

Reach Code Analysis Tracking Impact on Residential New Construction by Brian Reyes Sustainability Planner

November 18, 2021

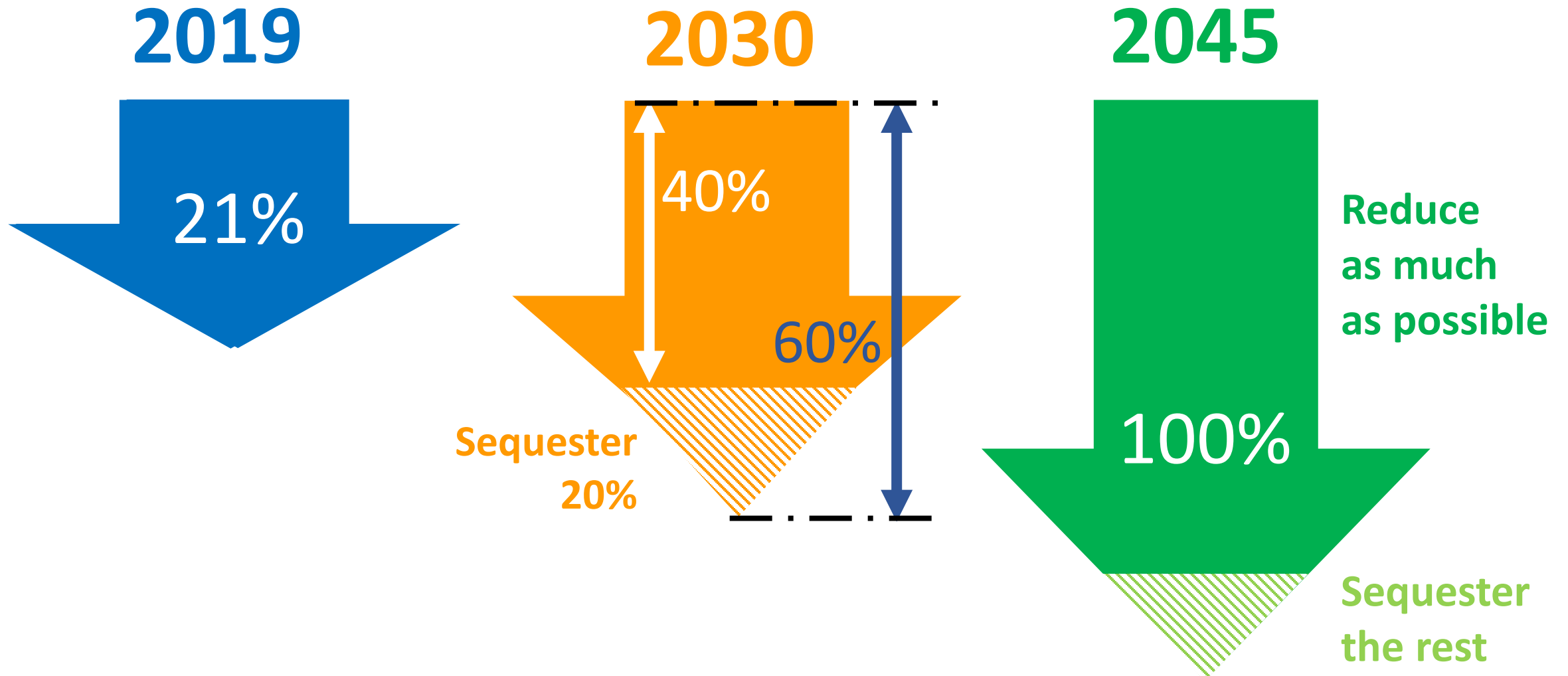
Photo Credit: Jeff Wong



Community Development Agency
3501 Civic Center Drive, Rm 308
San Rafael, CA
www.marinsustainability.org

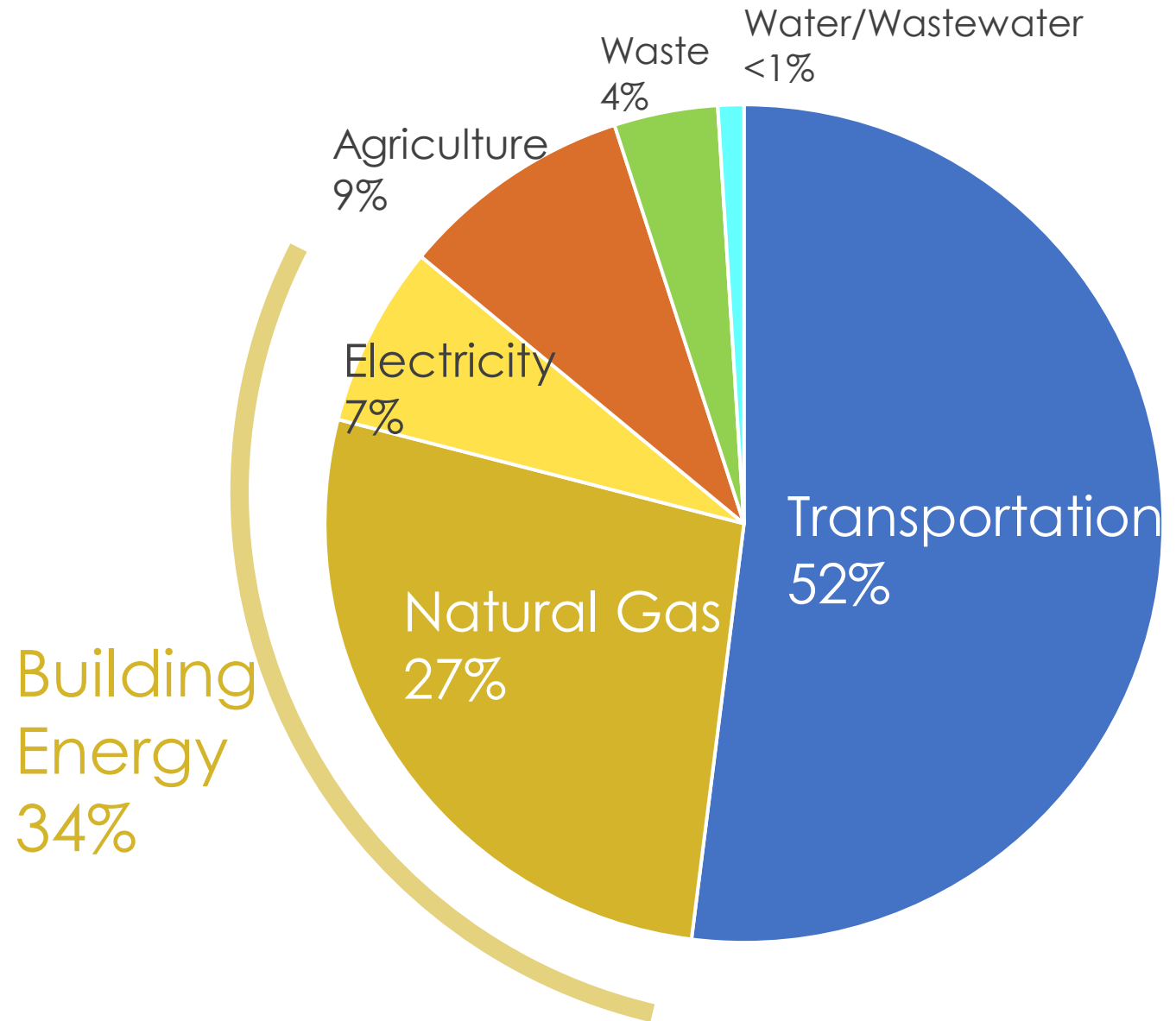


A Carbon Neutral Future by 2045

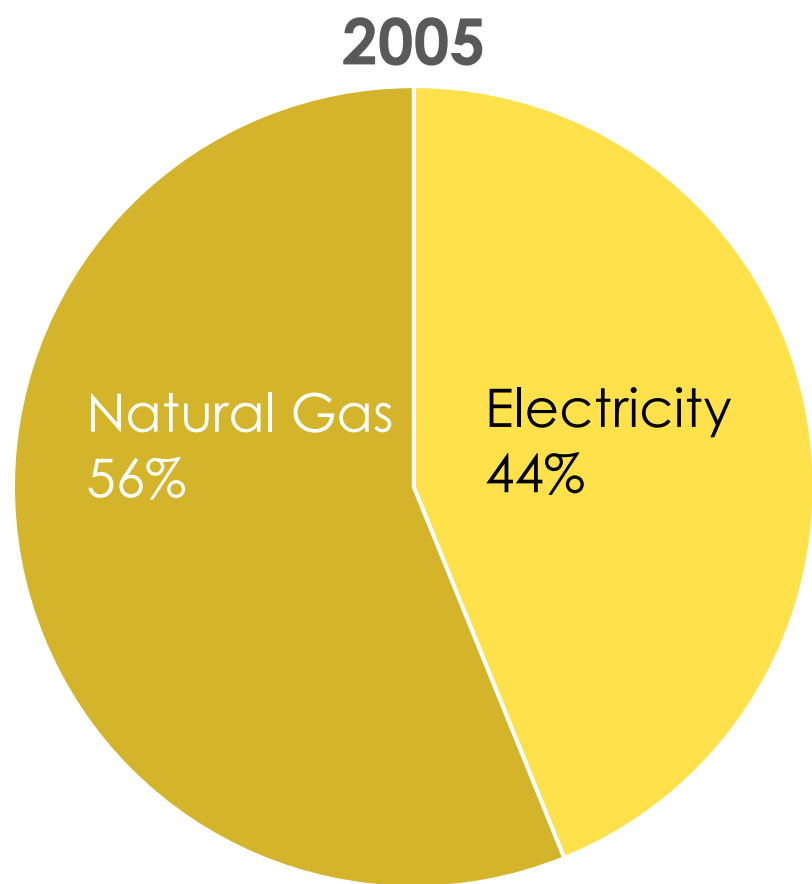


2019 Countywide Emissions

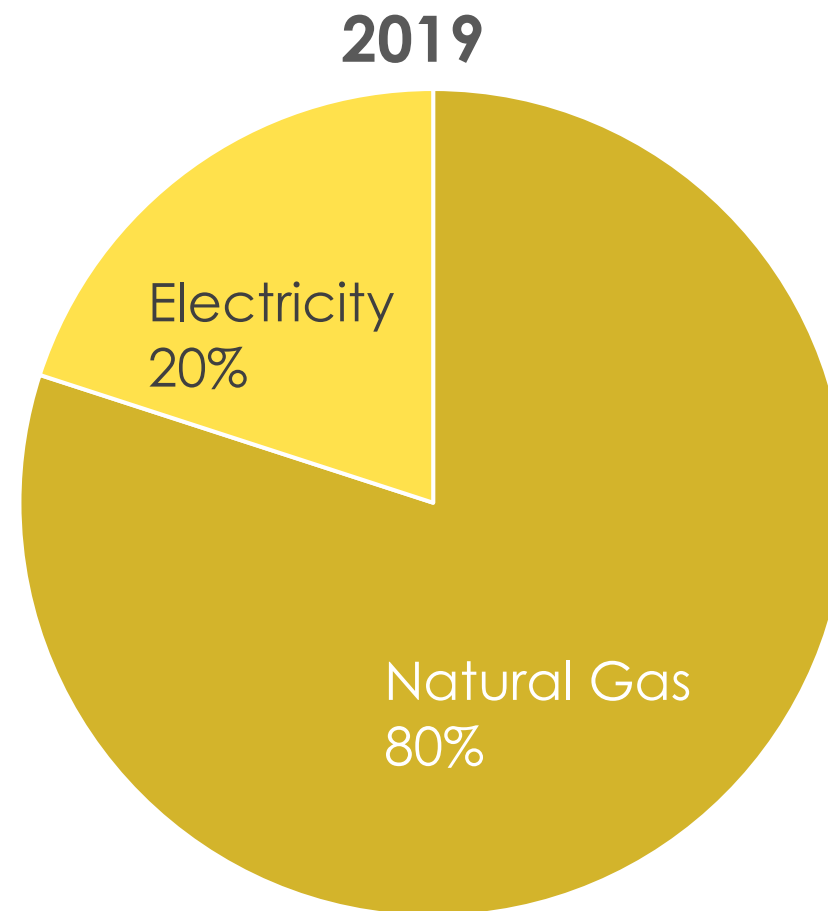
1.4 million
mtCO₂e



Electrification Critical to Decarbonizing Buildings



777,035 mtCO₂e



481,855mtCO₂

A Variety of Green Building Codes

Jurisdiction	Current Reach Code Status	Additional Efficiency Required
County of Marin (Unincorporated)	CalGreen Tier 1: Electric Preferred	For mixed fuel new construction
Mill Valley	CalGreen Tier 1: Electric Preferred	For mixed fuel new construction
San Anselmo	CalGreen Tier 1: Electric Preferred	For mixed fuel new construction
Novato	CalGreen Tier 1	Tier 1
San Rafael	CalGreen Tier 1	Tier 1
Tiburon	CalGreen Tier 1	None - excludes Tier 1 efficiency requirements
Fairfax	CalGreen Tier 1 <i>*All-Electric for Newly Constructed Buildings In effect 3/1/22</i>	None - excludes Tier 1 efficiency requirements
Belvedere	None	None
Corte Madera	None	None
Larkspur	None	None
Ross	None	None
Sausalito	None (considering all-electric)	None

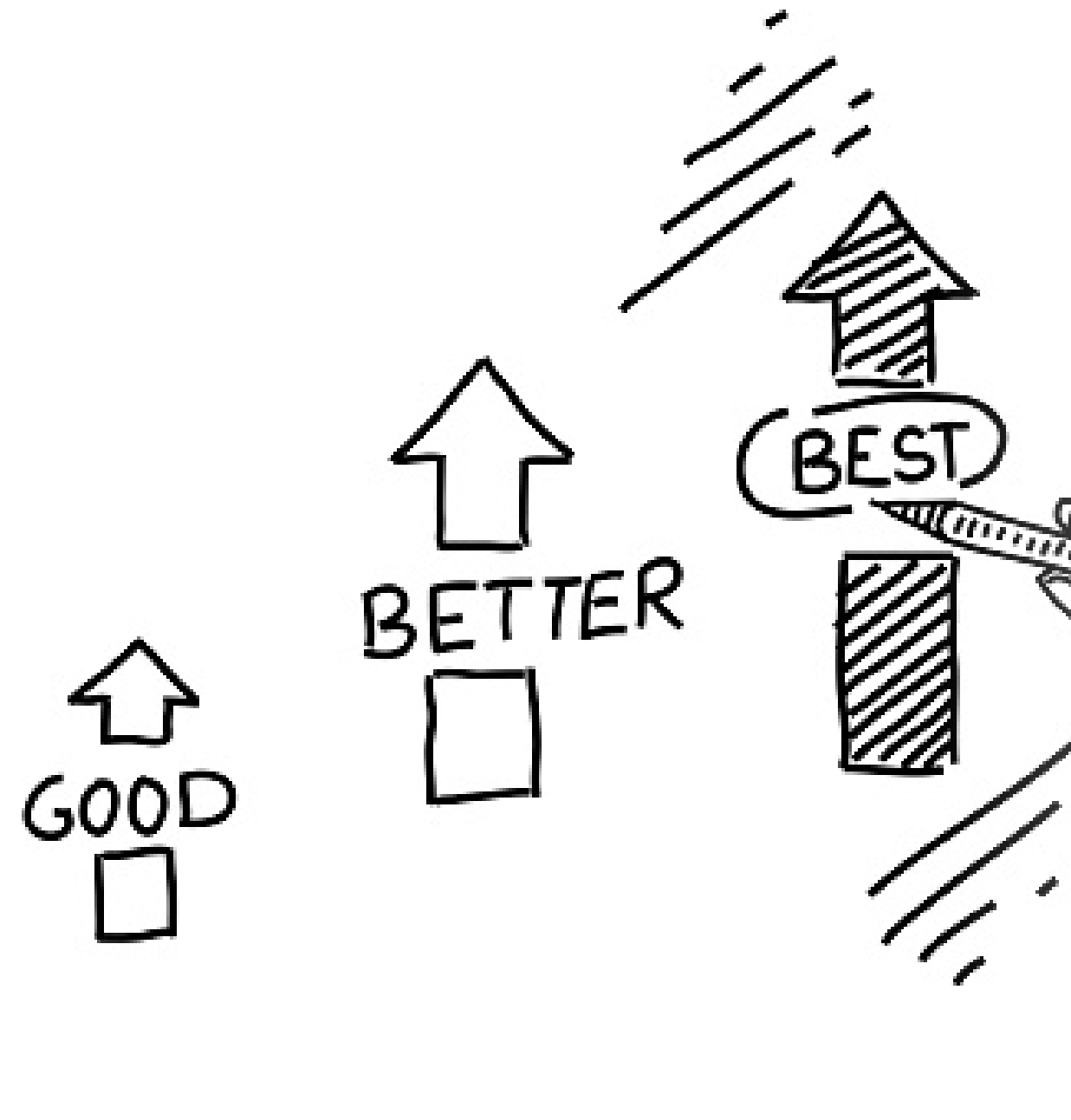
County of Marin Green Building Requirements for New Construction

+ “CalGreen Tier 1 Reach Codes”, with

+ “Electric Preferred Enhanced Energy Efficiency Requirements”

+ 3 Pathways

1. All-Electric (no Gas),
2. Limited-Mixed Fuel (Gas Cooking and/or Fireplace only)
3. Mixed Fuel (Gas and/or Electric)





Why this Analysis?

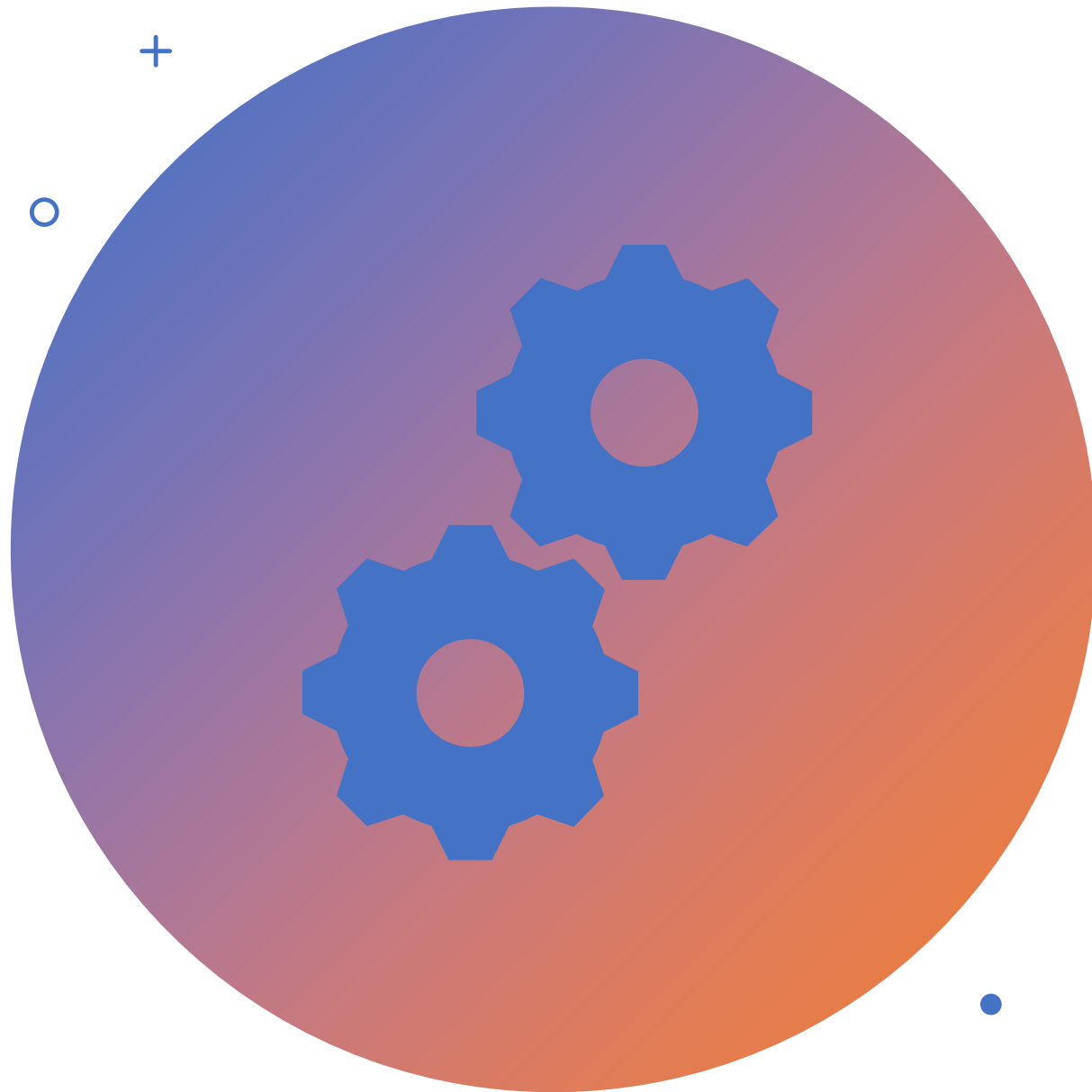
Assess whether our New Construction Green Building Codes are working as intended

- Are we seeing energy and GHG reductions and how they vary across jurisdictions?
- Are our codes being enforced?
- How can we make this a replicable and scalable analysis?
- How are building codes affecting change across the various code types in the County?
- Is our electric preferred reach codes driving projects to adopt all-electric?



Hypothesis

“More aggressive green building energy conservation requirements will result in more building energy and GHG savings”



Methodology and Limitations

- Residential New Construction from CalCERTs and CHEERS
- Targeted Interviews of Architects
- Process, Visualized and Analyzed using PowerBI
- Limitations
 - 2016 TDV vs 2019 EDR compliance metrics
 - Projects sampled according to Design, not actually installed

Results

(Preliminary Findings)

1. Impact of Reach Codes Across Code Cycles
2. Impact of 2019 Electric Preferred Reach Code

Impact of Reach Code

Avg. Compliance Margin (Time Dependent Valuation) Countywide

Code Year ● 2016 ● 2019

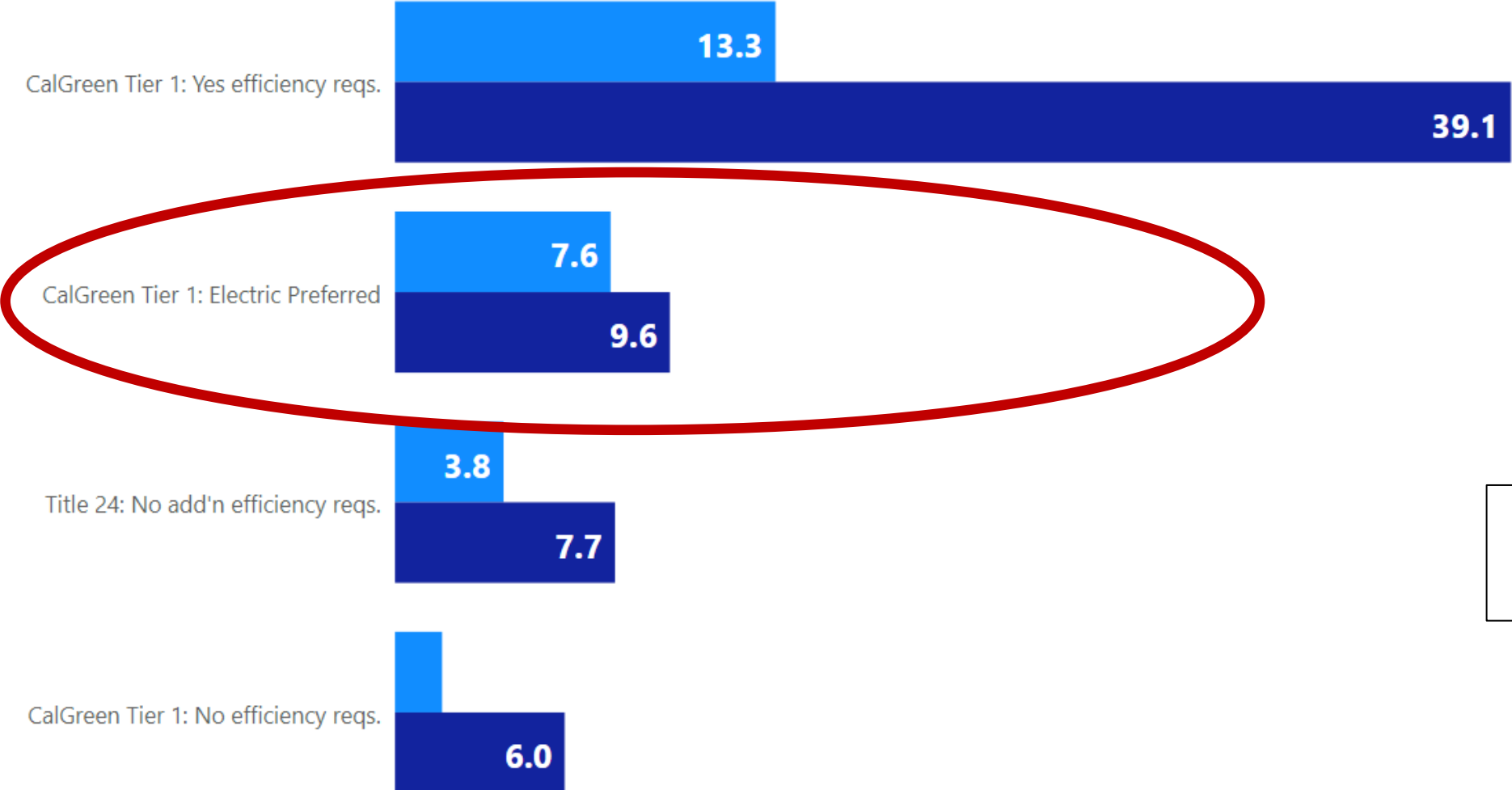


Sample Size
288

Impact of Reach Code

Avg. Compliance Margin (TDV) by Code Status

Code Year ● 2016 ● 2019



Sample Size
288

Impact of Electric Preferred Reach Code by Jurisdictions

2019 Avg. Energy Design Rating (EDR) Compliance Margin

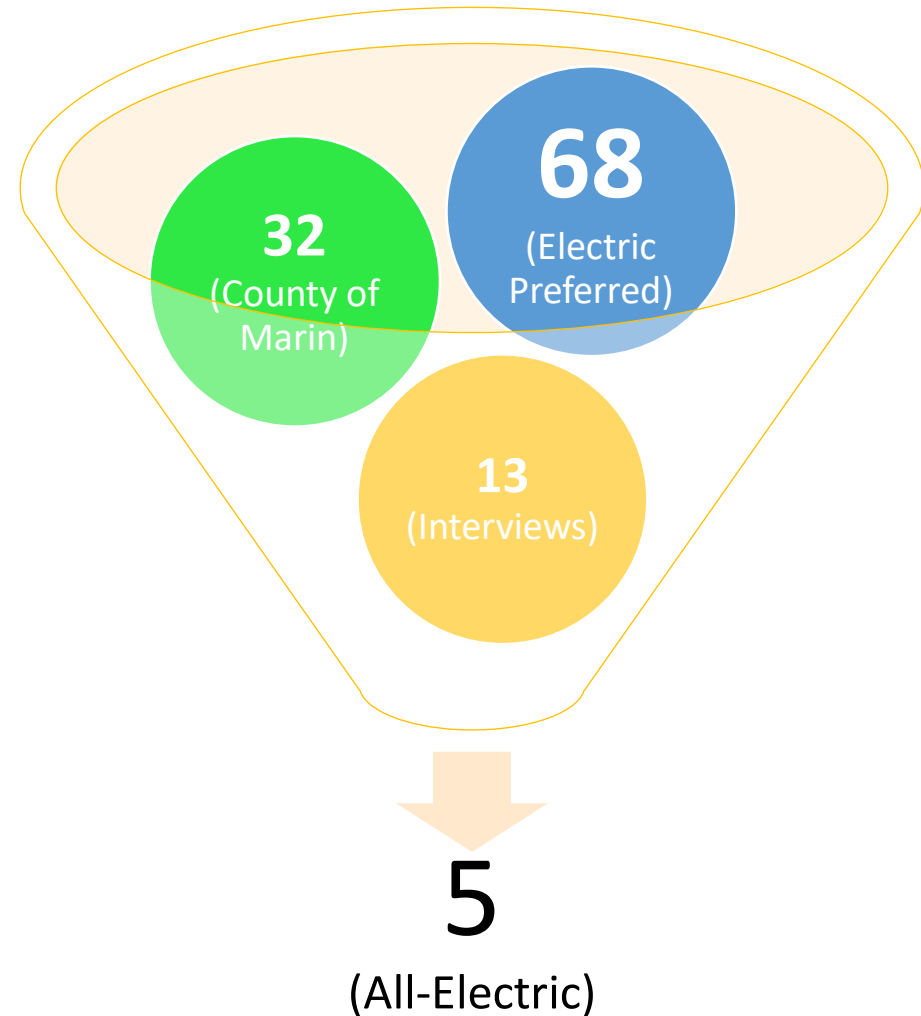
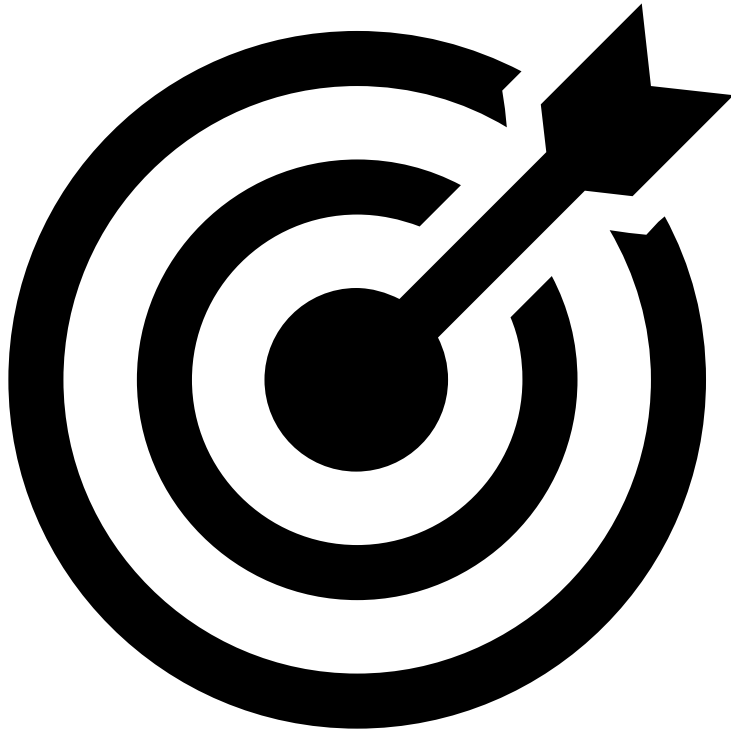


Sample Size
68

Impact of 2019 Electric Preferred Reach Code

County of Marin (Cont'd)

Leverage the Data to Target Projects



Are 2019 Electric Preferred Reach Codes Increasing Electric Adoption in the County of Marin? (Preliminary Findings)

Electric Preferred Pathways	# of Projects	Adoption Rate
All-electric (No Gas)	5	16%
Limited Mixed Fuel (No Natural Gas Space or Water Heating or Gas Cooking and/or Fireplace allowed)	8	25%
Mixed Fuel (Gas+Electric)	19	59%
Total	32	100%

Key Findings

- Enhanced Reach Codes were effective at reducing energy use countywide
- Majority of County of Marin 2019 Residential New Construction Projects still opted for gas installs
- Data is inconsistent, needs cleaning, and analysis unique
- Compliance documentation and enforcement needs to be improved
- Architects/design team needs to drive All-Electric choice?
 - Architect Quote *“9 out of 10 clients want gas cooking”*
- Hypothesis: Still pending . . .

Next Steps

- Near Term
 - Still Finalizing Data Analysis and Trends
 - Conduct Remaining Targeted Interviews
- Mid-Term
 - Final Report by February ~2022
 - Use data to inform stakeholder decisions to right-size updates to green building codes
- Long-Term
 - Update dataset to include completed installations for 2019
 - Make analysis useful and scalable to other jurisdictions?

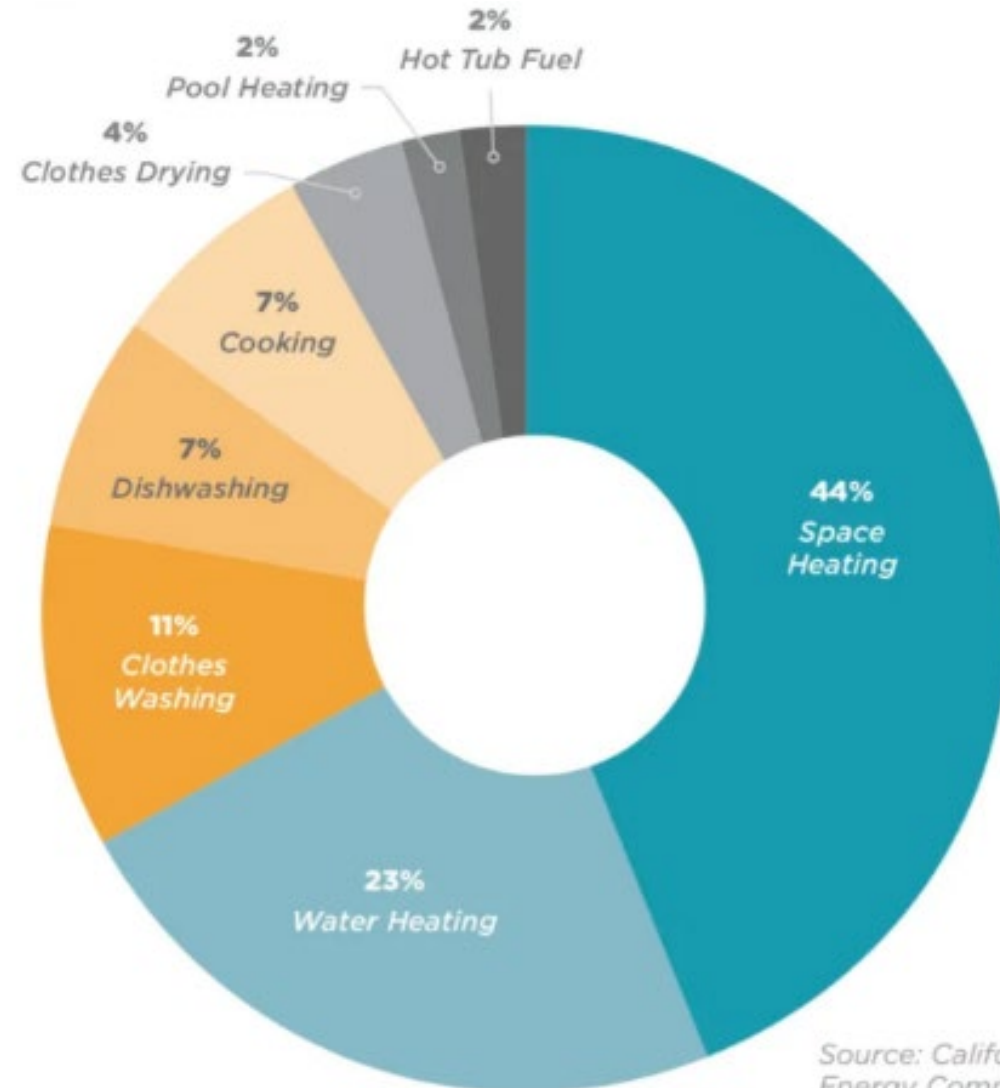
Thank You

BRIAN REYES
SUSTAINABILITY PLANNER
MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
BREYES@MARINCOUNTY.ORG
415-473-2797

Resources

A decorative white torn paper effect runs horizontally across the bottom of the page, with a jagged, irregular edge that gives the appearance of a piece of paper being torn away from a dark background.

California Share of Residential Gas Use by End Use



Source: California Energy Commission