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Developing an Effective Housing Strategy

A GIS-Based Approach

Understanding the Housing Crisis

A housing crisis has emerged—housing supply, the cost of a home, and household income are out of sync. While state and local governments and nonprofits are working together to develop strategies that provide affordable, accessible, and attainable housing options for every resident, addressing this crisis is complex and requires a comprehensive approach.

A geographic approach is the essential element because housing is inherently driven by location. Governments must understand where people need housing, where certain housing types are needed, where lands are available for development, and so much more. Comprehensive housing strategies must also take into consideration senior population needs, people with disabilities, access to services, and workforce for a more inclusive approach. A housing strategy must start by asking *where*.

Esri is the leading provider of geographic information system (GIS) software, the technology being used by state and local governments to reform housing policy and provide housing choices for all.

There are seven GIS-based pillars that state and local governments must leverage to develop and implement effective housing strategies:

1. Map housing data and community demographics
2. Implementing policy initiatives and legislative measures
3. Targeting assistance programs
4. Strengthening zoning and future land-use planning
5. Streamlining permitting
6. Measuring the impact of development
7. Providing public information on housing support

1.

Map Housing Data and Community Demographics

Knowing where housing is needed is the first step

Housing policy is an enormous balancing act. Policymakers must understand the renter, the first-time homebuyer, the family looking to grow, and the couple looking to downsize. Policymakers need to understand not only the economics of residents but also their lifestyles and behaviors. Policies must balance the needs of low- and middle-income households, seniors, people with intellectual or physical disabilities, and individuals experiencing housing instability or homelessness. It is not as simple as building inexpensive houses. You must know who needs assistance as well as where housing can be built, where housing should be built, and what types of housing need to be built.

GIS is the tool to help you organize, collect, and analyze demographic, socioeconomic, lifestyle, and vulnerability factors. Map income, education, and jobs data as well as population demographics such as renter versus homeowner, health factors, or transportation needs. Moving toward data-driven interventions helps ensure that resources and funding can be placed where they have the most impact.

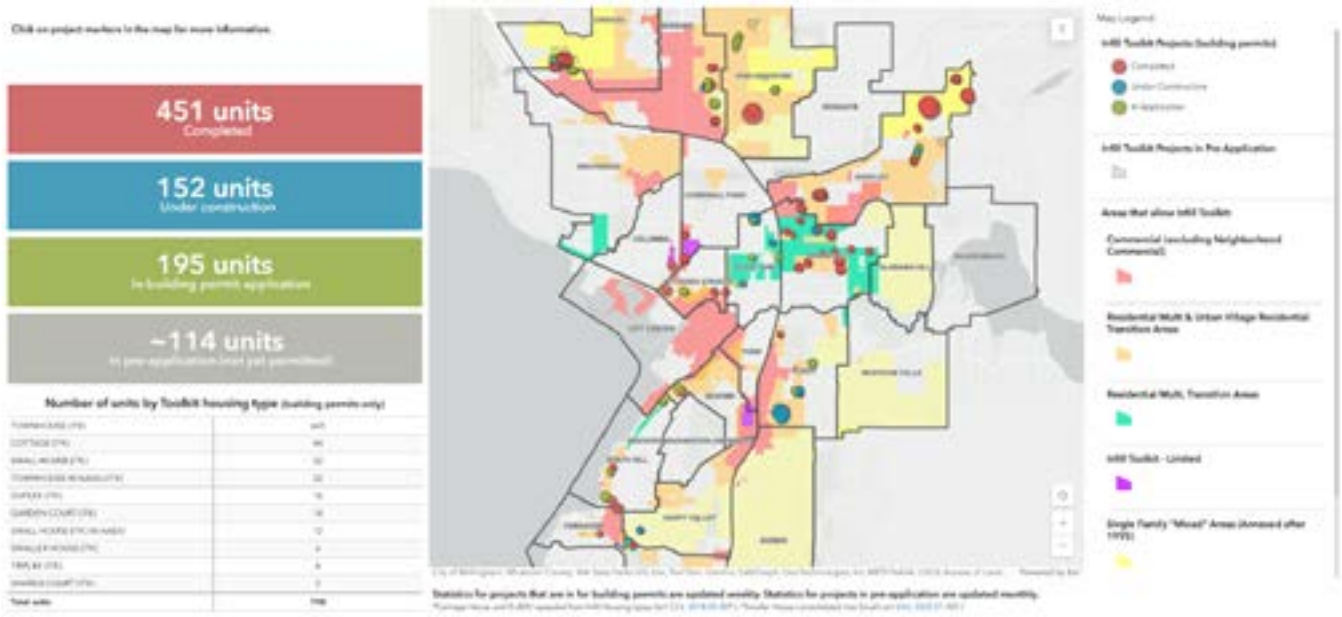
USE GIS TO

- ☑ Assess your housing mix by tracking housing types, year built, rented versus owned, rent or mortgage rates, vacant land, market data, and infill opportunities.
- ☑ Map demographic, socioeconomic, and lifestyle information to inform and validate decisions.
- ☑ Understand your current housing mix and analyze it against the needs of at-risk populations, low- and middle-income households, and other needs within your community.
- ☑ Inventory properties for potential development.
- ☑ Map the proximity and accessibility of jobs, businesses, and services to housing.

BEST PRACTICE

Housing Statistics in the City of Bellingham, Washington, Inform Housing Policies

The Bellingham Planning and Community Development Department provides extensive maps and data on housing and community demographics, allowing the department to allocate funds and resources to where they will have the most impact. The city's analysis on housing type, occupancy, density, and population demographics are key considerations for staff's strategic plan to prevent homelessness, focus on lower-income households, and provide more housing stability for all residents.



2.

Implement Policy Initiatives and Legislative Measures

Consider legislative actions and policy guidelines that set you up for success

Legislation can drive dramatic change in pushing a community's housing needs in a positive direction. State and local governments are pioneering aggressive approaches to addressing housing in crisis mode. We have witnessed policies such as these:

- Leveraging government-owned surplus properties
- Authorizing federal land for development
- Creating zoning reform that prioritizes diverse housing options such as missing middle, higher density, and mixed use
- Streamlining permitting for accessory dwelling units (ADUs) with preapproved designs
- Limiting short-term rentals
- Prioritizing transit-friendly housing
- Focusing on housing to address homelessness (Housing First policies)

GIS must be used to develop these approaches and provide insight and data to influence legislation, building and zoning codes, and guidelines. When these policies are put in place as an emergency response or short-term solution, the impacts are temporary. Policies must focus on long-term results and organizations must monitor their impact consistently to track and optimize their success.

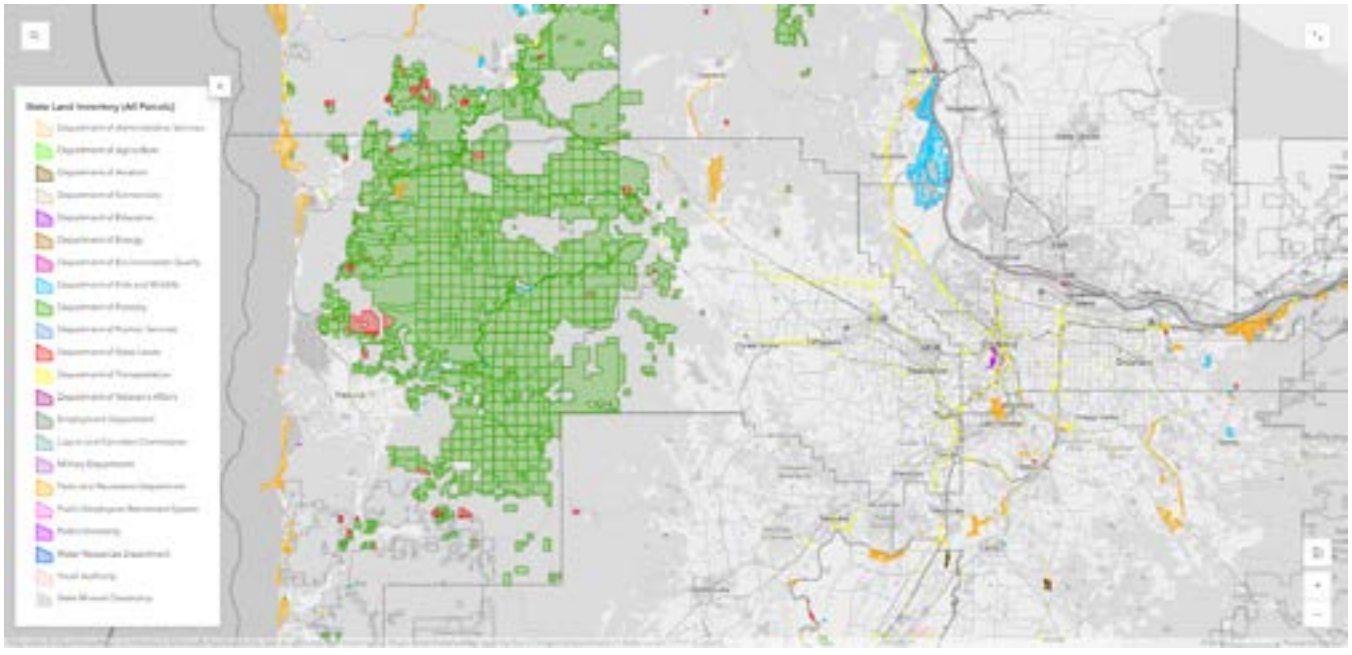
USE GIS TO

- ☑ Compare area income to housing cost.
- ☑ Model potential housing mix in the context of existing and proposed land use.
- ☑ Implement a location-centric development review.
- ☑ Analyze the impact of housing policies on transportation networks.
- ☑ Understand and compare fiscal, social, and environmental impacts of proposed zoning changes.

BEST PRACTICE

State-Owned Lands Help Oregon Meet Goal of Adding 29,500 Homes per Year

To meet Oregon's housing supply goal, the state has prioritized a plan for using state-owned or managed lands for housing development. A state lands inventory map, overseen by the Oregon Department of Administrative Services (DAS), allows the state to evaluate parcel characteristics and feasibility for housing. State agencies are also tasked with notifying DAS of any surplus property that may be ready for disposition. This process helps the state sell or transfer the land, with priority given to nonprofit organizations and Indigenous tribes, provided that the land is used to develop housing for households making 80 percent or less of the area's median income.



3.

Target Housing Assistance Programs

Connect residents to the programs and resources they need

Housing affordability is partly a land-use issue, partly a concern of housing supply, and partly about housing assistance. Housing assistance can be composed of support from governments or nonprofits in the form of income supplements, financial assistance, financial education, public housing, or programs that provide relief and economic uplift for residents.

GIS helps identify where to intervene with financial and housing resources. By combining housing, demographic, and lifestyle data, governments can develop a comprehensive strategy to pinpoint where housing assistance is needed and why.

USE GIS TO

- ☑ Connect residents with the nearest programs and resources that address their needs.
- ☑ Run analysis to identify housing that is eligible for assistance.
- ☑ Provide public resources that improve community awareness of programs.
- ☑ Identify housing units in need of repair so that you know where housing rehabilitation or preservation programs need to be focused.
- ☑ Target promotion of relevant programs to qualified and in-need individuals and neighborhoods.
- ☑ Locate service centers in vulnerable communities to provide in-person education and assistance.
- ☑ Maintain an inventory of housing options for emergency assistance for those impacted by disaster, homelessness, or housing instability.
- ☑ Monitor funding distribution to assess performance of programs and policies.
- ☑ Collaborate with nonprofits that can provide services to those in need of assistance.

BEST PRACTICE

Baltimore, Maryland, Concentrates Housing Assistance Through GIS-Powered CoDeMap

To address housing instability and rising homelessness, Baltimore's Department of Housing and Community Development (DHCD) developed CoDeMap, a GIS-based platform that consolidates housing-related data to guide targeted interventions. CoDeMap integrates property records, code violations, permit histories, and demographic data to help staff identify at-risk neighborhoods and tailor housing assistance accordingly. The platform supports programs such as streamlined code enforcement, demolition planning, and land resource projects. By visualizing housing needs at the parcel level, DHCD can prioritize investments, improve service delivery, and coordinate with other city departments to ensure equitable housing outcomes across Baltimore.

4.

Strengthen Zone and Future Land-Use Planning

Don't let your land-use policies and zoning limit housing options

Traditional land-use planning techniques must be challenged to address the housing crisis. Many zoning regulations are outdated and accommodate single-family homes and apartment complexes, but nothing in between. Today's housing must meet the needs of a large aging population; multigenerational family units; and young professionals who want greater access to transit, amenities, and local businesses. Today's housing policy must work to support the vulnerable—low-income households, students, those who are aging in place, residents with disabilities, and people experiencing homelessness. Considering changes to land-use policies and updating zoning will accelerate the right housing development and, as a result, improve housing supply and affordability.

GIS is helping state and local governments test and update zoning regulations and land-use policies to alleviate the imbalance of housing types and affordability. GIS allows you to analyze multiple scenarios and understand the impacts of zoning reform by taking into consideration community demographics, impact on government infrastructure and services, and future housing needs.

Jurisdictions use GIS to forecast land-use changes through digital twins—a process that allows different variables and development scenarios to be analyzed in a real-world view. The value GIS brings is the opportunity for planners and elected officials to make adjustments in real time and demonstrate long-term impacts.

USE GIS TO

- ☑ Inventory existing land use.
- ☑ Map available properties for infill, mixed-use, and transit-oriented development.
- ☑ Analyze changes to policy that encourage certain housing types such as missing middle, require higher density near transit stations, allow for ADUs, or convert land from commercial use to residential.
- ☑ Make changes to land use that limit short-term rentals.
- ☑ Run suitability analysis on all land-use changes and development scenarios that allow you to understand the impacts of conflicting land use, natural disasters, and environmental challenges.
- ☑ Weigh changes in land use with current and long-term factors such as green space, lifestyle changes, economic growth, mobility needs, conservation, and quality of life.

BEST PRACTICE

Rocky Mount, North Carolina, Tests Land-Use Changes to Ensure Housing Affordability

The city set a goal of providing 250 new affordable units over the next five years. Using ArcGIS® Urban, Rocky Mount performed a suitability analysis that took into account variables such as civic facility access, transit, preferential zoning regulations, and parcel structure. The city identified six sites feasible for infill developments. The city can now achieve its goal of constructing 250 affordable units in five years through code changes that allow for building heights of at least four stories (in addition to keeping the existing affordable-housing-density bonus).

5.

Streamline Permitting

Accelerate the timeline from plan review to new home

Slow regulatory review and inefficient permitting processes have become a barrier to accelerating housing supply and keeping costs down. How can you increase housing options if it is not easy for developers or residents to build within your community?

Streamlined permitting means accelerated development because processes are efficient, digital, and automated and include the necessary analysis and transparency for quick decision-making. Permitting is inherently based on questions about location. GIS provides centralized data; inspection tools; and integration with major business systems that allow for real-time status tracking, efficient reviews, collaboration, and report automation.

The housing crisis in many communities has also been exacerbated by natural disasters such as hurricanes, wildfires, or surges in homelessness. Streamlined permitting processes can ensure that emergency housing solutions are identified to meet urgent needs. Other communities have been impacted by an excess of short-term rentals that remove precious housing supply, and inefficient ADU approval. Streamlined permitting can expedite the construction and assessment of ADUs and help control the quantity of short-term rentals, while also encouraging greater compliance.

USE GIS TO

- ☑ Expedite the permit review process by eliminating paper workflows, expediting data gathering, securing data sharing, and automating workflows.
- ☑ Leverage built-in geospatial AI capabilities to automate impact analysis, check and complete applications, flag high-risk locations, autopopulate permit application fields, verify information, and dispatch inspectors.
- ☑ Encourage compliance through intuitive processes and greater transparency.
- ☑ Remove data silos and facilitate collaboration.
- ☑ Analyze environmental impacts, circulation, and impacts on services like schools and health care, ensuring that all necessary requirements are met before permits are issued.
- ☑ Use dashboards to monitor permits in real time and share status, information on bottlenecks, and timelines with all stakeholders.
- ☑ Reduce the time and cost associated with the permitting process by leveraging easy-to-use data-collection tools, spatial analysis, geospatial AI, and real-time dashboards.

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Rexburg, Idaho, Accelerates Plan Review with Modernized Permitting

The City of Rexburg turned to Trimble Unity Permit, from Esri business partner Trimble, a GIS-centric solution designed to help organizations manage public assets to digitize and streamline permitting, application, and inspection workflows. The city replaced paper-based processes with a public-facing permitting and licensing portal where developers, contractors, and residents can submit applications, schedule inspections, pay fees, communicate with the city, and track the status of their projects.

6.

Measure the Impact of Development

Build confidence in your housing decisions

Responsible housing policy must consider the impact that development has on quality of life. With increased density, expanding development, and community growth, there can be significant changes to government services, economic needs, employment, and open space.

GIS provides the tools for analysis and decision support not only to ensure that housing goals are being met, but also to understand the impacts of housing on community services—including health care, schools, and police and fire department resources—and infrastructure such as roads, water, open space, and public transit.

As governments operate in near real time, they are leveraging GIS data and analysis daily to make adjustments to their plans and policies. GIS allows governments to move at a faster pace, reviewing and measuring as they go—extinguishing the idea that policymaking must take years for development and proof of success.

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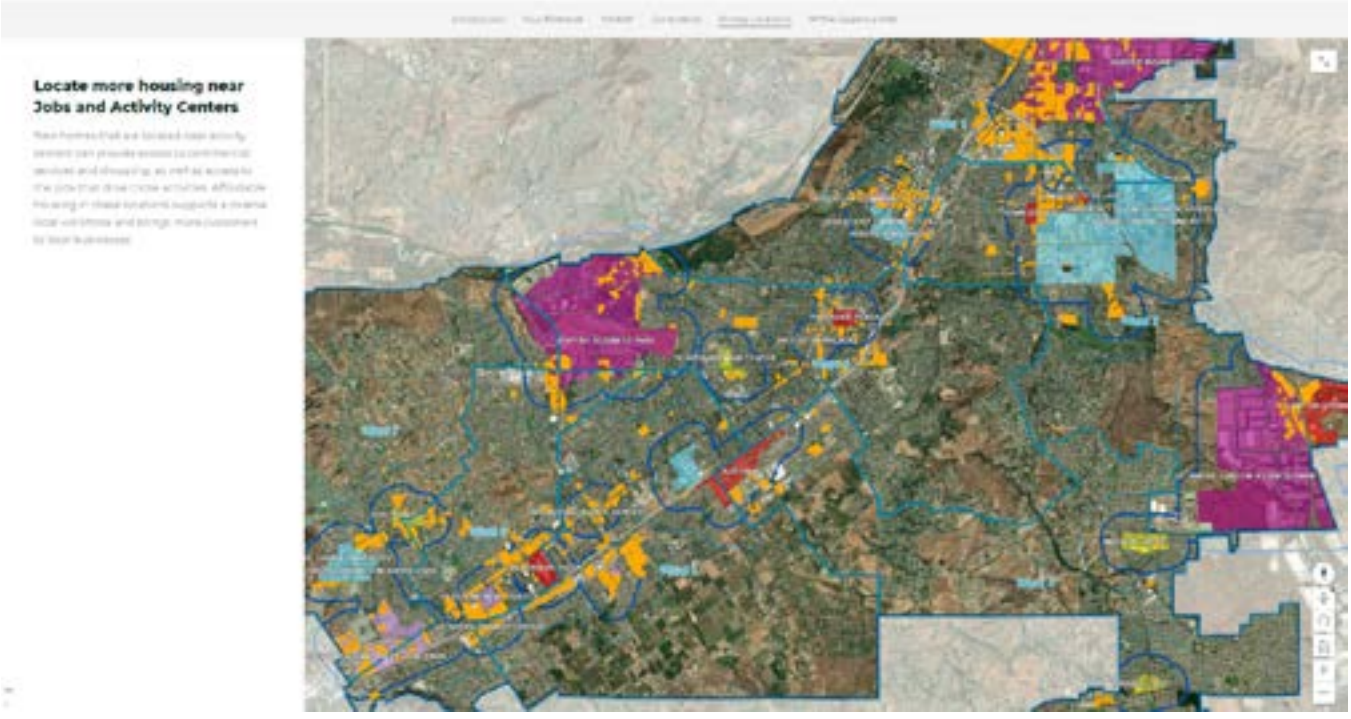
USE GIS TO

- ☑ Assess whether increased density is impacting crime rates, traffic congestion, and utility loads.
- ☑ Evaluate whether the addition of housing stock will put stress on service levels, employment opportunities, cultural resources, or open space.
- ☑ Identify where shifts in demographics and lifestyle are occurring.
- ☑ Understand whether job opportunities align with resident qualifications.
- ☑ Analyze how development will impact the environment, including species habitat, air and water quality, resource consumption, or public health.
- ☑ Measure jobs-to-housing balance to ensure that residents can live and work in your community.

BEST PRACTICE

Riverside, California, Analyzes Where It Can Build 18,000 New Homes

The City of Riverside needed to accommodate approximately 18,000 new residential housing units by 2029. To identify the most favorable locations for future resident development, the city worked with Houseal Lavigne, an Esri business partner, to evaluate factors affecting each parcel, including amenities access, workforce, proximity to pollution sources, protected natural areas, natural hazards, and other opportunities and constraints.



7.

Provide Public Information on Housing Support

Educate residents on your efforts and the resources available

There is no such thing as an overinformed stakeholder or resident. As you determine and execute your housing policies, you must keep stakeholders and the public informed on housing availability and affordable options, housing units under development, proximity to housing assistance programs, and progress of investments to address housing needs. Both governments and nonprofits are providing this information in GIS dashboards and community-facing maps and data hubs.

Governments and nonprofits are using mapping and storytelling to develop self-service resources that allow residents, property managers, and developers to explore available land, review affordable housing options, access assistance or programs, and gain greater insight into the housing options available to meet their need.

USE GIS TO

- ☑ Publish self-service applications that connect residents to the nearest available resources.
- ☑ Develop dashboards that allow residents to discover housing options that meet their needs.
- ☑ Share progress and the effectiveness of your policies and funding with stakeholders, developers, and the public.
- ☑ Publish reports on housing data and needs in an interactive map or dashboard.
- ☑ Establish two-way communication between residents and your organization through GIS-based survey tools.

BEST PRACTICE

Wasatch Front Regional Council App Helps Community Explore Housing Trends

The Housing Inventory Explorer app enables users to examine housing trends across Utah's Wasatch Front urban region. Users can explore data by housing type; by year built; and within specific counties, cities, and neighborhoods. The app also lets users discover housing options within a certain distance of key transportation features, such as transit stations and highway exits, as well as open-space amenities such as parks and trails. This allows stakeholders and residents to understand the housing landscape and find housing that supports their mobility and lifestyle needs.

Develop Your Housing Strategy with GIS

GIS serves as the common denominator for addressing the housing crisis because location data is essential to every phase of planning, development, and measurement of impact. It helps communities scope out the extent of housing needs and assess the future course of development, resource allocation, and progress monitoring.

GIS is also the common language that enables governments to coordinate efforts with other agencies, nonprofit organizations, and developers that play a role in addressing the crisis.

Esri offers software, services, and training to assist you with every element of your housing policy.

If you'd like to explore these resources in greater detail, please call us at 1-800-447-9778, or visit go.esri.com/housing-policy.

QUICK RESOURCES

Esri® Maps for Public Policy

esri.com/policymaps

This free resource is where you can access housing and demographic data for your community.

ArcGIS Business Analyst℠

esri.com/ba

Analyze advanced demographic, socioeconomic, and lifestyle data to better understand your community needs.

ArcGIS Dashboards

esri.com/dashboard

Track progress of development, permits, and land-use changes, and share insights into efforts for increased transparency and accountability.

ArcGIS Urban

esri.com/urban

Model housing scenarios in a digital twin to visualize and compare proposed development plans.

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Esri, the global market leader in geographic information system (GIS) software, location intelligence, and mapping, helps customers unlock the full potential of data to improve operational and business results.

Founded in 1969 in Redlands, California, USA, Esri software is deployed in hundreds of thousands of organizations globally, including Fortune 500 companies, government agencies, nonprofit institutions, and universities.

Esri has regional offices, international distributors, and partners providing local support in over 100 countries on six continents. With its pioneering commitment to geospatial technology and analytics, Esri engineers the most innovative solutions that leverage a geographic approach to solving some of the world's most complex problems by placing them in the crucial context of location.

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