BayREN 2021 Building Department Survey
External Report

ORIGINAL

PREPARED FOR:

BAYREN

October 2021

EXECUTIVE SUMMARY

OVERVIEW

The Bay Area Regional Energy Network (BayREN) is a collaboration of the nine counties of the San Francisco Bay Area. Led by the Association of Bay Area Governments (ABAG), BayREN provides regional-scale energy efficiency programs, services, and resources. The BayREN Codes and Standards program works directly with local governments and their staff. The program contributes to the overall BayREN goal of greenhouse gas (GHG) reduction and energy savings by expanding building department and other local staff's knowledge of energy code requirements and energy policies. The BayREN Codes and Standards programs helps local governments comply with energy codes and policies to save energy and reduce GHG emissions. The Codes and Standards program facilitates the institutionalization of code-related tools within Bay Area building departments and supports the development of state-level energy policies and local reach codes. BayREN's relationships with local governments puts them in a unique position to work with local government building departments and energy policy staff.

This survey was done for two reasons:
1. to learn about Bay Area building departments, their operations, and the challenges they face in enforcing the California Energy Code
2. to request feedback from BayREN participating building departments on program offerings.
This external report provides the results and findings related to the first of these purposes, and does not include the feedback on specific BayREN program offerings.

MAJOR FINDINGS

Survey respondents gave a variety of valuable insights into building department staff constraints, code complexity, and successful BayREN training and resource offerings. Respondents noted code complexity to be a major barrier towards demonstrating compliance. Respondents found safety considerations are prioritized over code compliance.

A list of the major findings is included below:

1. A large subset of respondents noted the complexity of the code to be the biggest barrier towards code compliance, followed by contractor training and building department staffing limitations.
2. Competing priorities such as health and safety related measures make it difficult to focus on energy code enforcement, especially when a building department is short-staffed.
3. Some respondents left specific recommendations supporting the development of Special Inspectors to focus on Energy Code Enforcement. Respondents reasoned a dedicated position left other inspectors to focus on health and safety issues, while prioritizing energy efficiency in the code inspection process.
4. While most building departments allow for permit application, plan submittal, and plan review to be conducted online, they do not allow virtual inspections.

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OVERVIEW

The Bay Area Regional Energy Network (BayREN) is a collaboration of the nine counties of the San Francisco Bay Area. Led by the Association of Bay Area Governments (ABAG), BayREN provides regional-scale energy efficiency programs, services, and resources. BayREN is funded by utility ratepayer funds through the California Public Utilities Commission (CPUC), as well as other sources, drawing on the expertise, knowledge, and proven track record of Bay Area local governments.

The BayREN Codes and Standards program works directly with local government staff. The program contributes to the goal of GHG reductions and energy savings by expanding building department and other local staff's knowledge of energy code requirements and energy policies. The support and investment in local government staff helps local governments make—and follow through on—energy codes and policies to save energy and reduce GHG emissions. The Codes and Standards program also facilitates the institutionalization of code-related tools within the Bay Area communities and supports the development of state-level energy policies and reach codes for local building departments. BayREN's relationships with local governments puts them in a unique position to work with local government building departments and energy policy staff.

While the Codes and Standards provides a range of activities and services to local government staff, the activities that are most widely available and see the most participation are the programs trainings and regional forums.[1]

SURVEY PURPOSE

The purpose of the BayREN 2021 Building Department Survey is to gather pertinent information from Bay Area Building Departments related to jurisdictional business practices to inform future BayREN Codes and Standards program activities. Additionally, the survey is a mechanism for Building Department Staff to provide feedback to BayREN training series and online tools. This external report focuses on the building department information and does not include the feedback on specific BayREN offerings. That feedback will be used internally to inform changes to program offerings in 2022 and going forward.

The survey was designed with the goal of receiving valuable Building Department feedback with the intent of informing BayREN Codes and Standards training offerings in the 2022 calendar year. The survey was also built to identify hurdles to building department business practices and inform ways BayREN can tailor existing online tools and trainings to break down barriers.

SURVEY RESPONDENTS

This survey targeted building departments within the nine Bay Area counties. This was assumed to be Chief Building Officials, but could include members of the building department, community development, sustainability, or whoever decided to respond to the survey. The goal was to receive a high response rate, and to accept only one survey from each jurisdiction. Although the Chief Building Official was targeted, it was made clear that others could respond, or the staff within the jurisdiction could collaborate on a response.

The overall response rate for the survey was 50.5%. To identify any potential bias in the survey results, we looked at the results in terms of both total permit valuation and climate zone. Building departments were divided into four categories based on total building permit values from 2015 as

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[1] For more information on BayREN Codes and Standards trainings and forums, see respectively: http://www.bayrencodes.org/services/trainings/ and https://www.bayrencodes.org/events/

reported by [Construction Industry Research Board](). As shown in Table 1 below, the response rates for building departments with high and very high total permit valuations were near 50%, which is similar to the overall response rate. Building departments with a medium permit valuation had a higher response rate, while those with a low permit valuation had a lower response rate.

Table 1: Total Permit Valuation and Response Rate

Designation	Permit Value ($)	Number of Building Departments	Response Rate
Very High	$350M ≤ X	11	54.5%
High	$100M ≤ X ≤ $350M	31	48.4%
Medium	$40M ≤ X ≤ $100M	23	71.4%
Low	X ≤ $40M	45	40.5%

The team also looked at the geographic distribution of responses. Jurisdictions in the Bay Area are located in five climate zones, as shown in the map in Appendix A, which were grouped into coastal, transitional and inland climates. As shown in Table 2 below, survey response rates were highest in the coastal areas and lowest inland.

Table 2: Climate Zone and Response Rate

Location	Climate Zones	Number of Building Departments	Response Rate
Transitional	2 & 4	38	53.3%
Coastal	1 & 3	46	64.1%
Inland	12	26	19.0%

As a result, the survey responses may be less representative of building departments with smaller total permit valuations and of building departments located in inland areas.

SURVEY TOPIC AREAS

The Survey team recognized the survey had to be short to maximize response rate. To achieve the goals of a lean and accessible survey, questions were divided in four categories:

1) Building Department Operations: How big is the staff, how are in-house and outsourced resources utilized, what types of actions are accomplished at the permit counter and online, and what software is used and how well is it working?
2) Barriers and Recommendations: Open ended opportunities to provide details on the biggest barriers to code enforcement and recommendations for BayREN or others to remove these barriers.
3) Assessment of Existing Resources: What BayREN Codes and Standards resources and training topics has the jurisdiction taken advantage of in the past? For these, how effective were they? For those that they have not taken advantage of, would they consider using it?

4) Assessment of Future Resources: What potential resources and training topics would the jurisdiction find to be useful in the future?

SURVEY METHODOLOGY

The survey team consisted of researchers and implementers from Fronter Energy, Inc., and the BayREN Program Manager for Codes and Standards. This group worked to define the objectives of the survey and developed the list of questions for building department staff. Questions were integrated into a text document for building department staff that may prefer providing responses through a hard copy version of the survey, and into an electronic survey for easier distribution and tabulation.

The survey team aimed to get as close to a 100% response rate as possible. Recruitment started with a consolidated list of building department contacts from each jurisdiction. The list included contacts at 105 building departments, including jurisdiction name and county, contact name, title, email, and phone number. Four distinct methods were used to reach out to potential participants:

- MailChimp emails from BayREN
- Emails from County Representatives
- Letters from County Representatives
- Phone Surveys

Several incentives for participation were offered to thank participants and to motivate building officials to respond to the survey:

- $10 Gift Card for Coffee Shop
- Solar charger to be used as backup in case of emergency
- 60–90-minute BayREN training, with pizza provided for up to 20 people
- Up to 4 hours of technical assistance/consulting on the Energy Code from BayREN consultants
- Participation in an informal meeting with a CEC commissioner

The survey was primarily administered through SurveyMonkey. The questions in the Word document were translated into SurveyMonkey questions. The survey consisted of 14 questions in four sections, plus a wrap-up section. The final survey instrument, in PDF form, is provided in Appendix B: Survey Instrument.

SURVEY FINDINGS

RESPONSE RATES

Surveys were sent to 105 building departments. Five of the communities within Contra Costa County are serviced by the County Building Department (Hercules, Clayton, Orinda, Lafayette, Moraga), and these jurisdictions were not sent separate surveys. In addition, we added the building department for the San Francisco International Airport to the survey list. Table 2 details which building departments responded, and which did not, by county. Overall, 53 of 105 responded for a response rate of 50.5%. In some building departments, more than one individual responded. In these cases, we included only the most complete response.

Table 2 also indicated the climate area (blue is coastal, red is inland, and black is transitional), and Permit Volume (bold is High or Very High, not bold is Medium or Low). Some counties are better represented than others. We attempted to follow up with inland building departments in Solano County by phone but were unable to obtain additional responses.

Table 3: Building Departments that Responded, by County

Responded	No Response	Responded	No Response	Responded	No Response
Contra Costa		**Santa Clara**		**Alameda**	
Contra Costa County	Antioch	Campbell	**Milpitas**	Alameda	**Berkeley**
Danville	**Brentwood**	**Cupertino**	Monte Sereno	**Alameda County**	**Emeryville**
El Cerrito	Concord	**Gilroy**	**Mountain View**	Albany	**Fremont**
Richmond	Martinez	**Los Altos**	**Palo Alto**	**Dublin**	**Hayward**
San Pablo	Oakley	Los Altos Hills	**San Jose**	**Oakland**	**Livermore**
	Pinole	Los Gatos	Santa Clara	Piedmont	Newark
	Pittsburg	**Morgan Hill**		Union City	**Pleasanton**
	Pleasant Hill	Santa Clara County			San Leandro
	San Ramon	Saratoga		**Solano**	
	Walnut Creek	**Sunnyvale**		Benicia	Dixon
Marin		**San Mateo**			**Fairfield**
Belvedere	Corte Madera	**Atherton**	Colma		Rio Vista
Larkspur	Fairfax	Belmont	**Daly City**		Solano County
Marin County	Ross	Brisbane	Half Moon Bay		Suisun City
Mill Valley	San Anselmo	Burlingame	**Menlo Park**		**Vacaville**
Novato	Sausalito	East Palo Alto	Millbrae		Vallejo
San Rafael	Tiburon	**Foster City**	Pacifica	**Sonoma**	
Napa		Hillsborough	Portola Valley	Cotati	Cloverdale
American Canyon		San Bruno	**Redwood City**	Healdsburg	Petaluma
Calistoga		San Carlos	**South San Francisco**	**Santa Rosa**	Rohnert Park
Napa		**San Mateo**	**San Mateo County**	Sebastopol	Sonoma County
Napa County		Woodside		Windsor	
St Helena		**San Francisco**		Sonoma	
Yountville		San Francisco	SF Int'l Airport		

Key

High or Very High Total Permit Value (bold)	Coastal Climate Zone (blue)
Medium or Low Total Permit Value (not bold)	Transitional Climate Zone (black)
	Inland Climate Zone (red)

BUILDING DEPARTMENT OPERATIONS

BUILDING DEPARTMENT INTERNAL STAFF

Table 4 shows the staffing levels of the building departments that responded to the survey. They are based upon responses to the question "How many Full-Time Equivalent (FTE) people are directly employed in your department today?". The building departments were segmented into categories according to the size of their staff based upon this response. This size category is used in other places throughout the survey analysis to determine different responses by different size building departments. In addition, table 4 divides current staffing level by the permit volume (from 2015, per $10M) to provide a rough indicator of how much activity is handled by each staff person in the building department.

Table 4: Number of Full Time Equivalent Workers by Building Department

STATISTIC	SMALL BUILDING DEPARTMENTS	MIDSIZE BUILDING DEPARTMENTS	LARGE BUILDING DEPARTMENTS	VERY LARGE BUILDING DEPARTMENTS	ALL BUILDING DEPARTMENTS
Minimum FTE	1.5	5	11	31	1.5
Maximum FTE	4.5	10	30	250	250
Number of Building Depts.	20	19	9	5	53
Current Staff per $10M Permit Vol (2015)	1.78	1.66	0.83	1.96	1.60
% that are at Full Staffing	70%	58%	22%	60%	57%

As shown in Table 4, most responding building departments are classified as small or midsized (20 and 19 respectively). There is a comparatively smaller number of large or very large building departments (9 and 5 respectively). Survey results indicate that very large building departments have the highest average staffing level per $10M of permit activity, and that very large building departments have staffing levels 23% higher than the overall average. While only 57% of building departments indicate that they are fully staffed, there does not appear to be a correlation between the size of the department and whether they are fully staffed.

The Survey team also looked at data on participation in BayREN Codes and Standards activities in three years (2019-2021) and classified each building department as high participation or low participation. When this additional data is considered, survey results indicate that Large and Very Large building departments are much more likely to participate in BayREN offerings. This may be because Larger building departments have a larger pool of potential staff to participate in trainings, forums, and other BayREN offerings while smaller building departments have a smaller pool of potential staff.

PERCENTAGE OF BUILDING DEPARTMENTS WHO USE OUTSOURCED FIRMS

Table 5 shows the percent of building departments in each size category that make use of outsourced services for various tasks.

Table 5: Building Departments that Outsource Different Tasks

SIZE	PERMIT TECH REVIEW	PLAN CHECKING	BULIDING INSPECTION
SMALL BUILDING DEPARTMENTS	15%	80%	45%
MIDSIZE BUILDING DEPARTMENTS	11%	68%	26%
LARGE BUILDING DEPARTMENTS	11%	67%	78%
VERY LARGE BUILDING DEPARTMENTS	20%	20%	0%
ALL BUILDING DEPARTMENTS	13%	68%	40%

As indicated in the table, many Bay Area building departments outsource duties to third party firms, particularly plan checking and building inspection services. Very large building departments were the least likely to outsource work. Plan checking is most likely to be outsourced, followed by building inspection. Fewer jurisdictions outsourced permit tech review.

OUTSOURCED FIRMS USED

Table 6 shows the specific outsourced firms building departments use by task (Permit Tech Review, Plan Checking, Building Inspection).

Table 61: Number of Building departments that Use Specific Outsourced Firms

FIRM	PERMIT TECH REVIEW	PLAN CHECKING	BUILDING INSPECTION
CSG Consulting	1	11	4
West Coast Code Consultants	1	9	4
4LEAF	1	8	4
Interwest	1	8	2
Bureau Veritas	1	6	3
Phillips Seabrook Associates		6	3
TRB & Associates		5	1
Coastland		2	2
Shums Coda		2	1
O'Brien Code Consulting		2	
Code Source		1	
Independent Code Consultants		1	
Structech		1	

Table 6 shows that six firms provide most third-party compliance services in the Bay Area: CSG Consulting, West Coast Code Consultants, 4LEAF, Interwest, Bureau Veritas, and Phillips Seabrook Associates. The above analysis indicated building departments primarily use third party firms for plan checking responsibilities followed by building inspection duties.

Respondents indicated the most used third-party firms for plan check duties are CSG Consulting, West Coast Code Consultants, 4LEAF, and Interwest accounting for 36 respondents. The least commonly used third-party firms for plan check duties are Code Source, Independent Code Consultants, and Structech accounting for 3 respondents.

Respondents indicated the most used third-party firms for building inspection duties are CSG Consulting, West Coast Code Consultants, and 4LEAF accounting for 12 respondents. The least commonly used third-party firms for building inspection duties are Coastland, Shums Coda, TRB & Associates accounting for 4 respondents.

RESIDENTIAL OVER-THE-COUNTER PERMITS

Table 7 presents responses to the question: "What kind of Permits are Issued at the Counter?" for residential buildings. In addition to these responses, the Appendix provides a listing of individual comments made by respondents regarding the other types of permits that they issue at the counter.

Table 7: Types of Residential Permits that are Issued at the Counter

TASK	RESIDENTIAL			
	SMALL	MIDSIZE	LARGE	VERY LARGE
Re-Roofing	80%	95%	100%	80%
Water Heater Replacement	75%	95%	100%	80%
Heat Pump Water Heaters	60%	84%	89%	60%
HVAC Change-Outs	75%	89%	100%	80%
Window Replacements	70%	89%	89%	60%
Insulation	55%	79%	78%	60%
Lighting	45%	79%	78%	60%
Tenant Improvements	5%	26%	22%	40%

Table 7 demonstrates that permits for re-roofing, water heater replacements, and HVAC change outs are the most common residential projects issued over-the-counter permits. 88 percent of re-roofing projects are permitted at the counter in all building departments. 87 percent of water heater replacement projects are permitted at the counter. 86 percent of HVAC change-out projects are permitted at the counter.

Insulation, lighting, and tenant improvement projects are the least common residential projects issued at the counter. 68 percent of insulation projects are permitted at the counter. 65 percent of lighting projects are permitted at the counter. 23 percent of tenant improvement projects are permitted at the counter.

NON-RESIDENTIAL OVER-THE-COUNTER PERMITS

Table 8 presents responses to the question: "What kind of Permits are Issued at the Counter?" for nonresidential buildings. In addition to these responses, the Appendix provides a listing of individual comments made by respondents regarding the other types of permits that they issue at the counter.

Table 8: Types of Non-Residential Permits that are Issued at the Counter

TASK	NONRESIDENTIAL			
	SMALL	MIDSIZE	LARGE	VERY LARGE
Re-Roofing	60%	74%	67%	60%
Water Heater Replacement	55%	79%	56%	40%
Heat Pump Water Heaters	40%	79%	33%	40%
HVAC Change-Outs	35%	47%	33%	40%
Window Replacements	40%	53%	22%	40%
Insulation	30%	47%	11%	40%
Lighting	25%	37%	33%	60%
Tenant Improvements	5%	11%	11%	60%

Table 8 shows there is more variation in how nonresidential projects are permitted over the counter based on the size of the building department. This is understandable given that nonresidential projects can be more complicated and or have more compliance challenges.

Like residential projects, re-roofing and water heater replacements are the two most common permits issued at the counter, 65 percent and 57 percent respectively. Similarly, insulation, lighting, and tenant improvement projects are the least common permits issued at the counter, 38, 32, and 21 percent, respectively.

ONLINE TASKS & PERMITTING

Table 9 presents responses to the question "What tasks does your department allow to be done online?" In addition to these responses, the Appendix provides a listing of individual comments made by respondents regarding the tasks that are done online only in some cases.

Table 9: Percent of Building departments that Allow Tasks to be Done Online

	SMALL		MIDSIZE		LARGE		VERY LARGE	
TASK	ALL	SOME	ALL	SOME	ALL	SOME	ALL	SOME
Permit Application	65%	15%	79%	11%	89%	11%	40%	40%
Plan Submittal	70%	15%	79%	11%	89%	11%	40%	40%
Plan Review	65%	5%	63%	16%	89%	11%	20%	60%
Virtual Inspections	10%	15%	5%	42%	11%	33%	0%	40%

Table 9 shows that most building departments allow for permit application, plan submittal, and plan review to be conducted online.

Survey respondents indicated plan submittal is the most common building department task conducted online. Of respondents, 69 percent indicated their jurisdiction offered plan submittals to be submitted digitally. Surprisingly, only 40 percent of Very Large building departments indicated plan submittals were done online. Given the volume of permits, projects, and comparative level of resources one would anticipate Very Large building departments would offer a seamless online portal for projects to be submitted and approved.

Survey respondents indicated virtual inspections are the least common building department task conducted online. Of respondents, 6 percent indicated their jurisdiction conducted virtual inspections. This makes some sense given safety considerations, code compliance, and resource considerations.

SOFTWARE USED

Table 10 presents responses to the question: "What software do you use, and how satisfied are you with it?". Note - there may be some overlap in the program titles, making tabulation difficult. In addition to these responses, the Appendix provides a listing of individual comments made by respondents regarding the programs they use and their satisfaction.

Table 10: Software Programs Used and Level of Satisfaction

PLATFORMS	TOTAL	GREAT	FINE	BETTER THAN NOTHING	LIKE TO REPLACE
TRAKiT	26	4	13	4	5
Accela	9	0	7	2	0
Bluebeam	4	3	1	0	0
EnerGov	3	0	0	3	0
MaintStar	3	0	3	0	0
EDEN by Tyler	2	0	2	0	0
Greenvue Fusion	2	2	0	0	0
iWorQ	2	1	1	0	0
ProjectDox	2	1	1	0	0
Citizen Serve	1	0	1	0	0
DigEplan	1	0	1	0	0
Eprocess 360 by WC3	1	1	0	0	0
Infor with Dynamic Portal	1	1	0	0	0
Munis	1	0	0	0	1
My Government Online	1	1	0	0	0
OMNIS	1	0	0	0	1
OpenGov	1	1	0	0	0
Permit Trak	1	0	1	0	0

Table 10 illustrates two software platforms are commonly used in building departments: TRAKiT and Accela. Furthermore, certain platforms are also deployed through multiple vendors/firms (TRAKiT), while other software vendors provide multiple platforms (Tyler Technologies with Eden and Munis). The functions between each platform also varies. For instance, Accela provides a range of comprehensive administrative, and tracking supports while Bluebeam is more of a construction plans coordination and review tool. Satisfaction with software platforms varies. It may be beneficial to better understand the capabilities of the most prevalent platforms and understand how software could enhance functionality in ways that building departments would find helpful.

In addition, there were quite a few building departments that utilized some standard business tools, such as Outlook, Excel, Box, Dropbox, and Zoom. Others noted that they used additional software programs or processes developed and used by building departments. It may be fruitful to engage with building departments and learn how "homegrown" tools are developed, implemented, and used. Based upon evaluation, jurisdiction developed tools could be proliferated to other building departments in the Bay Area.

BARRIERS AND RECOMMENDATIONS

The full responses to the open-ended questions about the main barriers to code compliance and recommendations for improvement are provided in the Appendix. A summary of the responses is provided below.

Barriers

Code Complexity

Respondents indicated the existing energy code is too complex to ensure compliance. Some issues respondents identified are:

- Staff turnover greatly effects code compliance as new building department staff are less familiar with the energy code
- Energy forms are convoluted and difficult for staff to navigate
- Continually changing set of requirements with new code changes

Contractor Knowledge

Respondents indicated contractor knowledge of the existing code was a challenge to demonstrate compliance. Some issues respondents identified are:

- Contractor and installers are not knowledge of code requirements, which effects code compliance
- Contractors find it difficult to access resources to help ensure code compliance. For instance, contractors are unfamiliar with Energy Code Ace.

Prioritization

Respondents indicated building departments and contractors have higher priorities than code compliance. The main issue respondents identified are:

- Code compliance is a significantly lower priority to safety for contractors and building inspectors

Homeowner Awareness

Respondents indicated there is an education and awareness gap between homeowners and code compliance. Some issues respondents identified are:

- Homeowners were generally not aware of new code requirements especially for solar, lighting, and radiant barrier projects
- Homeowners were unwilling to invest the time or money to familiarize themselves with new code requirements

Costs

Respondents indicated cost is an issue for building departments to ensure code compliance. Some issues respondents identified are:

- Inspection, reporting, and tracking code compliance is an extra cost building departments can't incur.
- Building department budgets are wasted on simple compliance items
- Energy Code compliance takes as much time as structural plan review, which is a higher priority.

Respondent Recommendations

Respondents gave recommendations to the question "Do you have ideas or recommendations for what would help you address these barriers?". A summary of responses is provided below.

Simplification

Respondents gave recommendations to simplify code compliance. Some recommendations respondents identified are:

- Provide fewer and simpler forms, especially for basic projects.
- Reformat Energy Code to align with California Building Standards Code
- Provide examples and sample equations to each required form
- Provide more pathways to compliance for all-electric buildings
- Consolidate Cal Green, CEC, Clean Bay and Green Halo
- Delete all forms and have CalCERTS or CHEERS provide software like "solar app" and require all permittees to go through their software prior to pulling a building permit

Training

Respondents gave recommendations related to code compliance training. Some recommendations respondents identified are:

- Provide training updates for senior plan reviewers at the outset of a code cycle and on other codes.
- Provide more education for enforcement agencies, as well as for staff who provide contracted compliance services.
- Incorporate experts to deliver in-depth training alongside CEC staff.
- Offer narrower/more condensed training from BayREN for supplemental training, review of new issues, etc.
- Require contractor continuing education.
- Provide more training on heat pumps

Staffing

Respondents gave recommendations related to staffing considerations. Some recommendations respondents identified are:

- Develop a program of Special Inspectors who specialize in Energy Code.
- Incentivize compliance by providing additional funding for building departments for compliance instead of continual unfunded mandates.
- Provide a mechanism to verify that building departments are enforcing the energy features.
- For HVAC, 3rd party HERS should leave the paperwork on site, so inspector does not need to come back to city hall to check a website.
- Provide information style marketing to City Administrators, Mayors and Directors on the importance of having well trained and educated Building Departments.

Outreach

Respondents gave recommendations related outreach. Some recommendations respondents identified are:

- Require a resale "Quality Assurance" inspection to document the existing condition of every property at time of sale, as a condition of escrow, and post the results of these inspections on a County website that is available to the public and searchable by address to enhance consumer protection.
- Subsidize HERS verification cost for permittees.
- Collect Fire-Life Safety, Seismic Preparedness, Energy Conservation data and document for public use and to inform County policy makers.
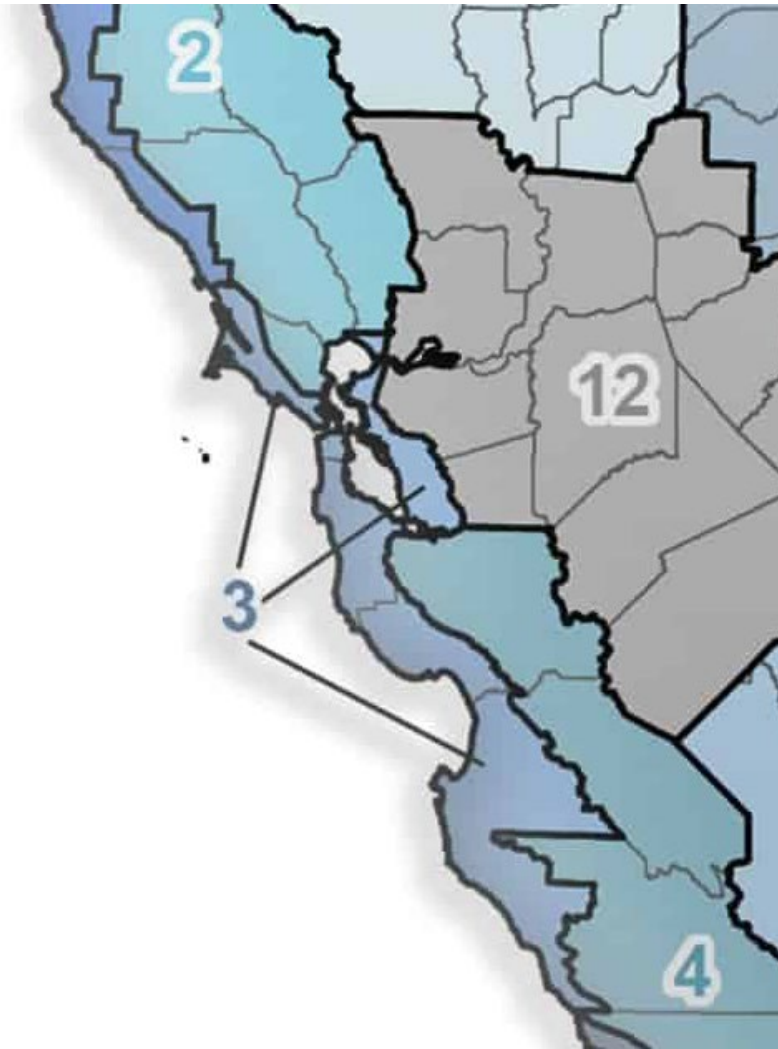
APPENDICES

Appendix A: Map of Bay Area Climate Zones

Appendix B: Survey Instrument

Appendix C: Detailed Responses

(Source: California Energy Commission)

Bay Area Building Department Survey

BAYREN

> Jurisdiction: _____
>
> Position of Person Completing Survey: _____
> *This information will only be used for tracking and follow-up.*

1. How many Full-Time Equivalent (FTE) people are directly employed in your department today _____?
    (For example, if you have one full-time person and three half-time people, then you have 2.5 FTE.)

2. Does that represent a full level of staffing? ○ Yes   ○ No

3. In the chart below, please indicate approximately how many FTEs work on each task:

	Permit Tech Review	Plan Checking	Building Inspection
In-house staff			
Outsourced staff			
Please indicate any firms to which work is outsourced			

4. What types of permits does your department issue at the counter? (Please check all that apply)

	Residential	Non-Residential
Re-roofing	☐	☐
Water Heater Replacement	☐	☐
Heat Pump Water Heaters	☐	☐
Window Replacements	☐	☐
HVAC Change-outs	☐	☐
Lighting	☐	☐
Insulation	☐	☐
Tenant Improvements	☐	☐
Other (please specify: _____)	☐	☐

5. Which tasks does your department allow to be done ONLINE?   (Please select one entry in each row).

	NO Projects	ALL Projects	SOME Projects	If some, please list which ones (or provide a link or attachment to a list)
Online Permit Application	○	○	○	
Online Plan Submittal	○	○	○	
Online Plan Review	○	○	○	
Virtual Inspections	○	○	○	

6. What software programs do you use to track applications and provide online services? For each, please indicate your level of satisfaction.

Program Used	It's great!	It's fine	It's better than nothing	I would like to replace it
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○

Please add any comments about software programs: (next page)

Please add any comments about software programs:

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7. Please describe what you see as the top barriers to Energy Code enforcement in your department.

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8. Do you have ideas or recommendations for what would help you address those barriers?

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9. How likely would your department be to use the following **TYPES** of code compliance resources, and how helpful do you think they could be? (Please select one entry in each row).

	We would not be likely to use this	We would be likely to use this, and expect it would be…			
		…slightly helpful	…somewhat helpful	…very helpful	…extremely helpful
Live trainings (online or in-person)	○	○	○	○	○
On-demand online trainings	○	○	○	○	○
Permit guides for applicants	○	○	○	○	○
Assistance sheets for staff	○	○	○	○	○
Code coach office hours – live Q&A sessions with local energy code experts (online or in-person)	○	○	○	○	○
Videos providing overviews of new technologies	○	○	○	○	○
Online/electronic tools	○	○	○	○	○

Please add any comments about these or other TYPES of resources you might find helpful:

<div style="border:1px solid #000; height:180px;"></div>

2

10. For each of the following **TOPICS**, please indicate how helpful training and resources would be and how likely you would be to use them. (Please select one entry in each row).

	We would not be likely to use this.	We would be likely to use this, and expect it would be…			
		…slightly helpful.	…somewhat helpful.	…very helpful.	…extremely helpful.
Energy Code Organization & Forms 101	○	○	○	○	○
Accessory Dwelling Units	○	○	○	○	○
Residential HVAC Design	○	○	○	○	○
Central Heat Pump Water Heaters for Multifamily and Commercial Buildings	○	○	○	○	○
Ventilation in multifamily buildings	○	○	○	○	○
Electrification Technologies	○	○	○	○	○
Acceptance Testing (ATTCP)	○	○	○	○	○
Nonresidential Lighting Compliance	○	○	○	○	○

Please add any comments about these or other TOPICS for which you might find resources to be helpful:

11. BayREN already offers the following trainings and resources. For each item, please indicate whether you have used it or not, and how useful you found it or think it would be.

Resource/Training	I HAVE used this resource		I have NOT used this resource	
	Would recommend or use again	Would not	Would consider using it	Would not be helpful for us
Training Topics				
Energy Code Changes: Residential	○	○	○	○
Residential Heat Pump Water Heaters	○	○	○	○
Residential New Construction	○	○	○	○
Residential Additions	○	○	○	○
Residential Alterations	○	○	○	○
Residential Envelope Compliance	○	○	○	○
Quality Insulation Installation	○	○	○	○
Residential ZNE for New Construction	○	○	○	○
Reach Code Implementation (customized for each jurisdiction)	○	○	○	○
Energy Code Changes: Non-Residential	○	○	○	○
Nonresidential New Construction	○	○	○	○
Nonresidential Tenant Improvements and Alterations	○	○	○	○
Nonresidential Lighting Compliance	○	○	○	○
Permit Guides, Technical Assistance Sheets, and related information				
Permit Guide on Residential fenestration alteration	○	○	○	○

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Resource/Training	I HAVE used this resource		I have NOT used this resource	
	Would recommend or use again	Would not	Would consider using it	Would not be helpful for us
Permit Guide on Residential roofing	O	O	O	O
Permit Guide on Residential water heater alteration	O	O	O	O
Permit Guide on Nonresidential re-roofing	O	O	O	O
Permit Guide on Nonresidential unitary HVAC	O	O	O	O
Heat Pump Water Heater Assistance Sheet (for building department staff)	O	O	O	O
Energy storage systems: Links to checklists, trainings, etc.	O	O	O	O
Electronic Tools				
ePermit Tool – electronic version of permit guides for residential fenestration, residential roofing, and residential water heater alteration	O	O	O	O
CodeCycle electronic plan check tool for commercial lighting	O	O	O	O

12. Please provide any additional comments or suggestions on what BayREN could do to help building departments with energy code compliance and enforcement.

[text box]

13. For those responding by the thank-you gift drawing deadline, please indicate which thank-you gift drawings you would like to enter (please select as many as you would like):
    - ☐ Solar charger (two available)
    - ☐ 60-90 minute in-person training for your department (when allowed) with pizza provided for up to 20 people (two available)
    - ☐ Four hours of technical assistance/consulting or training from Russ King or Amy Dryden (two available)
    - ☐ Informal meeting for up to three staff members with CEC commissioner Andrew McAllister (one available)

14. Would you be willing to provide follow-up information over the phone or by email?   ☐ Yes   ☐ No

15. Please provide your name, email address and phone number. This information will be used for thank-you gift eligibility and for any follow-up questions. *Remember that all survey information, including any follow up, will be anonymous in reporting.*

Name: _____

Email: _____

Phone Number: _____

4

APPENDIX C: DETAILED RESPONSES:
BUILDING DEPARTMENT OPERATIONS

Comments on Programs:

- Maintstar: Requires lots of follow-up and customization in order to make it work.
- Energov: There are always issues with software. This one has too many workarounds.
- CRW TRAKit: We have a contract to upgrade to a newer version of CRW, I believe it is called Community Development. The actual purchase order will happen in the new fiscal year. Our current version is 2014.8.1.2, and I think it is no longer supported. We have a program called Bluebeam which we will be using for digital review of plans. We are transitioning away from paper, to digital, but it is not moving quickly.
- Starting 7/26/21, SFDBI expanded the option of Electronic Plan Review (EPR) to all In-House Review projects, using BlueBeam. The objective is to create a one-stop online shop for In-House Permits. https://sf.gov/resource/2021/electronic-plan-review-epr-resources
- Central Square TRAKiT: We don't need anyone asking us to change to a new one. So, please no more salespersons regarding this. This was just installed last year during the beginning of the Pandemic.
- Sunguart – TRAKiT, CRW: IN THE PROCESS OF A MAJOR TRAKIT UPGRADE. IT SHOULD ONLY BE BETTER.
- EDEN by Tyler, Eprocess 260 by WC3, Email for OTC permits: We are moving to Energov which will move the 3 items above to a single system.
- We started opengov on June 8th 2021. Accela was just not functioning and too expensive and time consuming to fix.
- [We are] on a mission to implement an optimized online automated building permitting program for increased reliability in service delivery and resilience to externalities impacting on-site service delivery.
- Effective for virtual meetings and collaboration.
- We are currently under contract do develop an electronic plan review platform
- Tyler Energov: I do not recommend it to anyone.
- Fully a paper department

Explanation of "SOME" response to question about which tasks can be done online:

- We did virtual inspections for almost all projects from May 2020 to May2021
- Online Permit Application - this changed due to the pandemic. Online Plan Review - transitioning, but partial, small departments don't have this ability. Virtual Inspections - almost none.
- Online Permit Application: Single-trade (electric-only, or plumbing-only). Online Plan Submittal: PV, large new construction. Online Plan Review: large new construction; expanding from there.
- Simple inspections such as sewer replacements
- wtr htr, el svc, furn., roofs, 2) most, 3) not hardcopy plans, 4) less now that the pandemic has eased, but still available
- Residential and minor projects.
- We have done some virtual but not enough to say we have a solid program in place. We are looking at the concept.
- Reroofing, Residential rooftop PV and Residential EV charging station installations

- Plan review is performed electronically or digital for all projects. May need clarification on definition of 'online' in this instance. Virtual Inspections are currently limited to certain types of inspections such as reroofs, water heaters, water service, underfloor insulation etc.
- Those deemed appropriate by the CBO
- Online Permit Application: Roof, water heater change out, service upgrade Online Plan Submittal: Solar PV
- Solar projects, generators, decks, sheds/agricultural buildings (square footage limitations), master planned projects (i.e swimming pools, water tanks), bathroom and kitchen remodels.
- small projects
- Solar PV, ESS, Water Heaters, HVAC Changeouts, Reroofing, etc.
- Minor Over-the-Counter Permits
- as needed and nonstructural
- Only if requested
- we accept application through emails, 2) we accept plans through emails, 3) we return approved plans through email
- currently online apps are through email. this will change this next year and all applications will go through a web protal provided by central square as part of their community development software.
- Solar PV, Generators, Small Residential remodels, Patio/carports, Misc. projects
- All submittals are electronic, submitted by email.

BARRIERS AND RECOMMENDATIONS

Please describe what you see as the top barriers to Energy Code enforcement in your department. *(Note that the following comments are divided by jurisdictions that had high participation in BayREN Codes & Standards offerings and jurisdictions with low participation.)*

High Participation:

- Amount of construction done without building permits
- applicant confusion
- Code education for staff - knowledge of people in the field.
- Complexity and education
- Complexity of the code
- Complexity of the regulations & time wasted on reports for simple items such water heater changes outs
- Complexity, reporting, tracking
- Contractors' knowledge of which forms to provide and at what phase of the project
- Energy conservation is still a low priority for traditional builders and building department staff because the adverse effects of noncompliance remain abstract, compared to electrocution from noncompliant electrical installations, or structural collapse from noncompliant building construction.
- It is treated as a lower priority, as compared to 'Fire Life Safety.' The long-term benefits of reducing carbon emissions, or VOCs, or of removing combustion from homes is not readily visible. Some don't believe that climate change is real, or just say that it won't matter if we (this city, or county, or state, or country) do our part, since other countries will continue to pollute.
- Outdated permitting software
- Overly complicated regulations

- Staffing versus continually increasing energy efficiency requirements versus health/life-safety
- The complexity of the written code. It is not user-friendly, even in a code environment.
- The Energy Code is complex; that's a challenge for the public and an administrative challenge when staff inevitably turn over. We have good processes to track energy code compliance documentation from intake to inspection, but [our department] handles the full range of projects from residential appliance replacement to megaprojects constructing many large buildings. Simplification, and providing more pathways to compliance for all-electric, would be helpful.
- Too many forms
understanding of the code requirements including which forms to fill out and how to submit. Also, the cost associated with the report and inspection.

Low Participation:

- homeowner do not have the knowledge, time, or funding to complete energy code documentation. 2) contractors not focused on energy conservation
- All of our challenges are related to minimal staffing.
- Applicants indicate informational resources on what forms are required and when they are required can be difficult to find.
- Code is poorly presented, too complicated, and takes forever for a person who does not have the best experience.
- Continuing code expansion and changes.
- Depending on the requirement, cost is commonly used as a point of opposition, as well as, reluctance of the contractor performing the work.
- Having not only the correction forms but how to help the average person on how to fill them out when there is not a designer involved.
- Ignorance of energy code requirements.
- It takes as long to do Energy as it does a structural plan review. Training only helps so much for a small jurisdiction with limited staff.
- Lack of contractor / homeowner familiarity with energy codes.
- Lack of contractor/installer knowledge of code requirements.
- Lack of resource in term of training, and budgeting.
- Limited amount of time for review and inspection where higher priority reviews including Life Safety, Structural, Accessibility, Plumbing, Mechanical, Electrical take precedence.
- management has denied training
- No barriers: Energy code requirements are reflected on approved plans and field inspected.
- Public awareness of the new energy code requirements such as solar required, nonsocket based recessed light fixtures, and radiant barrier.
- The applicants, contractors and architects do not know the energy code requirements. They do not know about the Energy Code Ace website, they do not understand how or which forms they need to complete.
- The energy forms and MM need to be condensed and targeted for each type of project. Inspectors use memory and habit for inspection because they just do not have the time to read 4 pages of requirements.
- THE OVERALL SIZE OF OUR PROJECTS AND THE WILLINGNESS OF THE APPLICANT TO CONSERVE.
- The time to train staff because your are already short staffed and have other competing priorities
- Too many Energy Compliance Forms. Consultant driven industry.
- Too many forms and knowing what form needs to be submitted
- Understanding the codes

Do you have ideas or recommendations for what would help you address those barriers?
(Note that the following comments are divided by jurisdictions that had high participation in BayREN Codes & Standards offerings and jurisdictions with low participation.)

High Participation:

- A code commentary going code section by code section would be very helpful.
- Change outs of water heaters / reroofs and similar work should have a "do this" and you are done. Rather then reports and / or web sites that need to be checked. For HVAC, 3rd party HERS should leave the paperwork on site fso the inspector does not need to come back to city hall to check a website.
- Education
- Energy requirements have become substantial, almost warranting separate inspection. Our plan checkers and inspectors are regularly told they need to "enforce this too" from an ever expanding code series. Building departments keep adding to the plan check & inspection load and limit the time available to complete a thorough review. The problem will continue until Energy can contribute to the funding of plan check and inspection.
- I have used CodeCycle and find it takes a full separate inspection to complete energy compliance inspections. This is not feasible for building departments who perform all trade inspections and really distracts them from performing life safety inspection. The lighting compliance acceptance forms are simple and realistic.
- Incentivize compliance by providing additional funding for building departments for compliance instead of continual unfunded mandates.
- It is very important that some type of outreach is done by the State to the applicants so they have a better   understanding as to why the city's are require information that they do in order to determine if they are meeting the requirements of the California Energy Code and how it will help their permitting proses go more smoothly and quickly.
- more time in the day
- Require contractor continuing education
- Requiring re-sale "Quality Assurance" inspections to document the existing condition of every property at time of sale, as a condition of escrow, and then posting the results of these inspections on a County website that is available to the public and searchable by address to enhance consumer protection. Fire-Life Safety, Seismic Preparedness, Energy Conservation data would then be collected and documented for public use and informing County policy makers.
- Simple is better
- Simple uncomplicated forms that a 5th grader can complete. Education for contractors and homeowners.
- Simplification, and providing more pathways to compliance for all-electric, would be helpful.
- Simplify the submittal/documentation
- Special inspectors
- State funding to local governments to increase building code enforcement
- State to subsidize HERS verification cost for permittees.
- The BayREN survey reinforces the necessity for a small jurisdiction to contract out these specialized services.
- The Energy Commission should make an effort to simplify the litany of forms required for basic projects.
- Trainings help. At the outset of a code cycle, we typically send senior plan reviewers to training on Energy Code as well as updates to other codes. The in-depth training delivered by experts alongside CEC staff is helpful for that purpose. We use the narrower/more

condensed offerings from BayREN Codes for supplemental training, review of new issues, etc.

- We are currently working on obtaining new software
- Yes, I do have an idea about this. The energy forms, CF1Rs, 2Rs, and 3Rs are tracked on the CalCERTS and CHEERS registries. There is a Project Status Report, PSR, for each permit, which lists all the forms, and whether or not they have been submitted. This covers all projects with any CFR. The status is shown with big red or green dots. However, if the building inspectors don't confirm that the projects are in compliance, nothing happens. I believe there could and should be some mechanism to verify that building departments are actually enforcing the energy features. There could be a CEC website which posts the results, so either the CEC, or interested citizens, or environmental groups could check the progress, and possibly give reminders when the projects fall short of completion.

Low Participation:

- Additional dedicated funding for additional staff from State or Federal.
- Consolidate Cal Green, CEC, Clean Bay, and Green Halo
- education
- Examples attached to each required form. Sample equations if necessary.
- I THINK IT WOULD BE EASIER IF IT WAS MORE STREAMLINED AND WAS EASIER TO UNDERSTAND FOR THE APPLICANT THAT IS FRONTING THE BILL FOR THE REGULATIONS AND COMPLIANCE.
- Information style marketing to City Administrators, Mayors and Directors of the importance to have well trained and educated Building Departments especially when it come to the Energy Code.
- It takes as long to do Energy as it does a structural plan review. Training only helps so much for a small jurisdiction with limited staff.
- leave the jurisdiction
- Make it more simpler by deleting all forms. Have CALCERTS OR CHEERS provide a software like "solar app" and require all permittees to go through their software prior to pulling a building permit.
- Maybe there could be a 'green star' rating to rank how well building departments are doing with their energy compliance.
- More education opportunities, not only for enforcement agencies, but for the contractors, technicians, and installers performing the work.
- More training for contractors.
- More web-based training.
- No, applicants are directed to Energy Ace as a resource.
- provide access to code professionals to help complete energy code documentation for free
- Recommend to the CEC that they reformat the Energy Code to align with the rest of the California Building Standards Codes, which would make it MUCH EASIER for staff to understand and locate provisions for reference.
- Simplify and reduce the number of Title 24 Energy Compliance Forms and Required Documentation.
- Simplify energy codes to the extend feasible. Continue to offer and promote free online energy code education.
- Sure, figure out a solid set of expectations that can be easily interpreted and applied.
- There should be more outreach done to the Architects, designers and installers by the State helping these groups understand all of the updates, provide online training to them for how to complete the required forms and documentation that is need for the city's to be able to do a complete plan review.   There is a lot of confusion from companies installing and

designing ADU's. They think they are exempt from the energy code requirements including solar.

- Visit individual building departments for training purposes and to keep the Energy Code requirements in the forefront.
- Would like to see more training available, the more specific the better, for example " "Building inspectors guide to energy requirements for a new sfd" "Plan check requirements for additions" "how to read an energy analysis"

Please provide any additional comments or suggestions on what BayREN could do to help building departments with energy code compliance and enforcement. *(Note that the following comments are divided by jurisdictions that had high participation in BayREN Codes & Standards offerings and jurisdictions with low participation.)*

High Participation:

- We love BayREN! Trainings are very valuable to our department. Thank you!
- More web-based training.
- Note, your header for this survey still says it is a DRAFT (PDF). the question about 'over the counter insulation' permits seems odd, i have never seen any permit that is for insulation, it is just part of a larger permit. Maybe there could be a 'green star' rating to rank how well building departments are doing with their energy compliance.
- The exchange of best practices at BayREN Forums, particularly the June 2021 forum, is helpful.
- Continue your excellent training and resources to help demystify the topic of California energy compliance. Recommend to the CEC that they reformat the Energy Code to align with the rest of the California Building Standards Codes, which would make it MUCH EASIER for staff to understand and locate provisions for reference.

Low Participation:

- It is very important that some type of outreach is done by the State to the applicants so they have a better   understanding as to why the cities are require information that they do in order to determine if they are meeting the requirements of the California Energy Code and how it will help their permitting proses go more smoothly and quickly.
- Energy requirements have become substantial, almost warranting separate inspection. Our plan checkers and inspectors are regularly told they need to "enforce this too" from an ever-expanding code series. Building departments keep adding to the plan check & inspection load and limit the time available to complete a thorough review. The problem will continue until Energy can contribute to the funding of plan check and inspection.
- I have used CodeCycle and find it takes a full separate inspection to complete energy compliance inspections. This is not feasible for building departments who perform all trade inspections and really distracts them from performing life safety inspection. The lighting compliance acceptance forms are simple and realistic.
- The BayREN survey reinforces the necessity for a small jurisdiction to contract out these specialized services.

Comments on Resources:

High Participation:

- Wow, would LOVE the office hours. If I submit complicated questions during a webinar or presentation the presenters will offer to contact me later, but then I rarely get a response. In terms of staffing, most of us do several tasks, and there is lots of room for flexing. that's why i entered 1+, and 1-. we have 8 employees, and 3 permanent 'consultants'
- Collect the HERS data we review into a regular report, identifying trends in expected energy use, and electric/gas appliances. Elected officials and other agencies (Planning, SF Environment, SFPUC) want information about the number of heat pump HVAC and heat pump water heaters (and PV, and batteries, etc) that are installed or permitted. It would be cumbersome to modify our permitting database to collect all the info everyone wants. Why not summarize what's already reported to the Registry?
- We need to recognize that we ALL suffer from information overload, which never seems to abate in our daily lives. Permit applicants don't read most of the information provided to them. Permitting staff don't retain much of the information provided to them, because all information must compete for limited cognition.

Low Participation:

- These same type of resources should be made available to the Architects, designers and installers.
- The answers depend greatly upon the proposed scope of work and the questions that arise from that specific scope.
- Training from "the ground up" in a series of trainings would be helpful as staffing is coming into this business very green.
- Code Coach for home owners
- We contract staff for plan check and inspection processes. The contract requires the contractor to train their staff that serve the City.

Comments on Training Topics:

High Participation:

- There are a surprising number of permutations for ADU's, it seems like every week brings a new, unusual submittal. last week was a manufactured ADU, which was confusing, since they had a CF1R and a Calgreen checklist, even though neither one is applicable, since the project falls under T-25, and not T-24. Also, Thanks for all you do, the recent trainings have been very helpful.
- [Our] permitting jurisdiction is >90% single-family residential, with the majority of permitted work for improvements to exisitng dwellings. However, we recognize that >80% of the residential improvements are performed without getting permits.

Low Participation:

- There is a real need for heat pump technology training, we are requiring heat pumps in all new dwelling yet have very little experience with inspection
- We contract staff for plan check and inspection processes. The contract requires the contractor to train their staff that serve the City