

BUILDING AND ENERGY CODES



City Council Second Reading | Sept 3, 2013

Codes Proposed for Adoption

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- ❑ International Building Code (IBC)
- ❑ International Residential Code (IRC)
- ❑ International Energy Conservation Code (IECC)
- ❑ International Fire Code (IFC)
- ❑ International Wildland Urban Interface Code (IWUIC)*
- ❑ International Mechanical Code (IMC)
- ❑ International Plumbing Code (IPC)
- ❑ International Fuel Gas Code (IFGC)
- ❑ International Property Maintenance Code (IPMC)
- ❑ National Electric Code (NEC)

*Newly proposed for adoption

Background

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- Jan. 2013 City Council retreat
 - ▣ Council discussed energy codes efficiency levels
- Feb. 21 Planning Board study session
 - ▣ Long term GHG reductions discussion
 - ▣ Role of Site Review
- March 19 City Council update on proposed energy code requirements
 - ▣ Council discussed exceeding 20% efficiency proposal

Energy Code Highlights – Energy Efficiency Levels

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- For Residential & Commercial Construction
- Consistent with Climate Commitment Goals and Net Zero

Developing a Path to Net Zero Energy

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- First, Define Net Zero Energy
 - ▣ A building that produces as much total energy over an annual period as it uses when measured at the site.
- Second, Choose a Path
 - ▣ Brendle Group developed a timeline consistent with the ASHRAE Vision 2020 for a path to Net Zero Energy
 - ▣ Standards are consistent with the Architecture 2030 challenge

Clarifications from first reading

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- Home Energy Rating System (HERS)
 - ▣ A scoring system established by RESNET
 - ▣ Homes built to the 2006 IECC = a HERS score of 100.
 - ▣ Homes built to the 2012 IECC = a HERS score of 70.
 - ▣ A net zero home would have a HERS score of 0

HERS Rating System

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- Lower numbers represent better efficiency

Retrofit House 380



2006 IECC 100



2012 IECC 70



Net zero

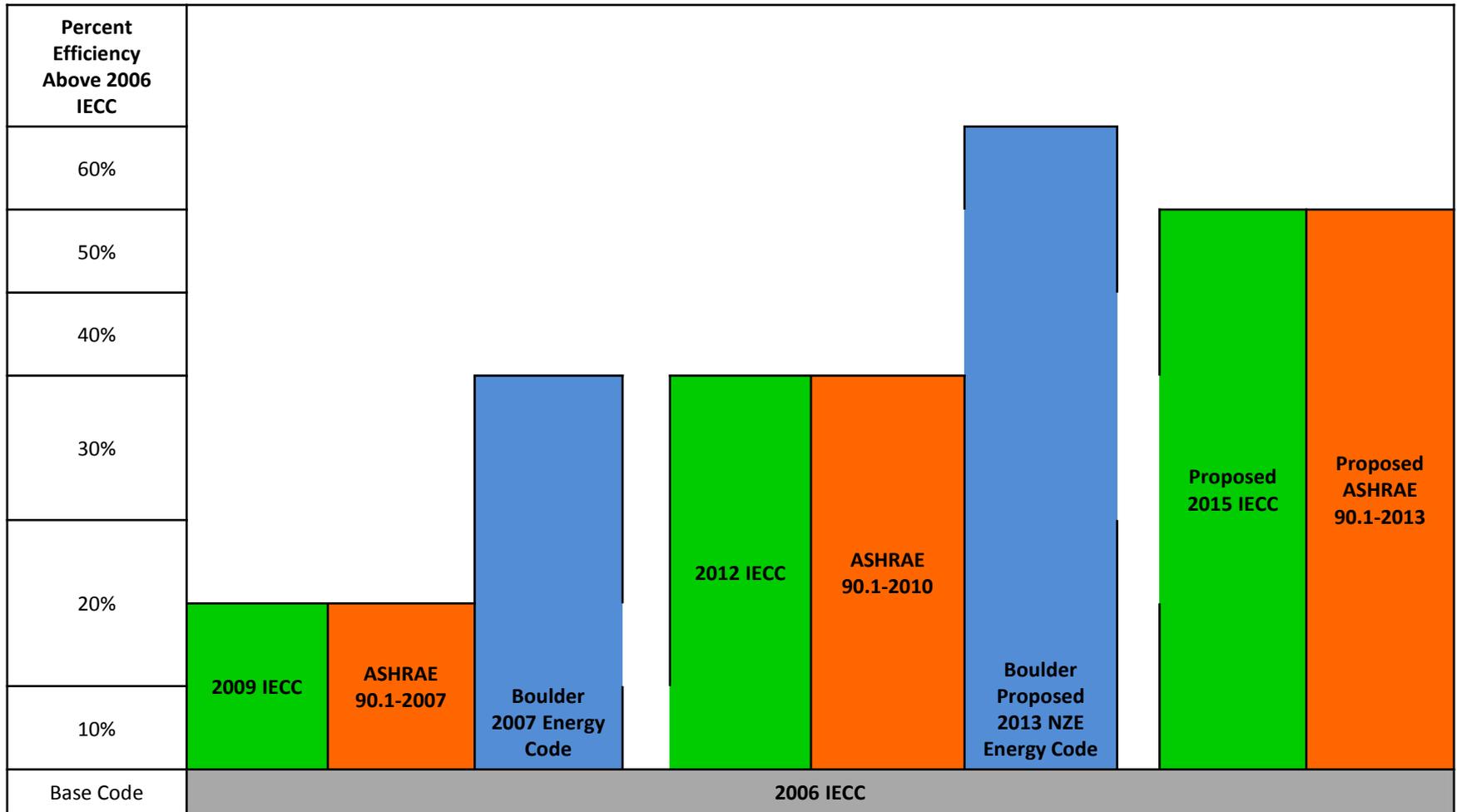
Residential Energy Requirements

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Proposed HERS index improvement

Size of home Sq ft	current HERS	proposed HERS	“Net Zero” by
Up to 3,000	70	60	2031
3,001-5,000	60	50	2028
5,001 and up	35	25	2025
Multi-family	70	60	2031

Current and Proposed Commercial Energy Requirements



Where are we now?

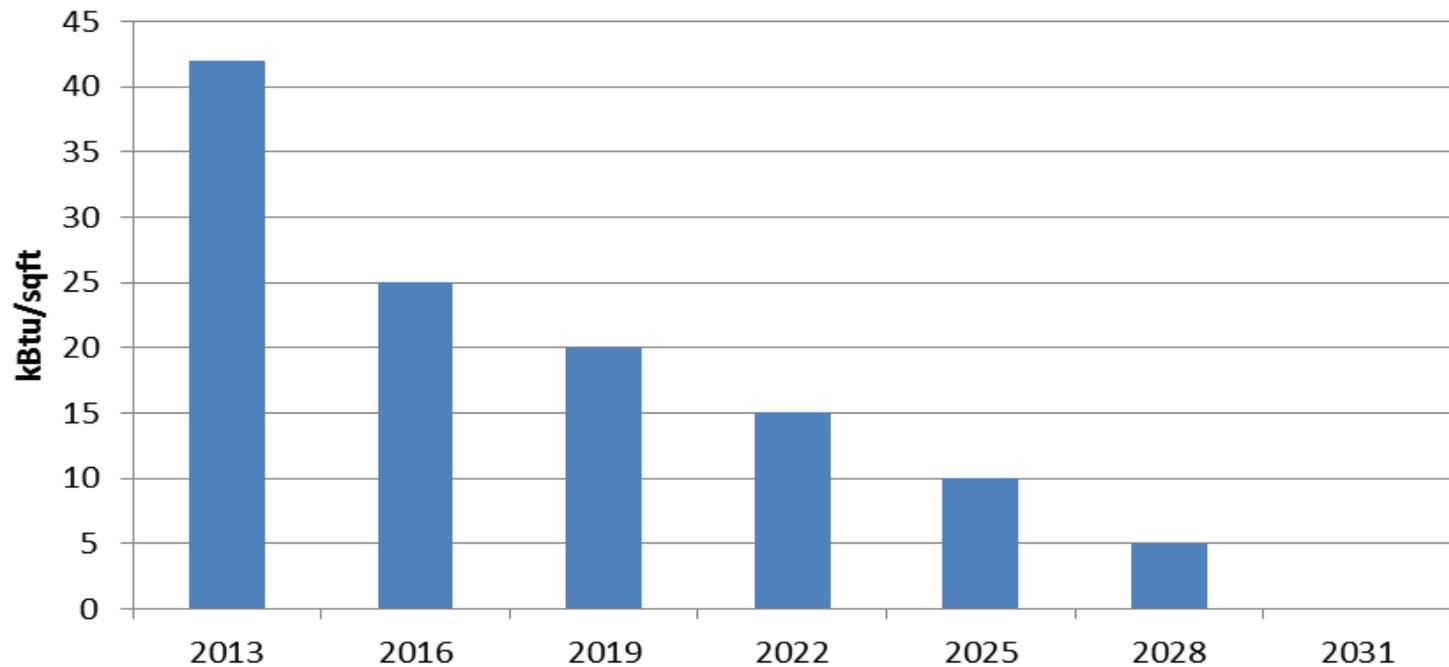
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- Energy modeling of current code requirements indicate:
 - ▣ Newly constructed buildings ~60 kBtu per sq ft
 - ▣ Remodeled buildings ~87 kBtu per sq ft

“Net Zero” code adoption goals

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Boulder Net Zero Commercial Building Code Energy Use Targets



□ Planning Board and City Council Questions and Recommendations

Planning Board Feedback

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- June 6 Planning Board recommendations:
 - ▣ IECC to 30% above 2012 base code
 - ▣ Work with solar community to reduce IFC impact on PV roof coverage
 - ▣ Limit wildland urban interface effect to existing properties
 - ▣ IRC residential fire sprinklers

Council Questions

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- From 1st Reading on Aug. 20, 2013
 - ▣ IRC fire sprinkler provisions
 - ▣ IFC Solar regulations
 - ▣ IWUIC applicability

Clarifications from first reading

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- International Residential Code
 - ▣ Fire sprinklers proposed for all new residential dwellings
 - ▣ Currently fire sprinklers are required for:
 - Residential town homes and multifamily
 - Homes with limited access
 - ▣ NFPA suggests the average cost of a home fire sprinkler system is \$1.61 per square foot.
 - ▣ Effective date proposed to be Sept. 1, 2014

Clarifications from first reading

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- International Fire Code
 - ▣ Staff worked with local and state solar representatives to draft regulations that would allow for maximum solar coverage, while maintaining fire fighter safety.
 - ▣ Optimal compromise between renewable energy and life/safety attained

Clarifications from first reading

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- International Wildland Interface Code
 - ▣ The purpose of the code:
 - Mitigate risk from wildland fire exposures
 - Prevent structure fires from spreading to wildland fuel
 - ▣ Newly proposed for adoption by the city
 - ▣ Applies to new homes within the wildland/urban interface zone
 - Will not apply to existing properties
 - ▣ Staff will conduct educational workshops for existing property owners in the wildland zone.

Changes Proposed at 2nd Reading

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- Proposing an effective date of Jan. 2, 2014
 - ▣ Allows projects already in development review an opportunity to complete the process without a code change mid-review
 - ▣ Provides staff and consultants the time needed to facilitate implementation of progressive efficiency requirements.

Changes Proposed at 2nd Reading

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- IECC Mechanical Equipment Replacement
 - The above code prescriptive standards previously referenced no longer apply
 - Referencing the mechanical sections of the energy code is now necessary
 - The ordinance language was changed to clarify how the code would be applied to equipment replacement projects.

Changes Proposed at 2nd Reading

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- Energy Modeling
 - Language developed for modeling structures 20,000 s.f. or greater in area had inadvertently changed the performance criteria for proposed buildings.
 - The amendment has since been changed to maintain consistency of the code performance requirements.

Next Steps

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- 3rd and 4th quarter 2013: If codes are adopted, staff will continue with public education by offering code workshops
- Effective date of the codes proposed to be Jan. 2, 2014
- Preparation to ensure effective implementation of the updated requirements

Revised Motion...

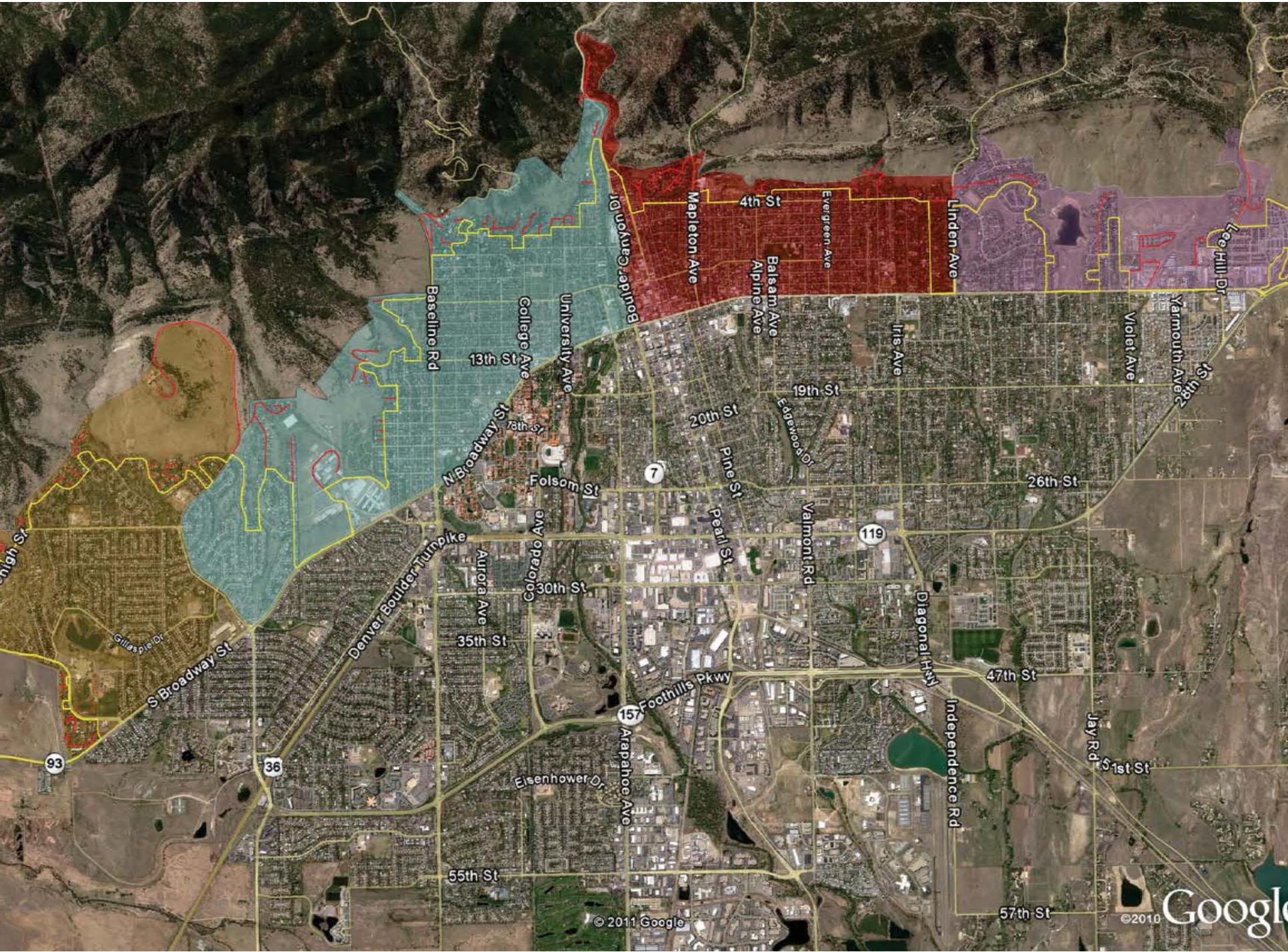
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- Staff requests City Council consideration of this matter and action in the form of the following motion:
Second reading and consideration of a motion to adopt Ordinance No. 7925 amending chapters 10-2, 10-5, 10-5.5, 10-6, 10-7, 10-7.5, 10-8, 10-9, 10-9.5 and 10-10, B.R.C. 1981, adding a new chapter 10-8.5; adopting by reference, with amendments, the 2012 International Property Maintenance, Building, Residential, Energy Conservation, Fire, Wildland-Urban Interface, Mechanical, Fuel Gas and Plumbing Codes, and the 2011 Electrical National Code, Amending Sections 4-20-47, "Zoning Adjustment Filing Fees, and" 2-3-4 "Board of Building Appeals," B.R.C. 1981; and setting forth related details, as amended to **include changes proposed today to the Energy Conservation Code and to the effective date of the ordinance.**

Questions?

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- Questions/Comments?



Wildland Fire Zone

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- Total Properties: 1,908
- Vacant Land: 177
- Single Family: 1,318
- Duplex/Triplex: 19
- Condo: 335
- Commercial: 59