of other fires have occurred in and around Santa Fe, with varying impacts. Those direct and indirect impacts include the following:

- **Air Quality.** Heavy smoke and particulates during a wildfire event fill the air, and depending on the wind speed and direction, can inundate a community for days or even weeks.
- **Watershed.** The Santa Fe watershed, supplying about 40 percent of the city's water, is located in the Santa Fe National Forest. Wildfires that occur nearby correspondingly threaten the quality and supply of city water resources.³ For instance, the Cerro Grande Fire significantly affected the nearby City of Los Alamos's watershed, resulting in water runoff levels more than 200 percent greater than pre-fire averages and diminishing surface water quality.⁴
- **Recreation and tourism.** Large catastrophic wildfires reduce the tourist draw to the City of Santa Fe and the regional draw for recreation activities. For example, the Pacheco Fire in 2011 resulted in the closure of the Santa Fe National Forest, Valles Caldera National Preserve, and nearby recreation sites such as Hyde Memorial State Park and Morphy Lake State Park, popular destinations with fisherman and



Much of the residential construction in Santa Fe's forested areas is adobe or similar composite with flat roofs—an inherently fire-resistant type of construction.

Photo credit: Clarion Associates

hikers.⁵

- **Costs for rehabilitation and restoration.** Following suppression of a major fire, the city bears a share of the burden to restore the built and natural environment to its pre-fire state. For example, it is estimated that for a high-severity wildfire burning more than 7,000 acres near the municipal watershed, the cost to the city for rehabilitation activities, including fees associated with water treatment, sediment regulation, initial fire suppression, and land restoration, are close to \$22 million.⁶

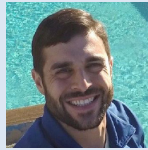
How Santa Fe Is Addressing Wildfire Risk Through Land Use Planning and Regulations

The City of Santa Fe has gone to great lengths to protect its people and property from the impacts of wildfire. This is evidenced by the amount of documentation and planning during the past decade to increasingly emphasize

wildfire as part of the common dialogue among city officials, and to draw linkages from wildfire to other citywide policies addressing climate change, sustainability, and community resilience.

Escarpment Overlay District

An overlay district sets standards that apply to properties within a defined overlay boundary that often supersede the underlying base standards within a given zoning district. One of the most instrumental land use mechanisms for managing wildfire mitigation in Santa Fe is its Escarpment Overlay District. The overlay district was established to protect viewsheds along the ridgetops and foothills along the escarpment as a major community asset. In doing so, the overlay also reduces wildfire risk and protects the valuable watershed by limiting development. The escarpment overlay covers approximately 500 acres within the city, and contains most of the high wildfire risk areas. Development applications in the escarpment



Noah Berke
*conducts individual
site inspections of
homes proposed
within Santa Fe's
Escarpment District, including
working with homeowners to
manage vegetation while also
protecting the scenic viewshed.*

scrutiny, and the city performs a more thorough site assessment for wildfire risk reduction for all new development applications.

Noah Berke, a Senior Planner with the City of Santa Fe, spends a significant amount of his time managing development and conducting site assessments within the escarpment. During his site assessments, Berke works with applicants to manage forested areas while also protecting visual aesthetics. For example, the city may reduce the required trees in the escarpment if necessary to reduce wildfire risk. Landscaping in the escarpment overlay is treated differently than other areas of the city, requiring vegetation with a lower burn risk. The mapping of the escarpment overlay district is an essential component to its functionality, and new modeling is currently being reviewed for future mapping updates.⁷

Hazard Mitigation Plan and the Community Wildfire Protection Plan

The City of Santa Fe adopted a Hazard Mitigation Plan in October 2014. The plan identifies risk, vulnerabilities, and mitigation actions related to wildfires. Berke and other Santa Fe planners are currently reviewing the Hazard Mitigation Plan and trying to

merge wildfire-related content into the General Plan (which states the community's goals, policies, and objectives) and the Land Development Code (which implements the General Plan by regulating development). The city also partnered with Santa Fe County to prepare the 2008 Community Wildfire Protection Plan (CWPP). CWPPs are local plans that are designed to specifically address a community's unique conditions, values, and priorities related to wildfire risk reduction and resilience. CWPPs can vary in scope, scale, and detail, but there are minimum requirements for their development and adoption.⁸ The 2008 CWPP describes risk in further detail, and provides recommendations for projects to reduce fuels and raise awareness of the wildfire threat to individual property owners.

and identify areas for wildfire risk reduction, especially in the escarpment overlay. Santa Fe has long considered adoption of the WUI Code—a more rigorous set of building and site standards than otherwise applied through International Building and Fire Codes. Advocates for a WUI Code in Santa Fe believe the higher level standards will help disperse costs and risks associated with wildfire to individual property owners, and are conducting further analysis to develop political support. The city's land use planners are working with WUI specialists to integrate components of a WUI code into the Land Development Code. In the meantime, the Santa Fe Fire Department also collects parcel-level data for homes that have been assessed for their wildfire risk. This level of detail allows for more accurate analysis and planning for future WUI activities.

“We’ve been shifting from what was previously a sole focus on a cohesive response in the WUI to more emphasis on land use and getting people vested in their own protection.”

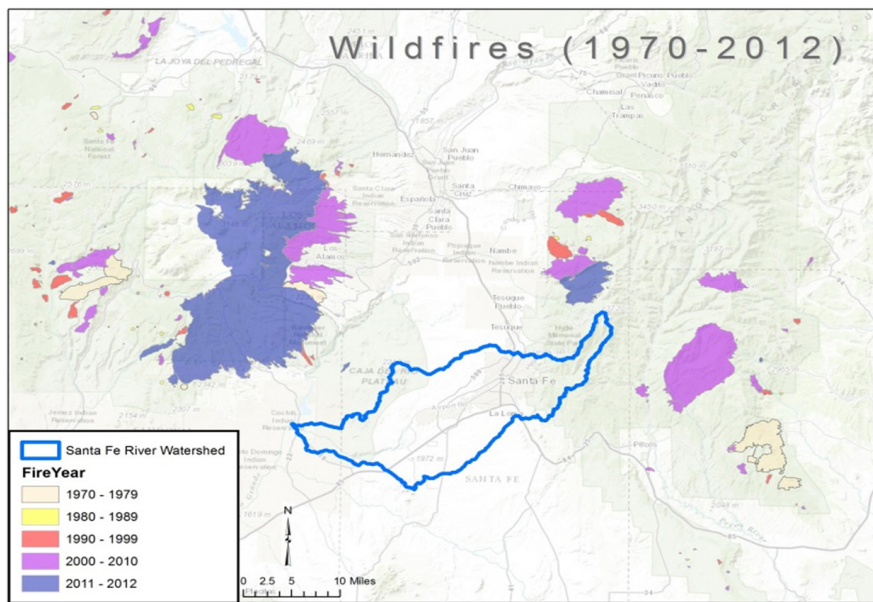
Eric Litzenberg, City of Santa Fe Fire Chief

Consideration of a Wildland-Urban Interface (WUI) Code

WUI codes are specifically designed to mitigate the risks from wildfire to life and property, primarily by providing a set of wildfire mitigation development standards, including structure density and location, building materials and construction, vegetation management, emergency vehicle access, water supply, and fire protection. The city's fire department employs WUI specialists that work closely with land use planners to manage risk

Managing the Forest to Protect Santa Fe's Watershed

The City of Santa Fe's water supply is provided by watersheds located in the Santa Fe National Forest. Accordingly, protecting the watershed from catastrophic wildfire is a top priority for city water officials. As an additional protective measure, the municipal watershed has been closed to public access since 1932.⁹ Following the Cerro Grande Fire in 2002, the City of Santa Fe established a forest treatment program in the Santa Fe



The map above from the City of Santa Fe Municipal Watershed Investment Plan illustrates the proximity of wildfires near the Santa Fe River Watershed (outlined in blue).

National Forest to reduce the fuel load in portions of the watershed. This program required a concerted effort by partnering agencies including the U.S. Forest Service, the Santa Fe Watershed Association, the Nature Conservancy, the City of Santa Fe Watershed Division, and other private and public groups. Since the program began, the U.S. Forest Service has treated more than 5,500 acres within the watershed.¹⁰

Although funding for the original fuels treatment program has since expired, the city now collects revenues from water utility rate payers (local water customers). The watershed division estimates that a 10,000- to 40,000-acre fire impacting some portion of the watershed could result in suppression and rehabilitation costs up to \$48 million, and dredging and disposing of reservoir sediment costs up to \$240 million.¹⁰ At those numbers, the City of Santa Fe realizes the immediate benefits of continued fuel treatment and forest management.

Santa Fe Prepares for Wildfire Risks and the Impacts of Climate Change

In 2014, and in response to growing concerns regarding present and predicted impacts from climate change, Santa Fe Mayor Javier Gonzales assembled a climate action task force. The task force includes elected officials, climate experts, and other representatives from the community. With more frequent and intense droughts expected in the future, this task force addresses various concerns related to the adverse impacts from climate change, including the health of the neighboring forest, changing precipitation patterns, and increasing wildfire potential. The city also partnered with the county and the Bureau of Reclamation to prepare a climate change assessment of vulnerabilities and adaptation alternatives. That 2013 study focused on water resources, but recognized wildfire as a major issue within the watershed.¹² The city also has a Sustainable Santa Fe Commission comprised of citizens that developed the Sustainable

Santa Fe Plan, which outlines opportunities to enhance the city's resiliency against climate change and increase environmental stewardship efforts. The city works with area businesses and residents to implement this plan, as well as identify areas for future actions to improve overall community sustainability.¹³

Key Takeaways

A culture of collaboration and innovation. The City of Santa Fe epitomizes the concept of interdepartmental coordination. As part of this, the fire department, with assistance from the planning department, is interested in partially shifting their focus away from response time in the WUI to land use and property owner support. Internal cooperation and interagency communication is part of city staff culture in Santa Fe. Community input is also a high priority and involves a robust early neighborhood notification program and regular communication of wildfire-related activities. The city's elected and appointed officials support initiatives to improve the resilience of Santa Fe, recognizing climate change as an indicator of future hazard risk.

Balancing multiple objectives. The City of Santa Fe comprehensively reviews proposed ordinances, planning documents, and other citywide policies or regulations for opportunities to incorporate wildfire risk reduction measures. One example is the city's Escarpment Overlay District, which was primarily established to protect the aesthetic values of the surrounding hillsides from incompatible development. Over time, administration of the overlay has adapted to include a



The City of Santa Fe and their partners have been actively engaged in protecting crucial regional watersheds, such as the McClure Reservoir.

Photo credit: Molly Mowery, Wildfire Planning International

more refined focus on wildfire mitigation. Additionally, the city is pursuing other updates to its land development regulations as a way to implement principles identified in the hazard mitigation plan and the CWPP. Ongoing maintenance of the city's policy and regulatory documents is essential to maintain political support for wildfire risk reduction and to educate Santa Fe residents about the inherent dangers of living in the WUI. In this way, the City recognizes the synergies between planning for wildfire risks while meeting the other resource needs of its residents.

KEY CONTACTS

Noah Berke, CFM
Senior Planner
City of Santa Fe Land Use Department
200 Lincoln Avenue
Santa Fe, NM 87504
505-955-6647
nlberke@ci.santa-fe.nm.us

David Silver, M.S.
Emergency Management Director
City of Santa Fe
200 Lincoln Avenue
Santa Fe, NM 87504
505-955-6537
dmsilver@ci.santa-fe.nm.us

Porfirio Chavarria
Wildland Urban Interface Specialist
City of Santa Fe Fire Department
200 Murales Road
Santa Fe, NM 87501
505-955-3119
pnchavarria@ci.santa-fe.nm.us

City of Santa Fe General Plan 1999	http://www.santafenm.gov/general_plan_1999
Sustainable Santa Fe Plan	http://www.santafenm.gov/sustainable_santa_fe_plan
Other Resources	
City of Santa Fe Climate Action Task Force	http://www.santafenm.gov/climate_action_task_force
City of Santa Fe Water and Climate Change webpage	http://www.santafenm.gov/climate_change
City of Santa Fe Watershed Association, Climate Adaptation	http://www.santafewater-shed.org/climate-adaptation/
City of Santa Fe Fire Department Wildland Fire Preparedness webpage	http://www.santafenm.gov/wildland_fire_preparedness
City of Santa Fe Wildfire Preparedness Day	http://www.santafenm.gov/news/detail/fire_department_encouraging_neighborhoods_to_join_national_wildfire

Key Resources

Websites	
Land Use	http://www.santafenm.gov/land_use
Fire Department	http://www.santafenm.gov/fire_department
Emergency Management	http://www.santafenm.gov/emergency_management
Long Range Planning	http://www.santafenm.gov/long_range_planning
Documents	
Santa Fe County Community Wildfire Protection Plan	http://www.emnrd.state.nm.us/SFD/FireMgt/documents/SantaFeCounty-CWPP2.pdf
Hazard Mitigation Plan	http://www.santafenm.gov/hazard_mitigation_plan_1
Santa Fe Land Development Code	http://clerkshq.com/default.ashx?clientsite=SantaFe-nm

References

1. Las Conchas Fire Factsheet. 2012. Southwest Fire Consortium. Available online: From the City of Santa Fe, Hazard Mitigation Plan. Available online: http://www.santafenm.gov/hazard_mitigation_plan_1.
2. Farmington District Fire Management Plan. 2010. Available online: http://www.blm.gov/style/medialib/blm/nm/programs/fire/fire_management_plans/farmington_fmp.Par.47436.File.dat/ffo_fmp.pdf.
3. City of Santa Fe, Hazard Mitigation Plan. Available online: http://www.santafenm.gov/hazard_mitigation_plan_1.
4. Los Alamos National Laboratory, Cerro Grande Fire Impacts to Water Quality and Stream Flow near Los Alamos National Laboratory: Results of Four Years of Monitoring report Available online: https://www.env.nm.gov/swqb/Wildfire/4.CerroGrande-Postfire_Report.pdf.
5. Examiner. June 30, 2011. Available online at: <http://www.examiner.com/article/las-conchas-wildfire-closes-new-mexico-s-santa-fe-national-forest>.

6. From the City of Santa Fe Municipal Watershed Plan, 2010-2029. Available online: https://www.santafenm.gov/municipal_watershed_plan.
7. The city of Santa Fe's Land Development Code. Available online: <http://clerkshq.com/default.ashx?clientsite=Santafe-nm>. The Escarpment Overlay District is Section 14-5.6 of the Land Development Code.
8. As described in Title I of the Healthy Forest Restoration Act (HFRA) of 2003 that authorizes communities to draft and implement a CWPP.
9. From the History of the Santa Fe River Watershed. Available online: http://www.santafenm.gov/upper_watershed_history.
10. From the Municipal Watershed Investment Plan. Available online: http://www.santafenm.gov/municipal_watershed_investment_plan.
11. From Municipal Watershed Investment Plan, Avoided Costs vs. Program Costs. Available online: http://www.santafenm.gov/municipal_watershed_investment_plan.
12. Water and Climate Change. Available online: http://www.santafenm.gov/climate_change.
13. Available online: <https://sustainablesantafe.wordpress.com/the-commission/>.