



Final Recommendations to Reduce Wildfire Risk: Baker County, Florida



PREPARED BY:
Wildfire Planning International, LLC
Wildland Professional Solutions, Inc.

November 2020

ABOUT

Community Planning Assistance for Wildfire Program

The Community Planning Assistance for Wildfire (CPAW) program works with communities to reduce wildfire risks through improved land use planning. The CPAW program is a partnership between Headwaters Economics and Wildfire Planning International. It is funded by grants from the USDA Forest Service and private foundations.

Author Information

CPAW engages qualified professionals with expertise in land use planning, forestry, risk modeling, and fire behavior. This report was produced by:

Molly Mowery, AICP – Wildfire Planning International, LLC

Kelly Johnston, RPF, FBAN – Wildfire Professional Solutions, Inc.

For questions related to this report, please contact: info@wildfireplanning.com

Acknowledgments

CPAW relies on collaboration with local stakeholders to provide meaningful feedback throughout the process. Our team would like to thank the agencies, organizations, and individuals who contributed their time to our CPAW activities in the Baker County community, including Chief B. Trevor Nelson, Assistant Chief Peter Quinley, Tanya Anderson, Doc Bloodworth, Lara Dietrich, Doug Moore, Terry Jenkins and others who attended CPAW site visits or provided feedback into the CPAW process in Baker County.



P.O. Box 7059

Bozeman, MT 59771

<https://planningforwildfire.org>

Cover photo credit: Molly Mowery, Wildfire Planning International

In accordance with Federal law and the U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

CONTENTS

EXECUTIVE SUMMARY	1
PART 1. OVERVIEW	3
COMMUNITY CONTEXT	4
PLANNING CHALLENGES AND OPPORTUNITIES	6
PART 2. RECOMMENDATIONS	9
UNDERSTANDING WILDFIRE RISK	9
1. UPDATE COMPREHENSIVE PLAN’S WILDFIRE GOALS, OBJECTIVES, AND POLICIES.....	13
2. INCREASE WILDFIRE RISK REDUCTION IN THE STRUCTURE IGNITION ZONE	16
3. ESTABLISH MINIMUM WATER SUPPLY REQUIREMENTS AND EMERGENCY ACCESS FOR NEW SUBDIVISIONS	18
STRATEGIES FOR IMPLEMENTATION	21
CONCLUSION	22

ACRONYMS

ADU	Accessory Dwelling Unit
BRIC	Building Resilient Infrastructure and Communities
CPAW	Community Planning Assistance for Wildfire
CWPP	Community Wildfire Protection Plan
FAC	Fire Adapted Communities
FEMA	Federal Emergency Management Agency
ISO	Insurance Services Office
HOA	Homeowners Association
LDR	Land Development Regulations
LMS	Local Mitigation Strategy
NFPA	National Fire Protection Association
PDM	Pre-Disaster Mitigation
SIZ	Structure Ignition Zone
SWRA	Southern Wildfire Risk Assessment
USDA	United States Department of Agriculture
WUI	Wildland-Urban Interface

EXECUTIVE SUMMARY

The South is one of the most rapidly growing regions of the United States, a trend that is driven by migration from other U.S. regions and abroad, and by natural increase. The result of this growth is the expansion of urban areas into forests and other natural areas, creating areas referred to as the wildland-urban interface (WUI).¹

Baker County is no exception to these trends. The Baker County Community Wildfire Protection Plan (CWPP) estimates that 96% of the total County population lives within or near the wildland-urban interface (WUI), an area that results in increased risk to people and property during a wildfire event. Further, the population of Baker County is anticipated to continue growing given its proximity to the expanding Jacksonville metropolitan area. These factors underscore the importance for integrating land use policies and regulations into the County’s approach toward being a fire adapted community—a community that takes actions to prepare for and adapt to the inevitable processes of wildfires.

To support these fire adapted activities, Baker County applied to the Community Planning Assistance for Wildfire (CPAW, pronounced “SEE-PAW”) program, a national program that provides professional land use planners, foresters, and fire behavior specialists to recommend improvements to local policies and codes. For the past year, the CPAW team worked with the Baker County Planning Department, Baker County Fire Rescue, Florida Forest Service, and members of the Baker County Fire Adapted Communities Work Group to learn about the local challenges and opportunities to address future development in the WUI. As a final outcome, CPAW has prepared three recommendations for Baker County to consider (see Table 1 for a summary). Implementation of any CPAW recommendation is voluntary and at the discretion of the local jurisdiction.

Recommendation	Why This Matters	Key Points
1. Update Comprehensive Plan’s Wildfire Goals, Objectives, and Policies	Setting a policy foundation for how the County can grow while ensuring safe and resilient development guides implementation priorities for wildfire regulations and other activities.	<ul style="list-style-type: none"> Update the Future Land Use and Public Facilities Elements to create clear, consistent, and technically relevant goals, objectives, and policies related to wildfire and fire adapted communities
2. Increase Wildfire Risk Reduction in the Structure Ignition Zone	Evidence-based science indicates that structure losses to wildfire are directly attributed to the ignition susceptibility conditions of the structure and the immediate surrounding area out to 100 feet of the structure (referred to as the Structure Ignition Zone, or SIZ).	<ul style="list-style-type: none"> Locally adopt Chapter 17 of the Florida Fire Prevention Code Adopt <i>NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire</i> Align and standardize the voluntary Structure Ignition Zone (SIZ) mitigation program with regulations

¹ Hermansen-Baez et al. *Wildland-Urban Interface: Key Issues* 2009 (Accessible at: <https://www.urbanforestrysouth.org/products/fact-sheets/wildland-urban-interface-fact-sheets/key-issues/index.html>)

TABLE 1. SUMMARY OF RECOMMENDATIONS

Recommendation	Why This Matters	Key Points
3. Establish Minimum Water Supply Requirements and Emergency Access for New Subdivisions	Large WUI fire incidents will require a significant water supply, however, a shortage of emergency fire water supply is a significant concern for the County. In addition, adequate access routes are critical for both first responder safety and efficient evacuation planning for the public.	<ul style="list-style-type: none">• Capitalize on the current opportunities for dry hydrants in storm retention ponds• Require cisterns to be installed as part of new development• Adopt <i>NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Subdivision Areas</i>• Adopt <i>NFPA 1142 Standard on Water Supply for Suburban and Rural Firefighting</i>

PART 1. OVERVIEW

Since its founding in 2015, the national CPAW program has assisted dozens of communities across the U.S. in reducing wildfire risk by providing technical land use planning assistance. The program is funded by the U.S. Forest Service and private foundations, which allows communities to participate in the program and receive assistance at no direct cost. CPAW teams bring expertise in planning, forestry, wildfire hazard, and other related skills and provide a set of final recommendations for implementation by each jurisdiction receiving assistance. Participation in CPAW is voluntary, and implementation of any CPAW recommendations is fully under the authority of the local jurisdiction responsible for land use decisions.

Baker County was selected as one of six communities to receive technical assistance by the CPAW program during 2020. The scope of CPAW's assistance included the following activities:

- Review and analysis of land use and wildfire-related documents and materials from local and state resources to understand current policies and regulations that affect wildfire and land use decisions.
- An in-person site visit in February 2020 to learn about local conditions, meet with stakeholders, and present CPAW program concepts to the County.
- Ongoing communications with the Baker County steering group members to discuss challenges and opportunities and receive input on wildfire planning topics.
- A half-day virtual training by CPAW team members on *Wildfire Ignition Susceptibility Basics and Community Planning Tools* to educate local steering group and Fire Adapted Community members on wildfire risk and land use solutions.



Figure 1. Baker County Wildfire Specialist Tanya Anderson (left) talks about local activities with CPAW team member Kelly Johnston during a site visit in February 2020.

This report is a culmination of the CPAW process with Baker County. Part 1 provides an overview of the community context relevant to the CPAW process to better understand the County's WUI, fire environment, and local development trends. This information is synthesized in the section on planning challenges and opportunities. Part 2 provides additional context on wildfire risk to help frame the discussion on local risk reduction and three recommendations to support wildfire risk reduction in Baker County. These recommendations are primarily intended for implementation by the Baker County Planning Department and Baker County Fire Rescue, and will be supported through collaboration with other agencies and community members such as the Fire Adapted Communities Work Group.

Community Context

Baker County is located in northeast Florida (Figure 2) and has a land area of 585.3 square miles.² The St. Mary’s River, located along the County’s northeast boundary, defines the boundary between Baker County and the state of Georgia.

Demographics & Housing

Baker County’s current population of 29,210 includes the City of Macclenny (7,362)—the county seat, and the Town of Glen St. Mary (480).³ The County ranks 52nd out of 67 for most populous county in Florida. The County’s population density has increased from 38 persons per square mile (2000) to 47.2 persons per square mile (2018). Despite this increase in population density, the County continues to maintain its rural character compared to the the State of Florida, which is developed at an average of 392.7 persons per square mile.⁴



Figure 2. Locator map of Baker County, Florida.

TABLE 2. DEMOGRAPHIC INFORMATION IN BAKER COUNTY	
Category	Statistic
Population Estimate (2019)	29,210 people ^a
Population Growth (2010-2019)	+7.7%
Population Projection (2040)	38,000 people ^b
Population Density	47.2 persons per square mile ^b
Median Age	37.1 years ^a
Median Family Income	\$62,200 ^b
Total Number of Housing Units	10,215 units ^a
Number of New Homes Permitted (2019)	66 homes
Number of New Mobile Homes Permitted (2019)	30 mobile homes
Average Household Size	2.92 persons per household ^a
Owner-Occupied Housing Unit Rate	75.6% ^a
Median House Value	\$120,900 ^a
Total Employment	5,782 ^a
<i>Sources:</i>	
<i>a. U.S. Census Bureau QuickFacts. Accessed August 2020.</i>	
<i>b. Baker County 2040 Comprehensive Plan Data & Analysis, September 17, 2019.</i>	

² Baker County 2040 Comprehensive Plan Data & Analysis, September 17, 2019

³ Ibid.

⁴ Ibid.

More than half (54.1%) of workers residing in Baker County work outside of the County. Major employment sectors for industry within Baker County include: government (35%), trade, transportation and utilities (33.7%), education and health services (10.8%), and leisure and hospitality (7.5%).

Forty-one percent of all Baker County households fall into the categories of low, very low, or extremely low income households based on the US Department of Housing & Urban Development Income Limits Summary; this is a nine percent increase from 2010.⁵ As a result, the provision of affordable housing remains a goal for Baker County. Much of this need is met by mobile homes; approximately 50% of all building permits for residential units are issued for mobile homes.⁶

Land Use and Development

Eighty-seven percent of the land area in Baker County is designated as Conservation or Agricultural (AG A or AG B). Conservation lands include Okefenokee National Wildlife Refuge, Osceola National Forest, John Bethea State Forest, and St. Mary's Shoals Riverside Park. Combined, these Conservation lands comprise 170,751 acres (46%) of the total land area of Baker County. The timber industry is the primary use within the Agriculture A land use designation.⁷

Despite many areas being designated as Conservation lands, the County has the potential to grow. As of 2019, there were approximately 46,000 acres of vacant land zoned as AG B, very low density residential, or medium density residential that could be developed with a total maximum development potential of 11,657 dwelling units.⁸ Development potential within the Agriculture A land use designation represents an additional 13,655 dwelling units (at one unit per 10 acres). Excluding AG A, there are many large tracts of undeveloped lands in close proximity to Interstate 10, which could be attractive for development as master planned communities for those residents seeking access to commercial centers and easier commuting options.

Fire Environment

Baker County is dominated by fire dependent ecosystems, which were maintained by regularly occurring surface fire until the 1950's when effective fire suppression began. The exclusion of fire from these ecosystems resulted in increased fuel loadings (Figure 3) that supported aggressive, high intensity crown fire.

Wildfires in Baker County can occur year-round, however, Baker County sees the highest number of fires between April and June.⁹ Human-caused ignitions account for 73% of the County's wildfires, while escaped debris burning fires account for both the highest number of fires and the greatest area burned each year.

⁵ Baker County 2040 Comprehensive Plan Data & Analysis, September 17, 2019

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ Baker County Local Mitigation Strategy, 2015



Figure 3. Comparison of a fire-maintained forest ecosystem to a fire excluded forest ecosystem in Baker County

Baker County has experienced a number of significant fires in recent history, including: an Osceola National Forest prescribed fire, which escaped in 2008 and burned 1,000 acres; the April 2012 County Line fire that burned 35,000 acres, and; the 2017 West Mims Fire that burned a total of 152,515 acres in Georgia and Florida, with 10,075 of those acres burned in Baker County. The Bugaboo Fire, which started in May 2007 and was part of the Florida Suwannee Fire Complex disaster declaration, was the most notable Baker County fire in recent history. Although no homes were destroyed, the Bugaboo Fire burned to a total size of 123,014 acres in Florida and forced the evacuation of 300 homes.

Baker County has also had several close calls in recent history with large fires burning into the adjacent Okefenokee National Wildlife Refuge in the northeast corner of the County, such as the 2007 Big Turn-Around Fire which burned 560,000 acres, and the 2011 Honey Prairie Fire which burned 310,000 acres. With 85% of Baker County's population located in the WUI Community Protection Zone (as identified in the Baker County CWPP), County residents have been fortunate not to have lost structures with the significant fire activity that has occurred.

Planning Challenges and Opportunities

To help inform its recommendations, CPAW worked with local stakeholders to understand challenges and opportunities related to land use planning and wildfire.

Challenges

- State and federally managed lands throughout the County are well-maintained for fire management in terms of hazardous fuel reduction and maintenance of a community buffer between parks and residential land uses. However, other areas such as Shoals Park, do not always maintain a managed fuel break or other means of separation between residential areas and park property, increasing the risk to landowners in the event of a wildfire.

- Reviews of subdivision applications currently do not include a robust assessment of WUI hazard and fire protection. For example, there is currently no requirement for minimum water flow for wells, no enforcement for dry hydrants, and no landscaping plan required to address flammable vegetation (Figure 4). As a result, some areas of the County have developed in a low-density, dispersed development pattern with unimproved road access, limited water supply, or other factors that may make an effective response more difficult.
- In addition, while the County enforces a building code that applies to all structures, there are some exceptions. For example, Agricultural use structures are exempt from meeting the building code when the primary use is farming. In some cases, this exemption has resulted in the creation of accessory dwelling units (ADUs) that are inhabited but may go unregulated, which can contribute to an increase of structure exposure and public safety threats during a wildfire.



Figure 4. A recent fire (2019) that started in the MacClenny South subdivision with heavy fuels along the access road shows how quickly public safety can become compromised. Image credit: Baker County Fire Rescue/ Chief Trevor Nelson

Opportunities

- Baker County Fire Rescue plays an active role in keeping the County's CWPP up-to-date and participating in the national Firewise/USA® program. Local activities include providing free property assessments for residents, working with recognized Firewise communities, hosting educational activities, and coordinating across agencies to implement risk reduction strategies. For example, during the 2007 Bugaboo Fire, first responders were successful in protecting the community of Taylor through the 30-foot wide and 11-mile long control line around the community, which was a direct outcome of the County's CWPP.



Figure 5. Updating codes, plans, and local regulations is an important part of a comprehensive approach toward community fire-adaptation.

- The timing of the CPAW process aligns well with County policy and regulatory updates, including the Comprehensive Plan, future updates to the Local Development Regulations, and alignment with the CWPP update. In addition, the County is able to locally amend the Florida State Building Code and Fire Prevention Code with more restrictive measures, if applicable. These plan and code updates provide the County with opportunities to voluntarily implement CPAW recommendations and advance fire-adapted community activities in the near-term.
- Other efforts, such as an active prescribed fire program, hazardous fuels reduction activities, education and outreach, and other fire-adapted communities strategies support a comprehensive approach toward wildfire mitigation (Figure 5). The Baker County Fire Adapted Communities Work Group also serves as an important multi-disciplinary, collaborative working group to support long-term implementation and integration of wildfire concepts into planning activities.

PART 2. RECOMMENDATIONS

Part 2 provides an overview of understanding wildfire risk to provide a helpful context on the relationship between wildfire risk and land use planning. Following this overview, CPAW has developed three recommendations to help Baker County reduce wildfire risk at multiple scales by focusing on policy development and implementation of appropriate planning tools through regulations.

Understanding Wildfire Risk

Wildfire risk can be visualized as a triangle consisting of three components:

- **Likelihood** of a wildfire occurring based on topography, weather, and ignition patterns; this can also include ignition sources from hazardous land uses (e.g., sawmills or propane storage facilities);
- Predicted **intensity** of a wildfire (usually measured in flame length) based on vegetation type and weather conditions.
- **Susceptibility** of values (for land use planning purposes, values consist of communities, structures and infrastructure).

Together, these components complete the wildfire risk triangle (Figure 6).



Figure 6. Component of the wildfire risk triangle

Land use planning largely focuses on mitigating the susceptibility portion of the wildfire risk triangle. Two important susceptibility inputs that should be evaluated to appropriately determine wildfire risk in the context of land use planning are: 1) the location and density of structures and infrastructure; 2) the ignition potential of individual structures and infrastructure.

Defining the Wildland-Urban Interface (WUI)

A general WUI definition used across all policies, plans, and regulations should account for the “set of conditions” where vegetation (wildland fuels) and structures or infrastructure (built fuels) are influenced by weather and topography to allow fire to ignite and spread through the WUI environment. To provide the basis for a true understanding of the risk that Baker County faces, the WUI should be more accurately defined as:

Any developed area where conditions affecting the combustibility of both wildland and built fuels allow for the ignition and spread of fire through the combined fuel complex.

Southern Wildfire Risk Assessment Portal

The Southern Wildfire Risk Assessment (SWRA) provides a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in 13 southern states, including Florida. Baker County uses the SWRA (accessed through the Southern Wildfire Risk Assessment Portal, or SouthWRAP) to help prioritize areas where tactical analyses, community interaction and education, or mitigation treatments might be necessary to reduce risk from wildfires. The SWRA can be of further use to the County with regards to providing wildfire exposure information as a decision support tool for the regulatory process.

Characteristic Fire intensity

The SWRA Characteristic Fire Intensity layer (Figure 7) can offer a spatial reference of the relative intensity exposure that a specific area. Or parcel may be exposed to. This can support the rationale for fuel mitigation requirements within new developments and along access and egress routes. It can also be used as a decision support tool for Structure Ignition Zone (SIZ) and building regulatory requirements in new developments, as well as support voluntary SIZ mitigation programs in existing developments.

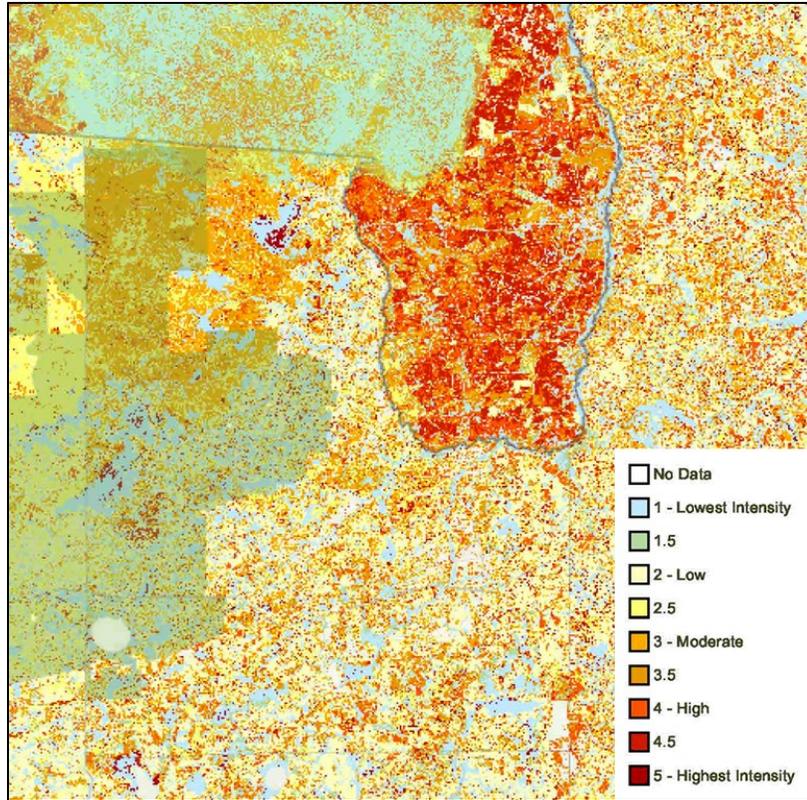


Figure 7. The SWRA Characteristic Fire Intensity map layer for Baker County

Wildland Urban Interface

The SWRA also offers the identification of the Wildland Urban Interface (Figure 8), based on housing density, or where structures meet or intermix with wildland fuels. This can support the rationale for where the County can expect wildfire to impact current development and therefore provide a decision support tool for defining the locations where regulatory requirements can support mitigation of existing development.

Specifically, the housing density locations identified in the WUI map across the entire unincorporated area of Baker County have the potential to be impacted by either direct fire intensity exposure (Figure 6) and airborne ember exposure. This means that every building within unincorporated Baker County is in the WUI, as it is defined in this document. Therefore, any policies or regulations implemented to reduce the risk of structure ignition, or increase the success of suppression, should apply to any new development within the County.

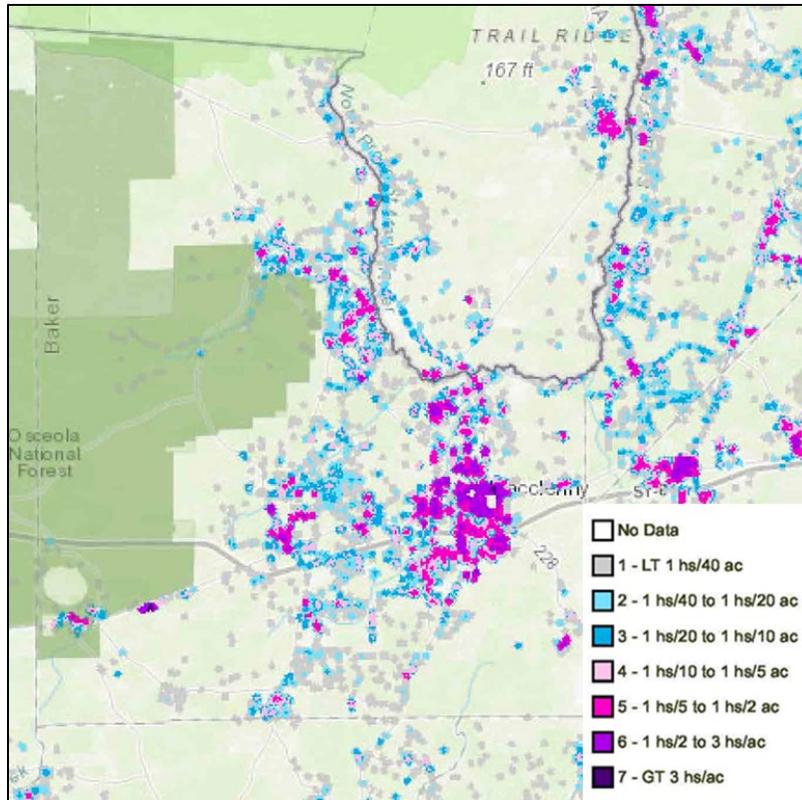


Figure 8. The SWRA Wildland Urban Interface map layer for Baker County

Parcel-Level Assessments

The SWRA does not contain parcel-level information to inform the susceptibility portion of the wildfire risk triangle. Scientific studies and research have shown that the condition of each individual structure (construction materials and design) and area within 100 feet (plus) of each structure (vegetation, landscaping, distance to other structures, slope and the presence of combustibles) are the primary determining factors of a structure’s susceptibility to wildfire. The area that includes the structure and the immediate surrounding 100 feet (plus) is referred to as the Structure Ignition Zone (SIZ)—also known as the Home Ignition Zone (HIZ), see Figure 9.

Parcel-level assessments require a “boots on the ground” approach, which is already being undertaken in some neighborhoods within Baker County. Combining the information collected from parcel-level assessments with the SWRA Characteristic Fire Intensity layer will complete the risk triangle and offer a comprehensive understanding of the susceptibility of structures to wildfire. The specific information collected as part of the parcel level assessments can also be used to identify the dominating specific SIZ factors that can be focused on through public education and regulatory requirements.

In addition, other improvements to local infrastructure affect wildfire risk by: a) increasing emergency responder access and capabilities to protect structures, and b) increasing the resiliency of infrastructure and other community assets through structure hardening and mitigation (e.g., fuel reduction). As a result, the following CPAW recommendations focus on steps Baker County can take at the local scale to address the susceptibility of communities, structures, and infrastructure to reduce wildfire risk.

1. Update Comprehensive Plan's Wildfire Goals, Objectives, and Policies

Baker County's 2020 Comprehensive Plan is undergoing a review and update, which will be adopted as the 2040 Comprehensive Plan. This presents an opportunity for CPAW to make appropriate revisions to existing goals, objectives, and policies related to wildfire, many of which are in the Future Land Use Element. The purpose of including updated wildfire policies in the next Comprehensive Plan is to lay a foundation for future actions.

Findings

CPAW's review of existing wildfire goals, objectives, and policies in the 2020 Comprehensive Plan revealed the following:

Future Land Use Element

- The primary goal for wildfire does not fully address the key areas of the County that can be affected by wildfire – the natural and built environment. Broadening the intent of this goal aligns better with the scope of the associated objectives and policies.
- Currently there is only one objective, but not all of the policies directly tie to this objective. We suggest adding a new objective and realigning those policies that better connect with the new objective for improved flow and organization.
- References to implementation dates have passed and require new dates. In some cases, we suggest an approach that does not require a date, rather more ongoing approaches. Implementation dates for specific activities may also be more suitable in other plans, such as the Local Mitigation Strategy.
- References to the names of previous programs or national standards are no longer current and require updates. As noted above, we suggest updated language and, where applicable, an approach that provides a more evergreen approach to such references.
- There are inconsistencies in the usage of key terms, most notably "wildfire hazard" and "wildfire risk." Additionally, thresholds such as high, severe, and extreme wildfire hazard are sometimes used interchangeably. This can create confusion when seeking to implement policies through regulatory or programmatic activities.
- The overall clarity of policies could be further improved to ensure readers understand the intent and future direction to implement such policies.

Public Facilities Element

- The registered term "Firewise" or similar derivatives should only be used in specific reference to the voluntary program administered by the National Fire Protection Association. We suggest alternative language that is more suitable when referencing wildfire mitigation guidelines.
- In addition, we suggest refining the current policy related to wildfire to improve its intent.

Recommended Revisions

Clear, consistent, and technically relevant goals, objectives, and policies provide an effective path for the County to support existing activities and prioritize future steps. To support these improvements, our team has made the following suggested revisions to the current Baker County Comprehensive Plan. Our revisions are based on the 2020 version, but objectives and policies under Goal A.3. also incorporate several revisions proposed by Baker County Fire Rescue.

FUTURE LAND USE ELEMENT

Policy A.1.6.10 Area-wide Assessment Requirements for Large Scale Comprehensive Plan Amendments

Any local government comprehensive plan amendments subject to review as a large scale plan amendment under Section 163.3184, Florida Statutes, and transmitted by Baker County to the Department of Community Affairs prior to the effective date of the updated plan to be adopted must include an area-wide assessment covering the geographic area of the County where the amendment is located and shall address:

- a. Protection of natural resources, including wetlands, floodplains, habitat for listed plant and animal species, river/creek shorelines, and groundwater quality;
- b. Protection of cultural heritage;
- c. Promotion of economic development;
- d. Promotion of emergency management wildfire risk and wildfire hazard mitigation measures, including identification of wildfire hazard and potential impacts on existing and future populations, creation of areas of refuge for vulnerable populations and animals, and implementation of appropriate components of the Local Mitigation Strategy;
- e. Adequate provision of public facilities and services including transportation, water supply, wastewater treatment, parks and recreation, libraries, and schools;
- f. Provision of affordable housing, where appropriate;
- g. Inclusion of intensity standards; and a
- h. List of allowable uses.

Goal A.3 Protect Natural Areas and Communities from Undesirable Wildfire

Impacts

The County shall seek to protect life, property, natural areas, and other community features from the detrimental economic, social, and environmental impacts of wildfire by appropriately eliminating or minimizing wildfire risk factors.

Objective A.3.1 Assess Wildfire Risk

County shall coordinate with the Florida Forest Service to map and rank wildfire risk areas based on the Southern Wildfire Risk Assessment and Community Assessor Application.

Policy A.3.1.1 Map Wildfire Risk Areas

The County shall coordinate with Florida Forest Service to annually review wildfire risk based on the Southern Wildfire Risk Assessment and Community Assessor Application.

Note: Objective A.3.1. and Policy A.3.1.1 are very similar in nature. We provided several word edits for consistency of terms, but the county could consider eliminating current objective A.3.A and moving the policy below with others as a strategy to address wildfire risk.

Objective A.3.2 Develop and Implement Strategies to Address Wildfire Risk

Based on the annual review of wildfire risk in Baker County, the County shall implement appropriate strategies to reduce such risks.

Policy A.3.2.1 Collaborate with Agencies, Landowners, Organizations

The County shall collaborate with local, state, federal agencies, landowners, and organizations to develop and implement successful wildfire mitigation and fire adaptation strategies for communities and lands.

Policy A.3.2.2 Educate the Public on Wildfire Risk and Mitigation Measures

The County shall educate the public, especially those at risk from wildfires, and raise awareness by sharing mitigation measures that can be taken to increase personal safety and reduce property damage in the event of a wildfire. These measures are identified on national program websites including Firewise USA® and Ready, Set, Go!

Policy A.3.2.3 Use Best Practices to Address Wildfire Risk

The County shall consider all land uses in areas at risk from wildfire and restrict or prohibit land uses as necessary to ensure the public health, safety, welfare, and the protection of property. Land uses and specific development plans for which adequate wildfire mitigation cannot be provided, or that would preclude or severely limit the use of wildfire mitigation or natural resource management options such as prescribed burns, shall not be authorized in very high wildfire risk areas.

Policy A.3.2.4 Require Wildfire Hazard Mitigation Plans

Any subdivision or non-residential development within applicable wildfire hazard areas shall complete a “Wildfire Hazard Mitigation Plan” specific to that development, and subject to review and approval by the County Fire Marshal as part of plan approval process. The wildfire mitigation plan shall address at a minimum:

- Vegetation on individual lots and subdivisions
- Building construction methods and materials
- Utilities
- Fire protection including access, water supply, and signage
- Public safety including areas of refuge, evacuation routes and other safety requirements
- Additional considerations or site constraints, such as vacant lots, ditches, canals or other areas that present a barrier to emergency access
- Roles and responsibilities of Homeowners Associations (HOA), Property Owner Associations, or similar community organizational structures as they relate to implementation and maintenance

All of these factors can be implemented based on the most current versions of NFPA Standards that address development in the wildland-urban interface, such as NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas, 2017 Edition, NFPA 1142 Standard On Water Supplies For Suburban And Rural Fire Fighting, 2017 Edition and NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire, 2018 Edition.

Policy A.3.2.5 Adopt Mitigation Standards Based on the Southern Wildfire Risk Assessment and Community Assessor Application

The County shall adopt Land Development Regulations (LDRs) to set forth standards for development within applicable wildfire risk areas as identified by the Southern Wildfire Risk Assessment and Community Assessor Application and recommended by the Community Planning Assistance for Wildfire program.

Policy A.3.2.6 Develop and Implement Plans for to Address Wildfire Risk

The County shall develop and implement wildfire prevention, education, and mitigation strategies by frequently updating and maintaining the County Local Mitigation Strategy, which includes the Baker County Community Wildfire Protection Plan as an appendix.

PUBLIC FACILITIES ELEMENT

Objective D.1.8 Ensure Potable Water for the Future

The County shall implement policies to ensure the long-term protection of aquifer recharge areas thereby providing the availability of potable drinking water for future needs.

Policy D.1.8.1 Development Requirement of 40% Open Space in Aquifer Recharge Areas

The County shall require a minimum of forty percent (40%) open space for development in areas of identified low to moderate aquifer recharge.

Policy D.1.8.2 Implement County Mitigation Strategies to Protect Forested Lands

The County shall coordinate with the Florida Forest Service and other applicable federal or state agencies and organizations to preserve and protect designated forested and other natural areas from development by adopting and implementing appropriate mitigation strategies such as fuel breaks, community buffers, and low density land use designations (e.g., Ag A).

Note: Policy D.1.8.2 could be moved under Objective A.3.2 (as proposed above) to improve the overall organization of wildfire-related goals, objectives, and policies.

2. Increase Wildfire Risk Reduction in the Structure Ignition Zone

Baker County has an outstanding outreach program that educates residents on the importance of the SIZ through its Firewise/USA® program, which includes offering free property assessments and encouraging mitigation activities on homes and properties (Figure 9). However, several wildfire risk gaps remain as discussed below.

Findings

Current efforts support those individuals interested in the program, not necessarily residents who may lack access to the information or be unaware of their risk. Further, there is no consistent approach to new construction in the WUI, aside from the Building Code minimum standards, although these do not specifically address WUI construction vulnerabilities.

Florida Fire Prevention Code Chapter 17

Chapter 17, Wildland Urban Interface, of the Florida Fire Prevention Code contains planning, construction and maintenance requirements to meet the *NFPA 1144 Standard for reducing Structure Ignition Hazards from Wildland Fire*. With the exception of a requirement for non-combustible skirting for mobile and manufactured homes, the chapter does not provide specific structure design, or construction



Figure 9. Baker County Fire Rescue has been working with local residents to increase voluntary participation in mitigation through programs such as Firewise/USA.

material requirements, but focuses primarily on the requirement to complete a comprehensive structure assessment. The structure assessment documents conditions of the surrounding environment (e.g., relationship to topographical features, local weather conditions, nearby structures), conditions of the structure (e.g., materials and construction used for the roof, siding, foundation and other features), vegetation and other combustible materials within the structure ignition zone. Based on the result of the structure assessment, Chapter 17 also provides the requirements for a wildland fire hazard mitigation plan to address vulnerabilities identified in the structure ignition zone (Figure 10).

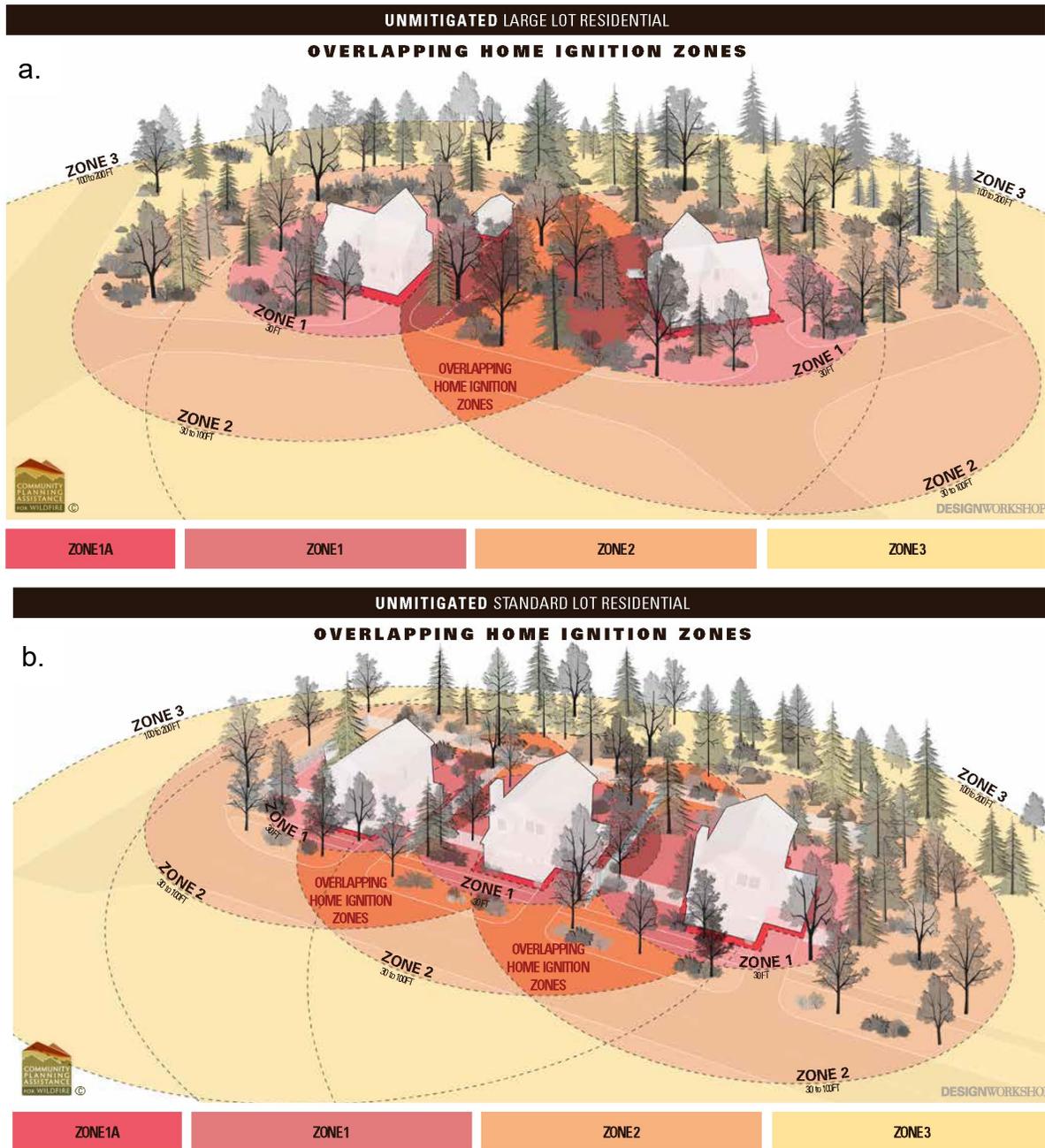


Figure 10. The Structure Ignition Zone for each building as shown on large lots (a) and standard lots (b). Without appropriate setbacks from the property line, zones can overlap into adjacent lands beyond a property owners' legal control. This can create a challenge for property owners seeking to fully mitigate their zone from wildfire.

The challenge in implementing these requirements (Figure 10) is to ensure that each parcel owner has the appropriate amount of distance that they can control (i.e., on their land) between their building and neighboring property buildings, or hazardous vegetation. This typically requires the implementation of building setbacks through subdivision and zoning requirements.

In addition, Chapter 17 provides requirements for safeguards to prevent the occurrence of fires and to provide adequate fire protection and mitigation measures in hazardous fire areas. For example, explosives, blasting, tracer bullets and other incendiary uses are prohibited in hazardous fire areas. The clearance of brush and vegetative growth near electrical transmission lines is also required. Besides the general requirement to provide fire department access, Chapter 17 (and Chapter 18) does not address the specific access or water supply requirements. CPAW's recommendation for addressing these requirements is discussed in Recommendation 3.

Recommendations

To support existing outreach efforts and create a more comprehensive approach toward reducing future structure loss and damage from wildfire, CPAW recommends the County adopt SIZ regulations and incorporate more educational materials into the development process to increase support and expand voluntary implementation. Specifically, CPAW recommends that Baker County locally adopts Chapter 17 of the Fire Prevention Code to enhance its current voluntary assessment process. This would establish a consistent process for assessing the SIZ and align with national standards. It would also address mitigation for permanently situated mobile and manufactured homes. To further enhance Chapter 17 by providing specific requirements, the County should implement local amendments to the zoning code and the Florida Building Code by incorporating the appropriate requirements of the NFPA 1144.

To ensure that owners of parcels within new subdivisions have the distance they require to appropriately mitigate their SIZ in relation to neighboring hazardous vegetation, lot area requirements (for subdivision and zoning) should include minimum 100 foot building setbacks from neighboring public and private forested lands, and a minimum 30 foot setback from neighboring parcels within the development. This will require conformance with, or amendments to, the underlying subdivision and zoning requirements in the County's Land Development Regulations.

3. Establish Minimum Water Supply Requirements and Emergency Access for New Subdivisions

There are several neighborhoods within the County that do not have an emergency fire water supply that can adequately support fire suppression operations. This leaves County fire resources relying heavily on long-distance mobile water tender (tanker) relays. The fire water demand that is required to adequately protect structures during a wildland-urban interface incident is significant. Additionally, road access and egress are a significant challenge in several neighborhoods.

Findings

During the site visits, discussions, and document review, the CPAW team learned that potable water supply through community municipal systems is a significant challenge in the County. The CPAW team was also able to see firsthand, communities with significant road access challenges, such as single access to neighbourhoods, extended-length narrow and single-lane roads, and road surfaces that created challenges to fire apparatus access.

Dry Hydrants

There are a number of existing storm water retention ponds located throughout the County. Many of these ponds are operated and maintained by the individual private property owners or Homeowner Associations (HOAs). The installation of dry hydrants would provide fire apparatus and water tenders access to drafting the water that is retained in these ponds. This would increase the overall number of water-refill sites and provide closer water supplies to shorten the travel times of water tender shuttles and therefore increasing the overall amount of water that is available for suppression. Agreements would have to be established with the HOAs responsible for the retention ponds to have dry hydrants installed. The agreements would also require a maintenance component to ensure that they are operationally ready. The Florida Fire Prevention Code Chapter 18 requires the specification for a fire hydrant system to be submitted for approval to the authority having jurisdiction. However, it does not specifically address dry hydrants. Dry hydrants that are installed and maintained to the minimum standard of the *NFPA 1142 Standard on Water Supply for Suburban and Rural Firefighting* a relatively inexpensive and are typically considered as an equivalent to municipal water supply hydrants with regards to community insurance (ISO) ratings, which is likely an incentive for HOAs.

Cisterns

There are also examples of fire water supply cisterns located on private property (Figure 11). These cisterns can provide stored water capacity for emergency fire suppression. The installation of dry hydrants would provide fire apparatus and water tenders access to drafting the water that is retained in these ponds. Similar to dry hydrants, these cisterns would increase the overall number of water-refill sites, and provide closer water supplies to shorten the travel times of water tender shuttles and therefore increasing the overall amount of water that is available for suppression. Unlike dry hydrants in retention ponds, each individual cistern has a much lower water capacity; however, these cisterns are typically associated with supplying individual dwellings with enough water supply for fire suppression of that dwelling. The *NFPA 1142 Standard on Water Supply for Suburban and Rural Firefighting* also provides requirements for dry hydrants



Figure 11. An emergency fire water cistern on private land

Access and Egress

The network of unimproved road surfaces and long dead-end roads are extensive (Figure 12). With the current and expected population growth and migration from Jacksonville, the County can take advantage of implementing increased road standards for new subdivisions and road improvements where new development occurs in existing subdivisions. Road standards for new subdivisions should address width, bridges, turn-arounds, multiple access and road surface standards. Redevelopment in existing subdivisions can address the addition of pull-outs and turn-arounds as part of specific property development. In addition to the requirements of the Florida Fire Prevention Code Chapters 17 and 18, *NFPA*

1141 Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Subdivision Areas provides specific minimum access requirements that include road, bridge, signage and secondary access requirements.



Figure 12. Unimproved roads in the County may hinder response efforts during a wildfire event.

Recommendations

The CPAW team recommends that the County require the installation of a community fire water supply by adopting *NFPA 1142 Standard on Water Supply for Suburban and Rural Firefighting*. Furthermore, the County should also adopt the *NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Subdivision Areas* to provide specific road standard requirements for new and existing developments. New developments should be required to meet all the standards, while existing developments should be subject to standards when significant new construction is being undertaken in the area that would result in negative public safety outcomes, such as delayed evacuations, and compromised response.

Specifically, these developments should have more than one means of access/egress that allows for simultaneous safe and effective fire suppression apparatus access and resident evacuation. Additionally, fire water supply systems installed must be capable of supplying a minimum of 500 gallons per minute of continuous water for one hour to any structure fire in the County within five minutes of the first fire engine arriving on scene. This can be achieved through the use of an installed municipal type water system, a dry hydrant system, cisterns, water tenders, or a combination of any of these systems. These systems should meet the requirements of NFPA 1141 and 1142, and be approved by Baker County Fire Rescue.

Strategies for Implementation

Supporting the adoption of new regulations, as identified in Recommendations 2 and 3, will require continued support for these activities. The Baker County CWPP provides a comprehensive set of actions, many of which align with or support the recommendations listed in this report. To supplement CWPP activities, CPAW has suggested a few additional activities and resources below.

Education / Outreach

- Collaborate with partners to develop materials and hand out information with permits on voluntary landscaping and building requirements (suggested lead: Planning Department in coordination with Baker County Fire Rescue).
- Host a local training on building, landscaping and other wildfire risk reduction techniques that can be employed in the SIZ (suggested lead: Baker County Fire Rescue in coordination with Baker County's Fire Adapted Communities Work Group).
- Continue to support and expand Firewise Communities and incorporate an annual Firewise day that focuses on the SIZ (suggested lead: Baker County Fire Rescue).

Capacity / Coordination

- Baker County already does an exemplary job on coordinating local stakeholders through its Fire Adapted Communities Work Group. Continue to convene this group to prioritize short- and long-term activities related to the CWPP and these CPAW recommendations.

Funding

Baker County's CWPP lists potential funding sources to support implementation of outreach, engagement, landscaping, response improvement, and other actions. In addition, a new funding opportunity is available through the Federal Emergency Management Agency's (FEMA) Building Resilient Infrastructures and Communities (BRIC) grant program to states, local communities, tribes and territories for pre-disaster mitigation activities. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program. The BRIC priorities are to:

- Incentivize public infrastructure projects;
- Incentivize projects that mitigate risk to one or more lifelines;
- Incentivize projects that incorporate nature-based solutions; and,
- Incentivize the adoptions and enforcement of modern building codes.

More information on the BRIC program and application process is available at: <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>

CONCLUSION

The CPAW process with Baker County has been a dynamic process. During the course of its assistance, CPAW team members worked with local stakeholders to discuss potential changes to the County's local planning and regulatory approach. Some of these changes have already made an impact, such as the inclusion of more WUI considerations in the development review and approval process. This set of recommendations is intended to capture those discussions and continue supporting the County in its long-term approach toward WUI implementation.

CPAW recommendations focus on both short- and long-term strategies for policy development and regulatory implementation, including:

- Setting a foundation of appropriate policies in the Comprehensive Plan
- Expanding wildfire risk reduction regulations to address vulnerabilities at the individual lot scale
- Implementing policies through new regulations for emergency response in subdivisions, including improved access and water supply

These CPAW recommendations supporting a comprehensive approach toward community fire adaptation. Baker County is well-positioned to implement these strategies through its dedicated staff and Fire Adapted Communities Working Group. While some changes will take time to implement, a proactive approach toward wildfire planning is critical to avoiding future losses.