



# Codes & Standards Market Assessment Report

*November 2023*

Developed by:



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## Introduction

The Inland Regional Energy Network's (I-REN) Codes & Standards program serves Riverside and San Bernardino Counties. This market assessment survey was carried out to better understand the educational needs of public and private workers in the building sector around navigating the Energy Code in these two counties. We sought to identify current gaps in energy code knowledge as well as the best ways to deliver trainings and support to building sector professionals. Two surveys were created, one for the public sector and one for the private sector, so we could assess their needs independently and together. The public sector survey was targeted at those employed by Authorities Having Jurisdictions (AHJs), such as sustainability director or managers, chief building officials, permit technicians, building inspectors, planners, and plans examiners. The private sector survey was targeted at contractors, designers, developers, energy consultants and others who work in fields impacted by energy code enforcement. This will allow us to put together a training schedule that caters to the needs of both sectors and to more efficiently design our marketing for different offerings. We also wanted to assess any differences in needs between the two I-REN counties to help us provide more targeted support. Discovering how people learn about Energy Code training opportunities, which forms of trainings and support are the most accessible and desired, and where there are gaps in energy code knowledge and barriers they face in complying to them will allow us to tailor our support and trainings to the needs of the I-REN region specifically, rather than making assumptions based on state-wide data.

The survey was made available in hard copy and through an online survey from May 1 to October 31, 2023. The public sector survey was primarily promoted through I-REN orientation events, which were meetings to introduce public and private sector audiences to REN services. The survey was also shared with public sector contacts known by the COGs (Council of Governments) that administer I-REN. Several strategies were used to promote the private sector survey, including direct email and phone outreach to contractors by the I-REN Codes & Standards Program Implementer Frontier Energy, email newsletter and social media post outreach by the program community stakeholder engagement partners Making Hope Happen, Inland SoCal Housing Collective, and Inland Equity Community Land Trust, email newsletter outreach to program participants, and direct outreach from COG staff to their private sector contacts. To encourage private sector participation after initially low response rates, a \$10 Amazon gift card was offered during the last few weeks of outreach to private sector respondents.

A full copy of the survey questions for both the public and private sector is available in the supporting documents.

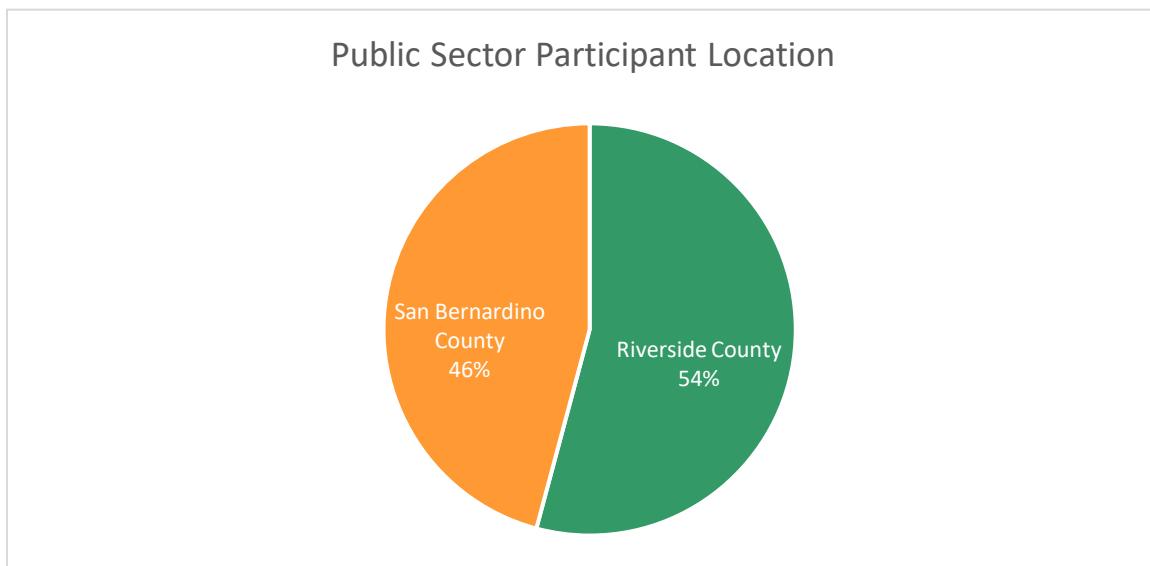
The public sector survey received 50 responses, while the private sector survey received 27 responses.

## Public Sector

### About the Survey Participants

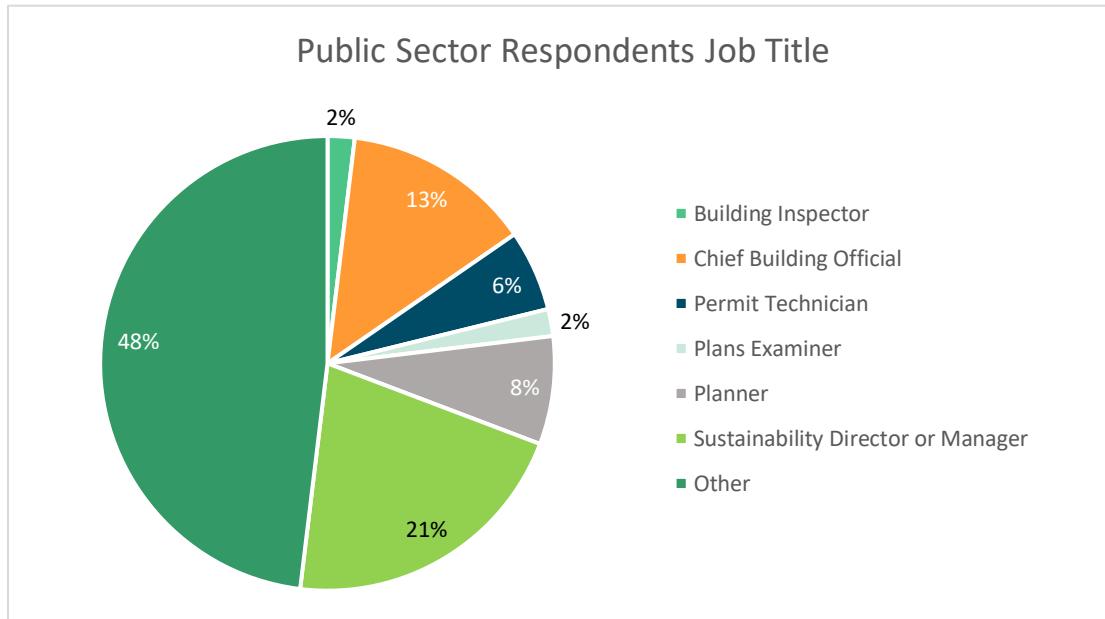
#### Locations

There was a 54 to 46 percent split in public sector survey responses between the Riverside and San Bernardino counties. There is about a 10% difference in the two counties' populations - Riverside County has a population of 2.42 million to San Bernardino County's population of 2.18 million. Thus, the 8% difference in responses from Riverside versus San Bernardino counties closely mirrors the population gap between the two counties.



## Job Titles

Sustainability Director/Manager or Chief Building Official were the job titles of 34% of respondents. Outside of these categories, nearly half of participants fell into the “other” category, with respondents working in the facilities field as the most common “other” category.



Write-in Responses for participants who selected Other:

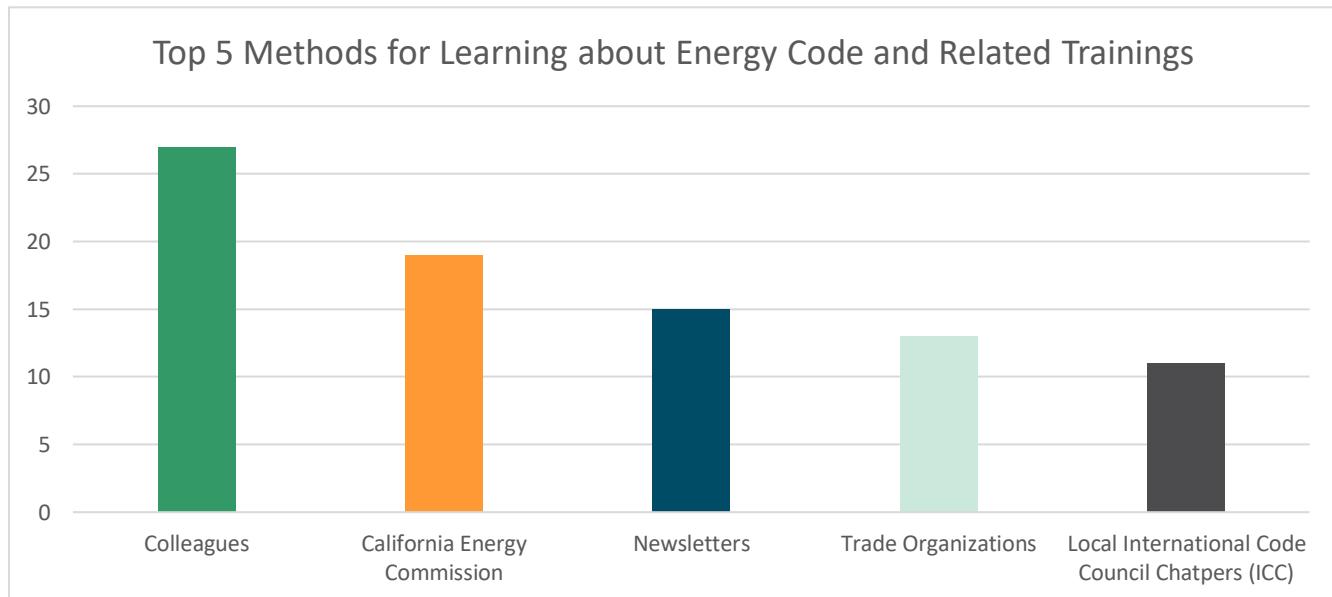
- Code Compliance Officer
- City Manager
- Public Works Manager/Facilities Manager
- Facilities Operations Manager (2)
- Community Development Director
- Management Analyst
- Finance Director
- Instructor
- Utility Program Coordinator
- Engineering Manager
- Energy Budget
- Admin Manager
- Operation Manager

- Facilities Maintenance
- Facilities
- Sustainability Liaison
- Energy Intern with Local Government
- No response
- Program Manager (workforce)
- Board Member
- M&O Director
- VP of Admin Services
- Workforce Development
- Management Analysis – Energy Efficiency

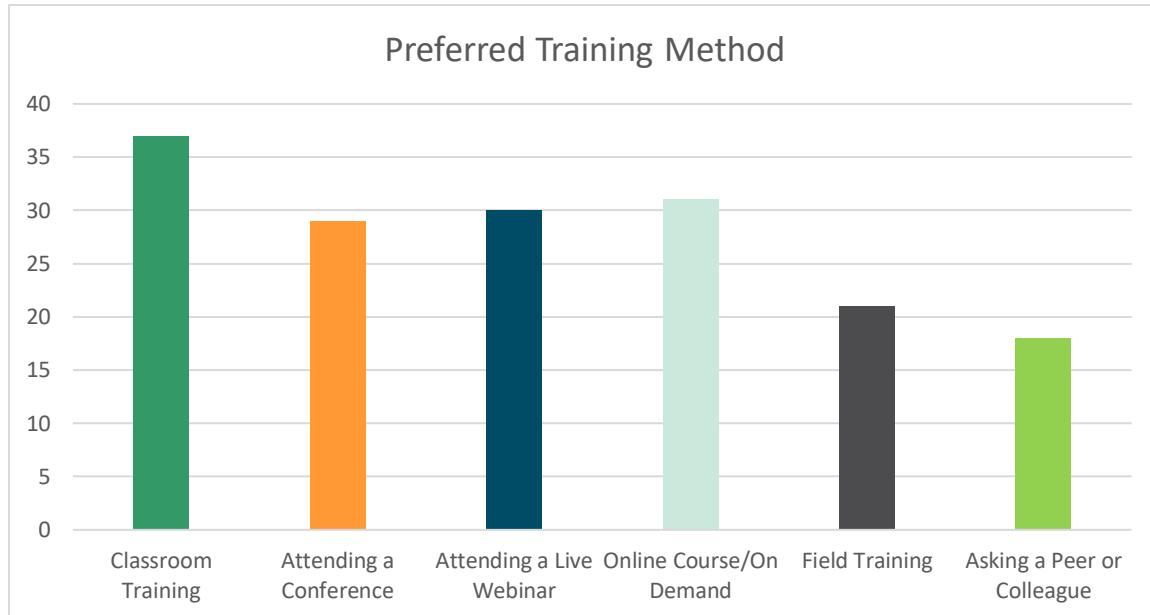
## Training Interest Areas & Preferences

### Preferred Energy Code Resources

Colleagues were the most popular way for respondents to learn new information about energy codes and trainings, though the California Energy Commission and newsletters were also important.



Classroom training, online courses on demand, attending a live webinar, and attending a conference were the most popular ways to learn new aspects of the Energy Code. The graph below shows all training methods that received more than 15 votes:



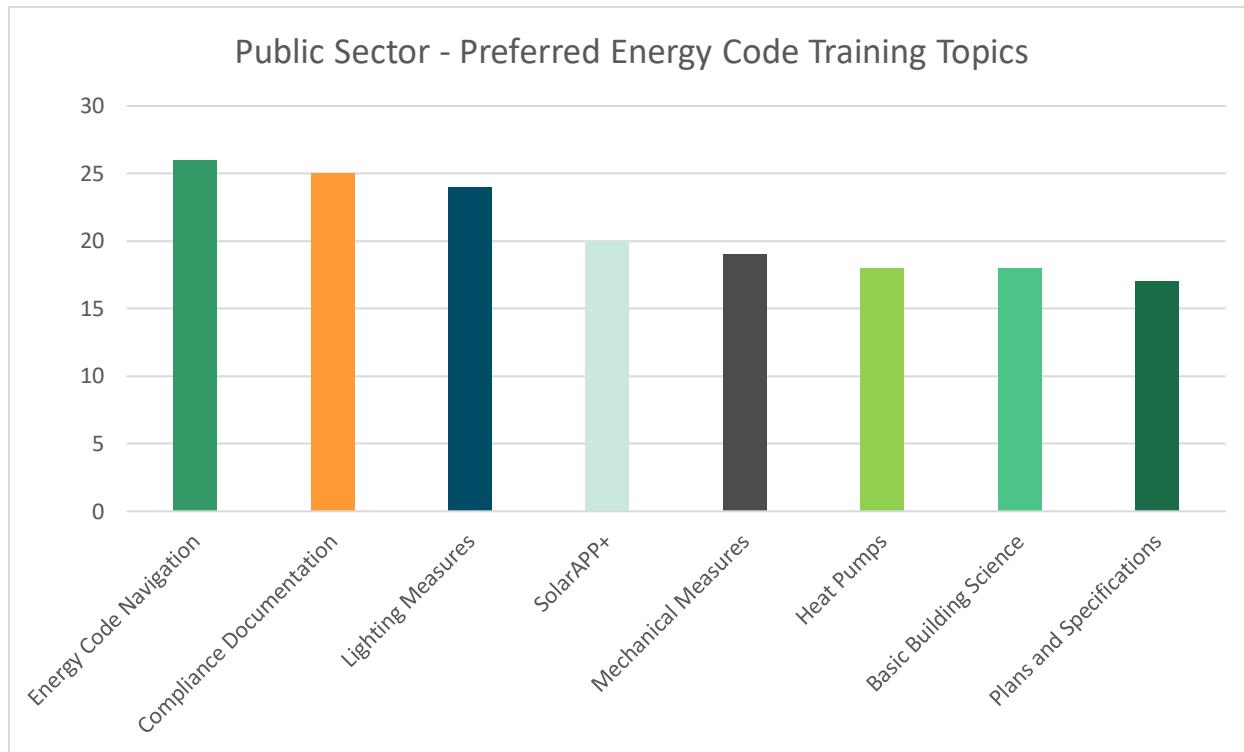
Trade organizations (9), reading the compliance manual (7 votes), and calling the building energy hotline (6 votes) were the least popular methods.

## Training Topics

The chart below shows all Energy Code training topics that achieved more than 15 votes. Respondents were able to vote for more than one topic. Energy Code navigation, compliance documentation, and lighting measures were the top three topics public survey respondents were interested in, though SolarAPP+, mechanical measures, heat pumps, basic building science, and plans and specifications were also popular choices.

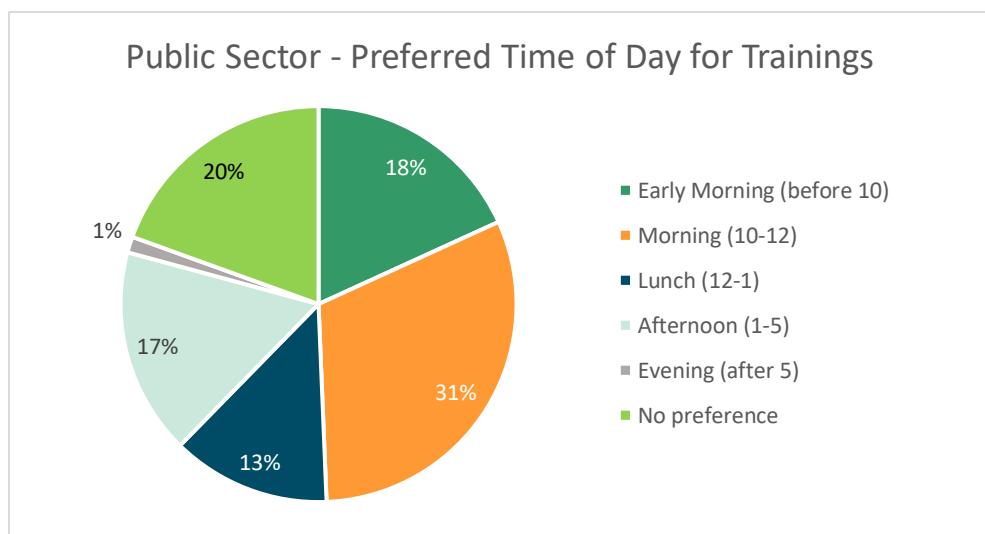
\*It is worth noting that only two respondents chose the “other” option, suggesting that the menu of topics the survey proposed was sufficiently expansive.

\*See Appendix1 for a full list of topics that were offered as options.

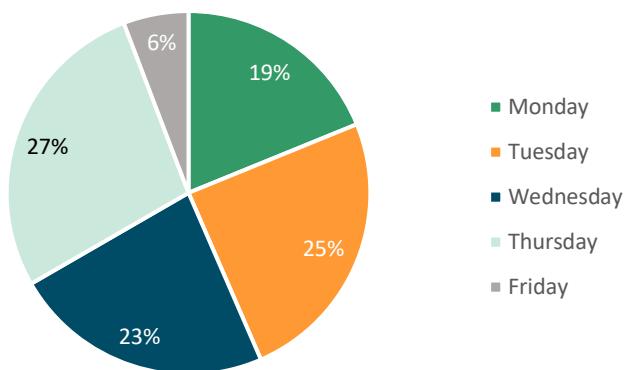


## Training Timing

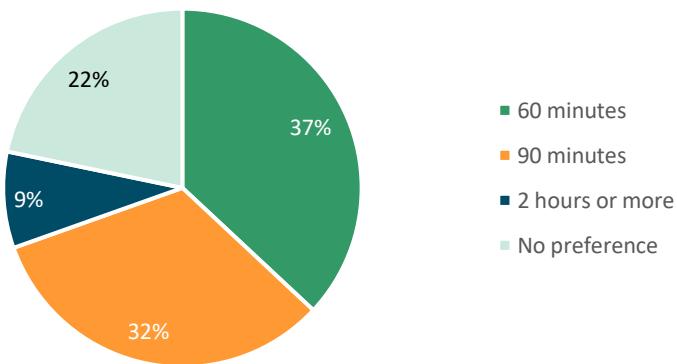
Morning (10AM-12PM) was the most popular time for trainings, while evening (after 5PM) was by far the least popular option. There was a nearly equal split for preference of 60 minute versus 90 minute training times, with 60 minutes having two votes more. Preferred days for trainings were Tuesday, Wednesday, and Thursday, with only four respondents choosing the Friday option.



### Public Sector - Preferred Day of Week for Trainings



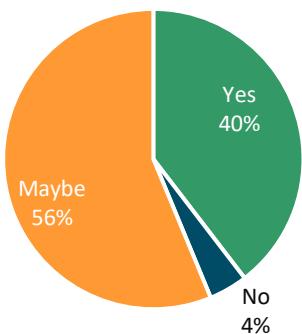
### Public Sector - Preferred Length of Trainings



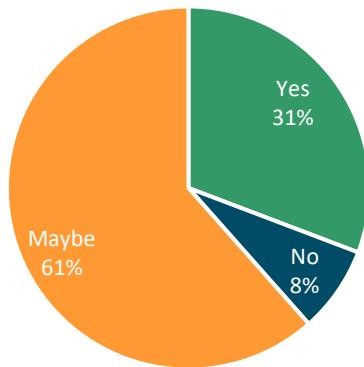
### Interest in Reach Codes

Overall, respondents were open to receiving assistance with reach code development and implementation: 56% said maybe, 40% said yes, and only 4% said no.

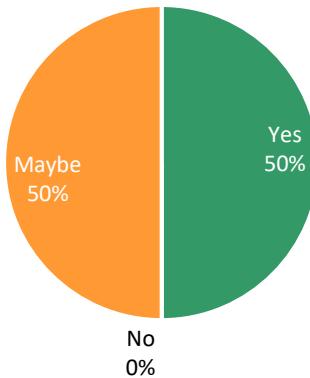
#### Overall: Open to Reach Code Development or Implementation?



### Riverside County: Open to Reach Code Development or Implementation?



### San Bernardino County: Open to Reach Code Development or Implementation?



In Riverside County, the majority of the respondents chose 'maybe,' with a small minority, 8%, choosing 'no'. All respondents in San Bernardino County selected 'yes' or 'maybe,' with an even split between them.

The table below provides an overview of responses by jurisdiction name. It is important when interpreting the table below to keep in mind the variety of jobs held by the respondents of the public sector survey. The admin manager at a college may not have the same sway in developing and promoting reach codes compared to a chief building official, though citizen advocacy and support is still a meaningful and important metric.

Jurisdiction Name	Yes	Maybe	No
<b>Blythe</b>		3	1
<b>Canyon Lake</b>	1		
<b>Chino Hills</b>	1	2	
<b>Colton</b>	1		
<b>Grand Terrace</b>	1		
<b>Hemet</b>		1	
<b>Indian Wells</b>		2	
<b>Jurupa Valley</b>		1	
<b>Lake Elsinore</b>	1		
<b>Moreno Valley</b>		3	
<b>Norco</b>		1	1
<b>Ontario</b>	1	1	
<b>Perris</b>	1	1	
<b>Rancho Cucamonga</b>	1	1	
<b>Redlands</b>	1		
<b>Riverside (County)</b>	1	3	
<b>San Bernardino (City)</b>	1		
<b>San Bernardino (County)</b>		1	
<b>Temecula</b>	1	1	
<b>Twenty-nine Palms</b>	2		
<b>Upland</b>	1		
<b>Victorville</b>		2	
<b>Wildomar</b>	1		

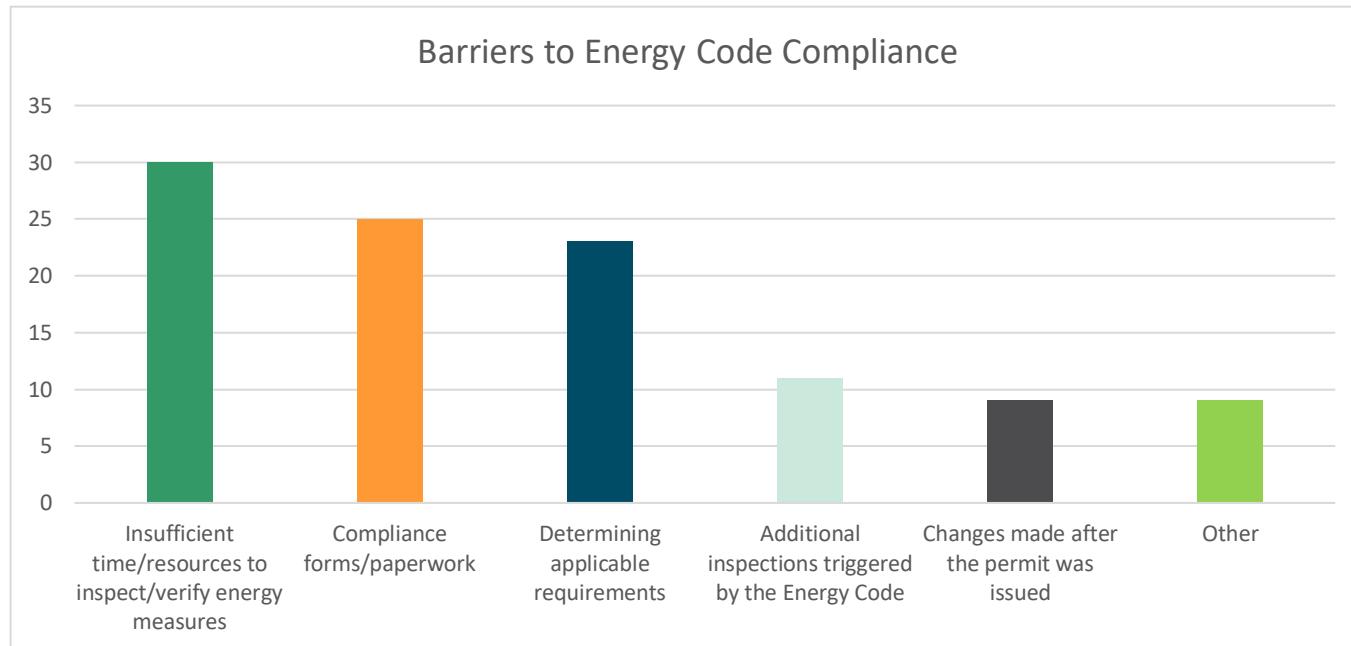
## Barriers to Energy Code Compliance

Three primary barriers emerged to Energy Code compliance:

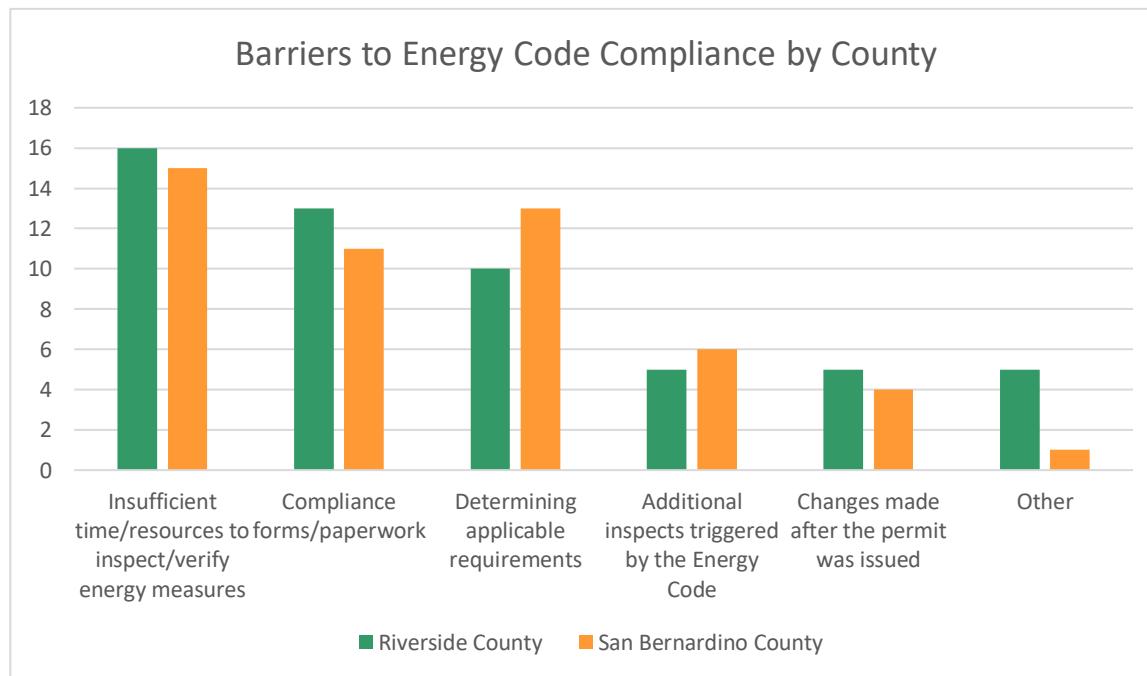
- insufficient time/resources to inspect/verify energy measures (28%)
- compliance forms/paperwork (24%),
- determining applicable requirements (21%)

Conversely, changes made after the permit was issued and additional inspections triggered by the Energy Code were seen less frequently as barriers. Two respondents who selected the “other” option wrote that the biggest barrier was the cost to the customer, and two others noted the cost more generally.

The barriers to Energy Code compliance were relatively consistent between both counties.

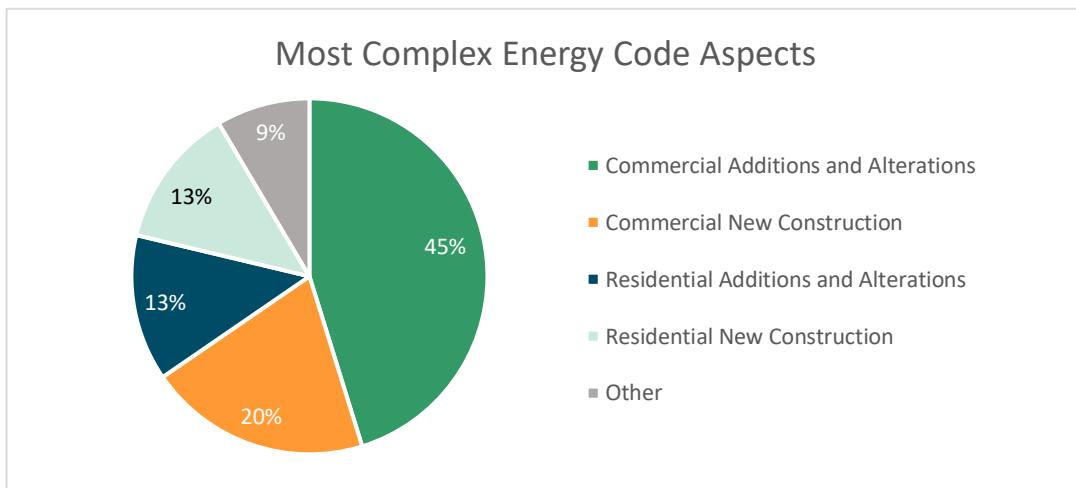


All four of the “other” answers related to cost came from Riverside County; further research about the cost of Energy Code compliant permits between the two counties could be useful.

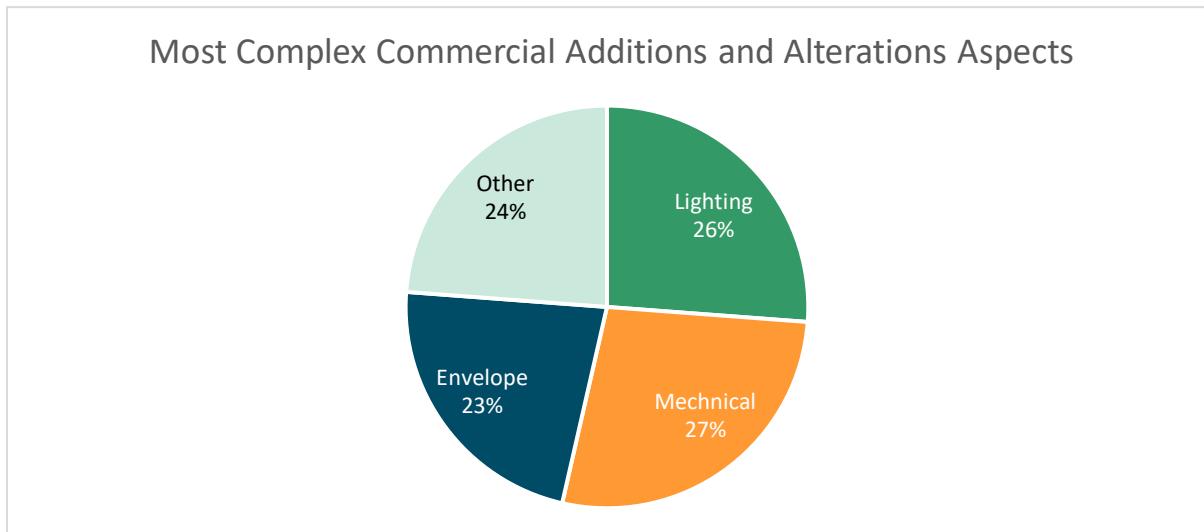


## Most Complex Energy Code Areas

When asked about which aspects of the Energy Code are overly complex for building professionals to apply or comply with, nearly half focused on commercial additions and alterations. Commercial codes for both additions and alterations and new construction accounted for around two-thirds of the responses. Residential additions and alterations and residential new construction were split evenly at 13% each. Finally, a small percentage selected an unspecified 'other' category.

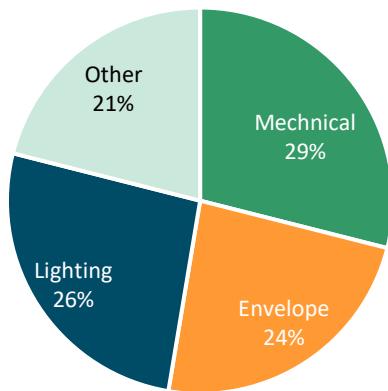


Breaking down each section:



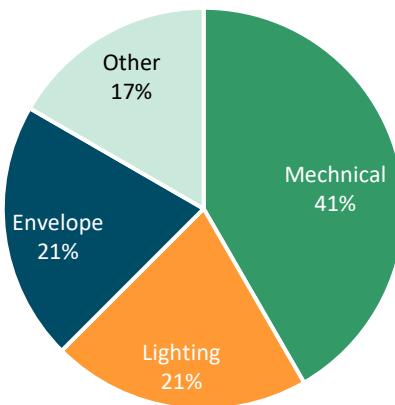
For commercial additions and alterations, respondents were evenly split between the four offered options of lighting, mechanical, envelope, and other. There was a similar split between the four options for commercial new construction as well, with mechanical aspects having a slight lead.

Most Complex Commercial New Construction Aspects

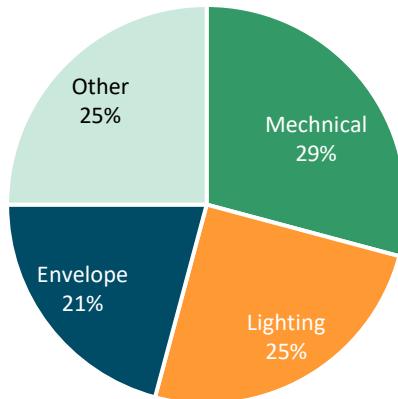


For residential additions and alterations, survey respondents highlighted mechanical issues as one of the most challenging aspects, and the same was true for residential new construction.

Most Complex Residential Additions and Alterations Aspects



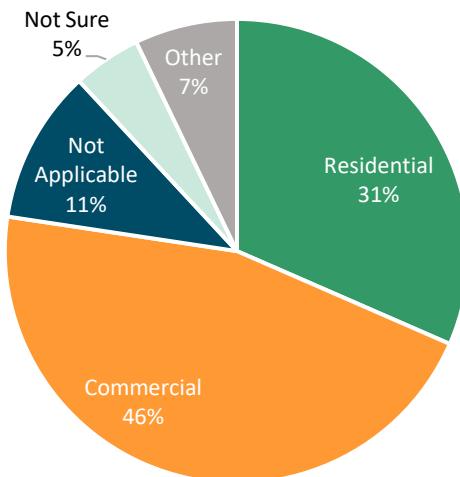
### Most Complex Residential New Construction Aspects



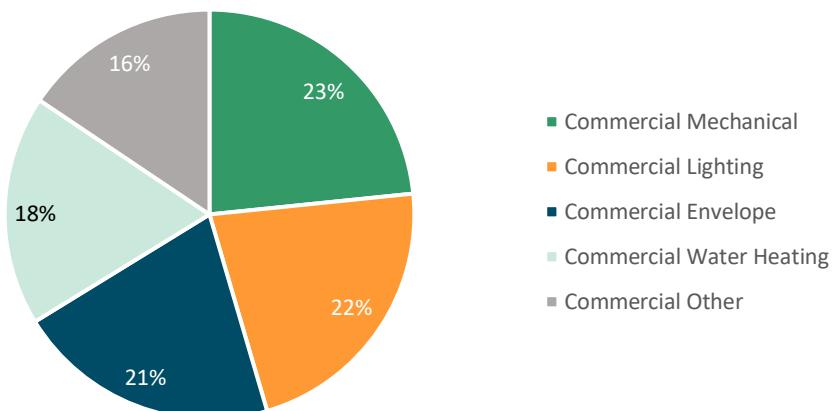
### Jurisdiction Staffing

Nearly half of respondents indicated that their jurisdiction used third-party or outsourced commercial plan checks, while another third used these services for residential plans. Commercial mechanical aspects were the plans most commonly outsourced.

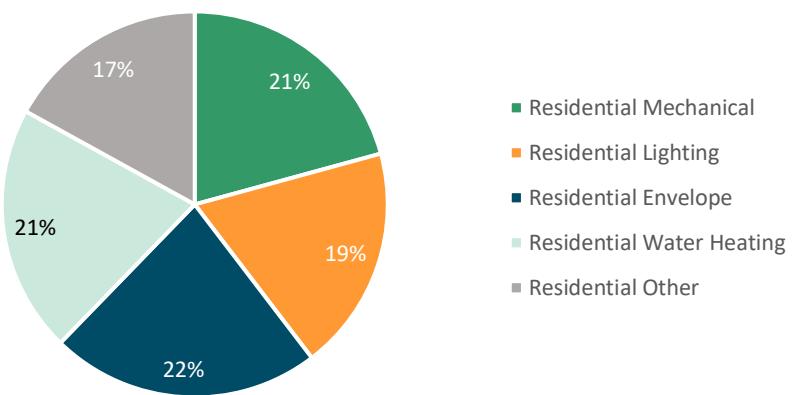
### Types of Projects Reviewed by Third Party Plan Checkers



### Commercial Projects Reviewed by Third Party Plan Checker



### Residential Projects Reviewed by Third Party Plan Checker



### Interest in I-REN Follow-up

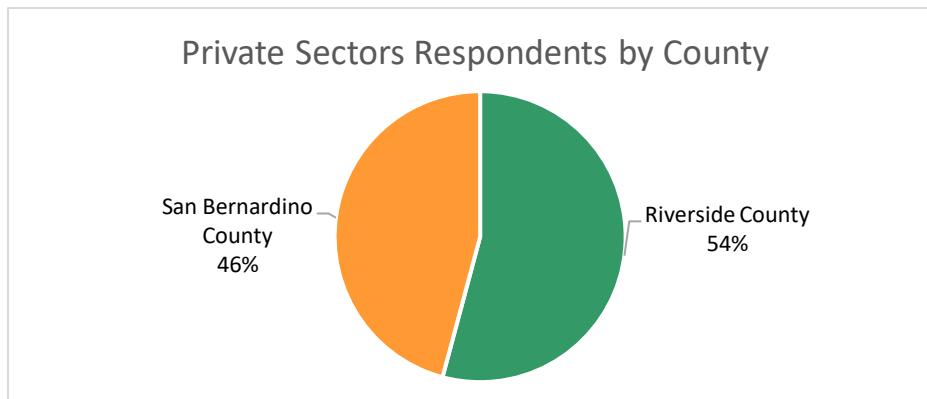
Following the completion of the survey, 75% of public sector survey respondents said they were open to further contact, indicating a willingness to continue to give input as I-REN works to refine its offerings.

# PRIVATE SECTOR

## About the Survey Participants

### Locations

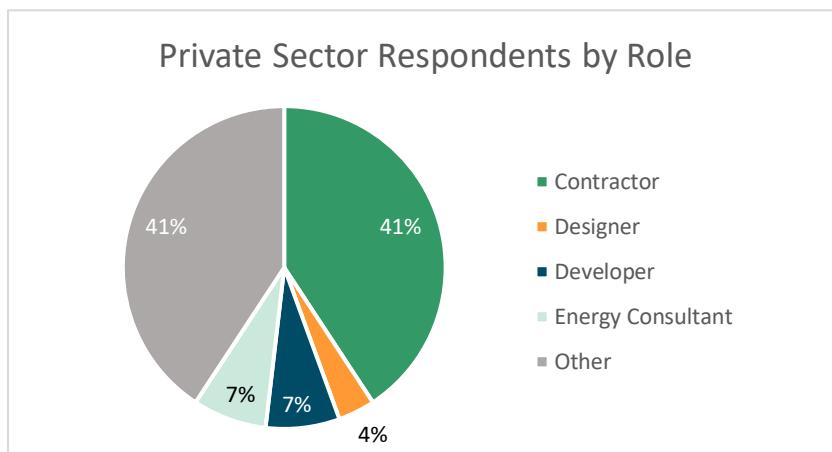
Private sector respondents were split 54/46% from Riverside and San Bernardino counties respectively, the same as the public sector survey.



Please note that for all analysis broken down by county below, three responses were left out, as the respondents were confirmed to work in both Riverside and San Bernardino but did not reside or primarily work in either county.

### Job Titles

About 40% of respondents reported their job title as "Contractor," and another 15% of respondents reported their job title as either Designer or Developer. However, there was also a large percentage of write-in responses, with about 40% of respondents reporting their job title as "other."



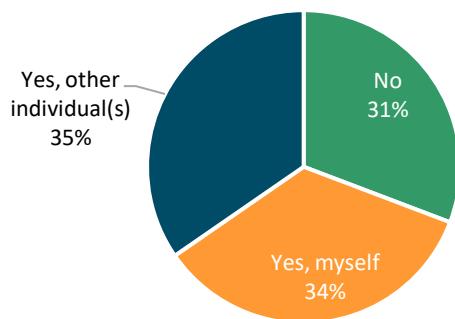
Below is a list of the “other” professions submitted:

- Trade Association Member
- Distributor
- Instructor
- Assistant Professor
- Home Inspector
- Inspector
- Consultant
- Project Manager
- Plumber
- Property Manager
- Manufacture

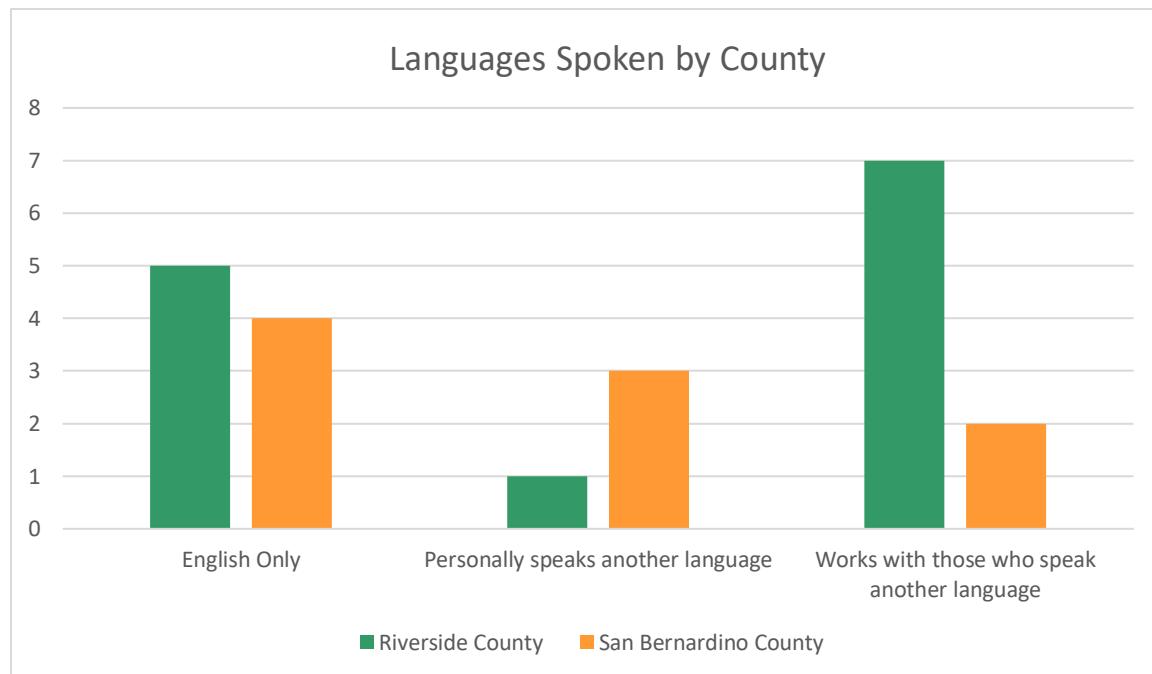
## Languages Spoken

The majority of respondents either personally spoke a language other than English, or worked with someone who spoke a language other than English. This indicates that it may be useful to explore creating training or other content in languages other than English.

Language Spoken other than English?



Overall, Riverside County and San Bernardino had a similar amount of respondents who spoke only English; however, Riverside has many more people who work with others speaking a primary language other than English. This suggests that marketing materials in languages other than English may be useful in Riverside County. Given the small sample size, it may be beneficial to conduct further research on this question in order to guide the amount of resources put in to translating marketing content.

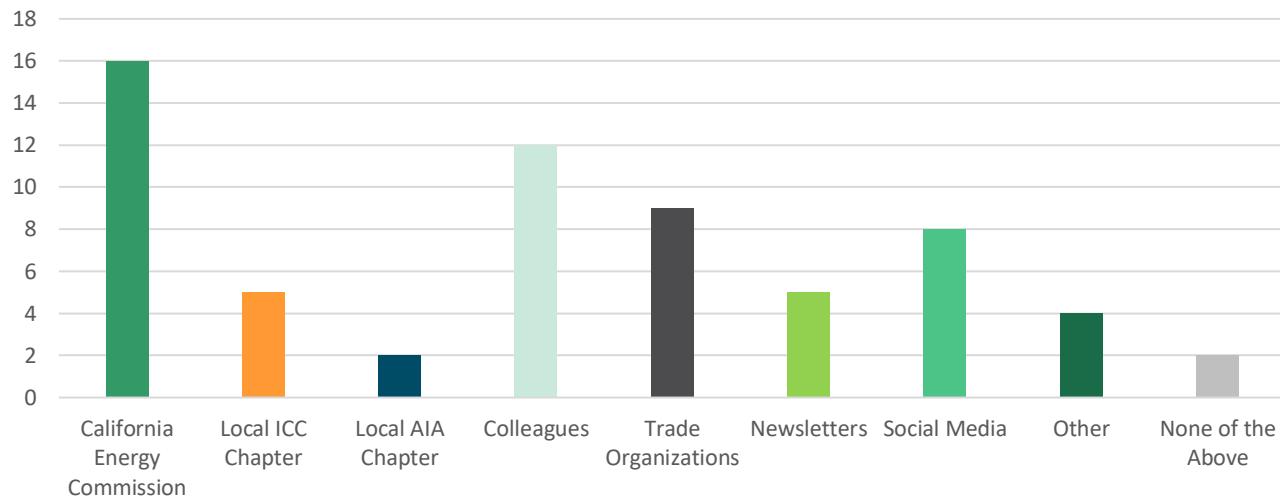


## Training Interest Areas & Preferences

### Preferred Energy Code Resources

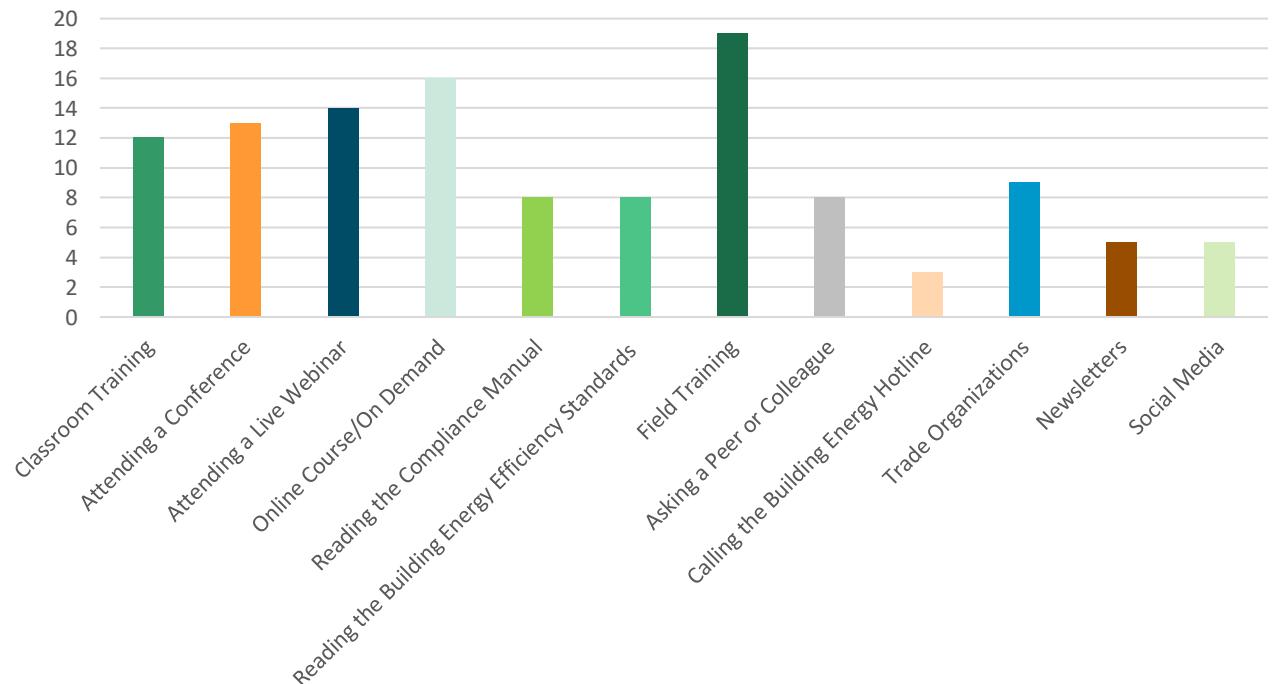
The California Energy Commission and colleagues were the two most common sources by which respondents learned about energy code and energy code trainings. Trade organizations and social media were also popular; it is likely that the local AIA (American Institute of Architects) chapter was a less popular option as no architects responded to the survey.

### Sources for Information on Energy Code and Energy Code Trainings



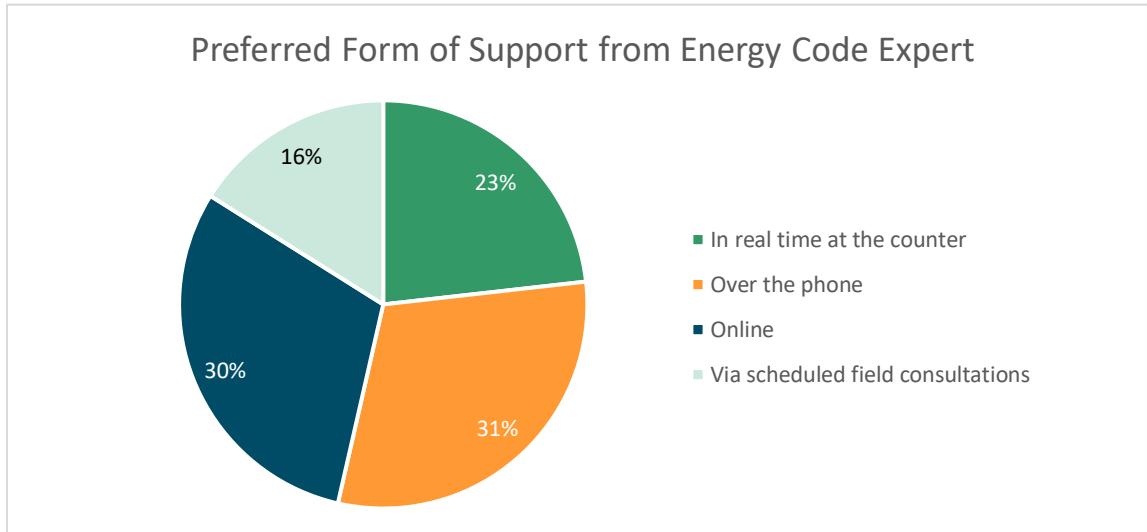
For private sector respondents, field training was the most effective learning method, followed closely by on demand courses and live webinars. Overall, they cited a variety of learning sources, though calling the building energy hotline, newsletters, and social media were the least popular learning methods. Offering training opportunities in multiple formats will be crucial for educating those who work in the private sector on the Energy Code.

### Preferred Ways to Learn New Aspects of the Energy Code

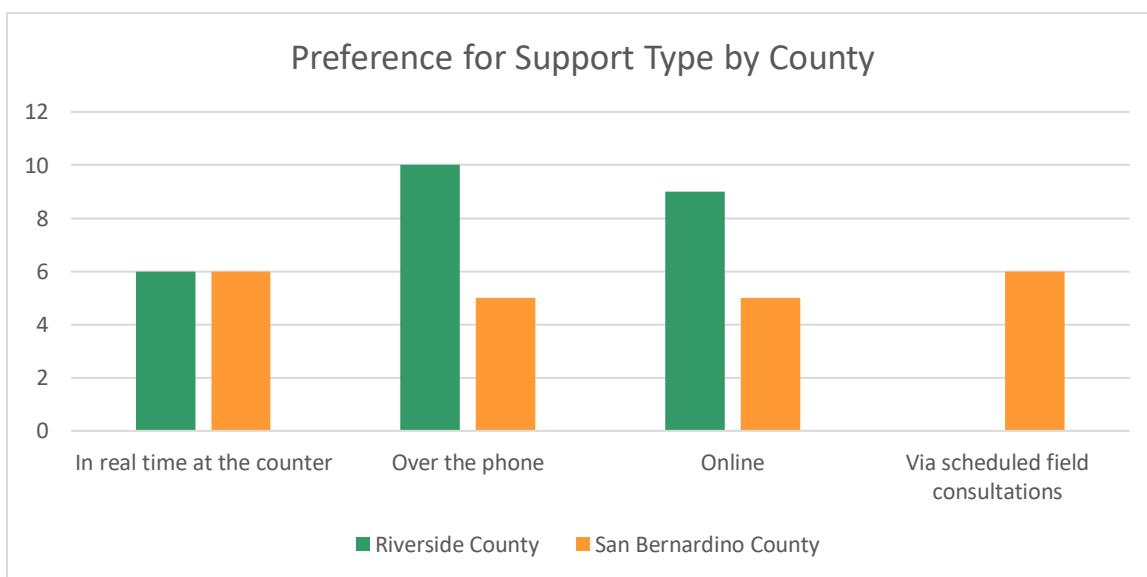


## Preferred Means of Accessing Energy Code Expertise

Private sector survey respondents overall indicated a slight preference for phone and online support from an Energy Code expert.

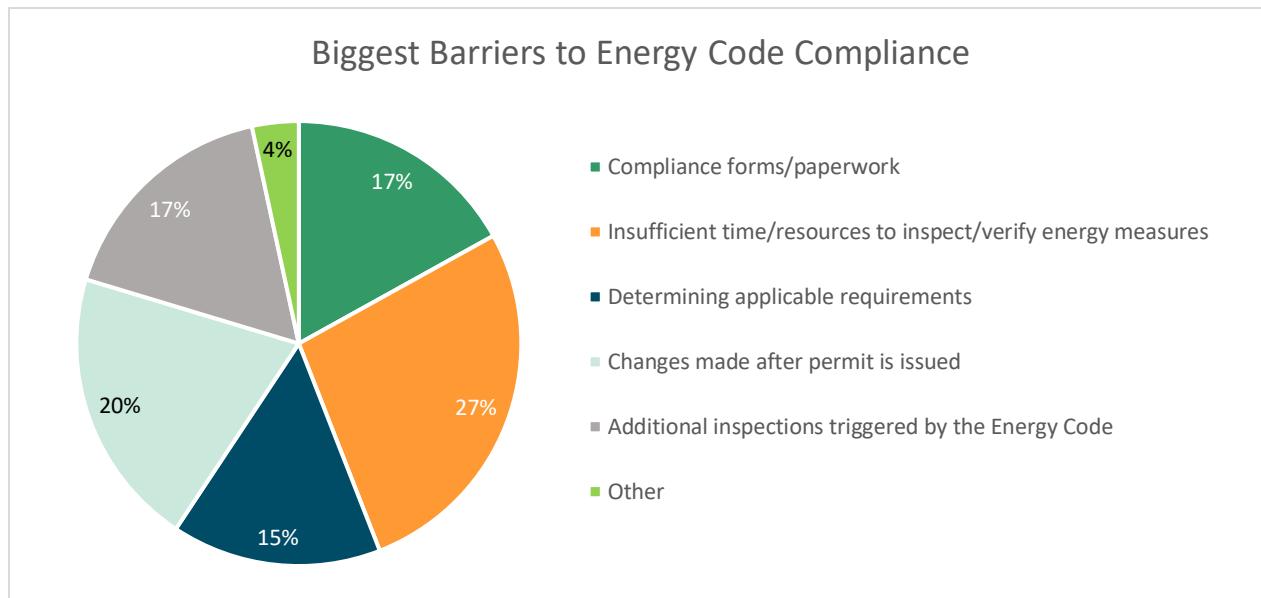


However, it is worth noting that respondents in Riverside County preferred phone and online support, while San Bernardino respondents showed more of a preference for scheduled field consultations. Phone and online support are easily accessible to both counties; however, it may be worth investigating whether participants in San Bernardino would benefit more from having someone available that can participate in scheduled field consultations.



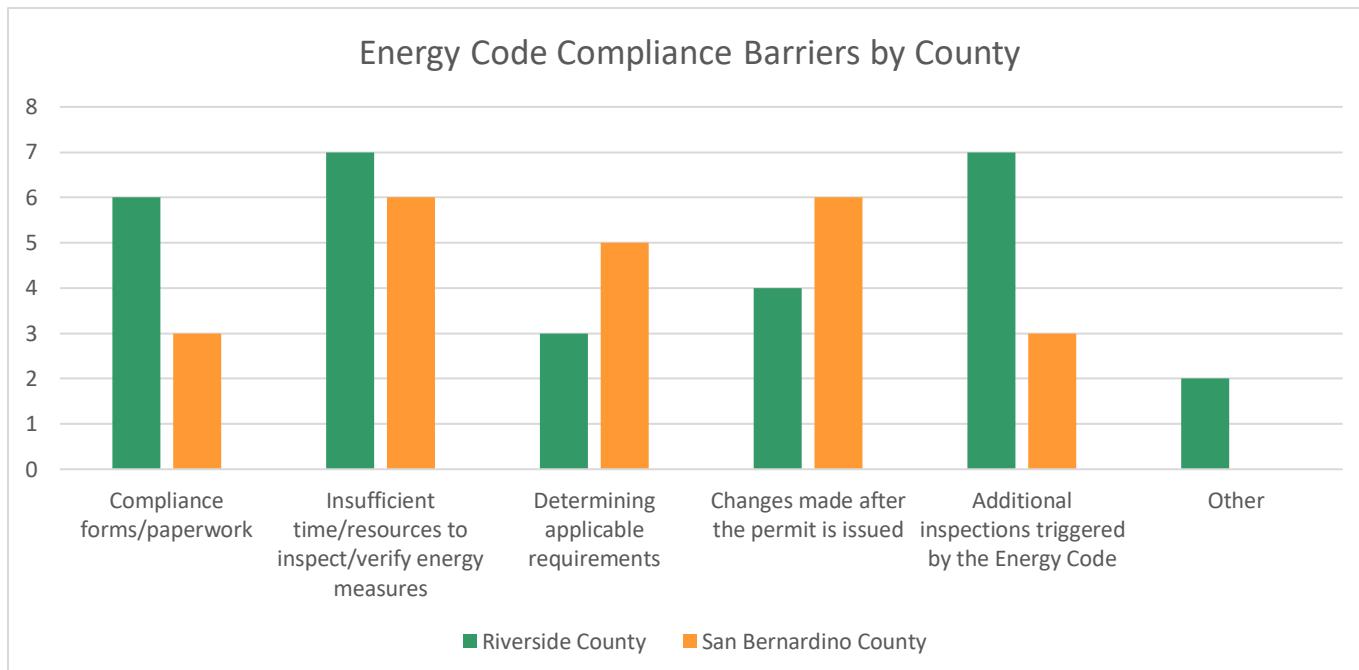
## Barriers to Energy Code Compliance

Private sector respondents faced a variety of barriers to Energy Code compliance, with insufficient time/resources to inspect/verify energy measures and changes made after the permit is issued being the top two barriers.



I-REN's ability to provide resources and to coordinate between the public and private sectors in permitting can help address these barriers. (The two 'other' answers mentioned having no barriers or other contractors not knowing the Energy Code well was their barrier.)

The survey also provides a look at whether there are different perspectives on energy code barriers by county. Respondents from both counties indicated that one of the biggest barriers to energy code compliance is insufficient time/resources to inspect/verify energy measures.



In interpreting this graph, it is crucial to remember that respondents were allowed to select as many responses as they desired; Riverside County participants selected a total of 29 options, while those in San Bernardino County selected a total of 23 options. This may account for some of the discrepancies between the two counties, and it raises the possibility that those in Riverside County are facing a wider range of challenges than those in San Bernardino County. This graph does indicate that those in Riverside struggle most with compliance forms/paperwork and additional inspections triggered by the Energy Code, whereas those in San Bernardino had more difficulty determining applicable requirements and dealing with changes made after the permit is issued.

## Training Topics

Interest in training topics spanned a wide spectrum.



Energy code navigation, compliance documentation, heat pumps, plans and specifications, and basic building science were the most popular topics selected by private sector survey respondents. There was less interest in controlled environment horticulture and warehouse solar and storage energy efficiency.

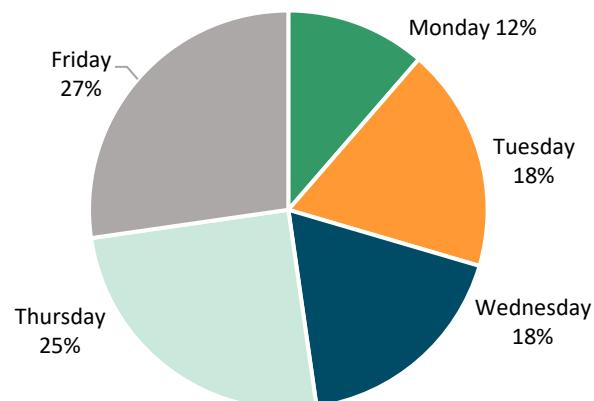


Private sector survey respondents expressed a wide variety of responses for taking trainings; the most common were to deliver a higher level of service to customers, to learn about new technologies, and to stay competitive in the marketplace. Requirement by employer, help to obtain certifications, and the need for CEUs were the least common reasons. No respondents selected the “other” option, indicating that the options captured the general breadth of reasons. These responses can inform marketing decisions for trainings.

## Training Timing

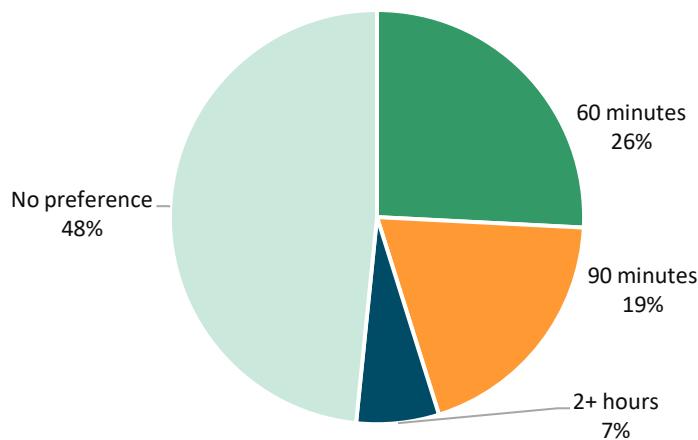
Private sector respondents showed a preference for Thursday and Friday trainings, with Monday as the least popular day.

### Private Sector - Best Day for Training

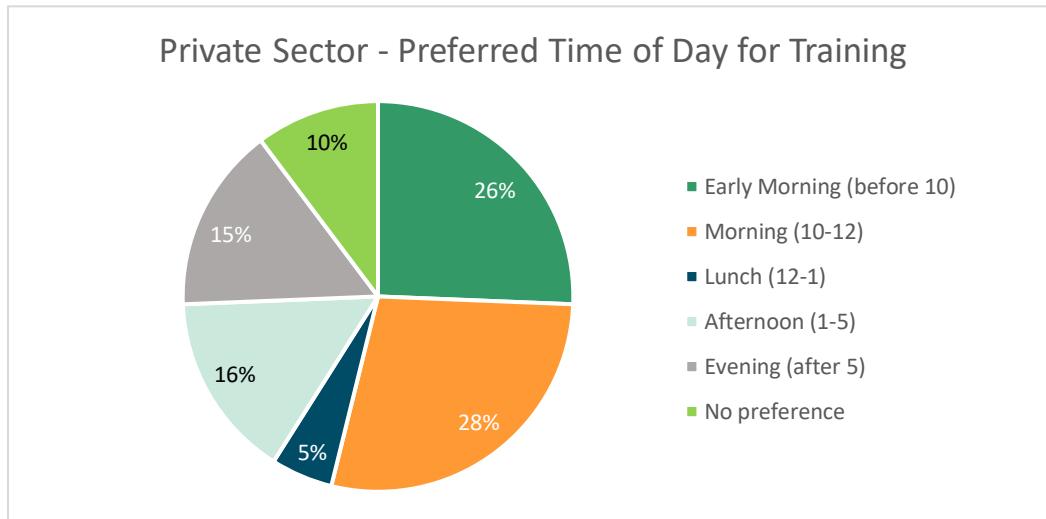


The majority of private sector respondents had no preference for the length of the trainings (selecting none of the provided options was considered as having no preference). Sixty minute and 90 minute trainings were close in popularity, with only a 7% difference. Only 7% of all respondents indicated a preference for 2+ hour trainings.

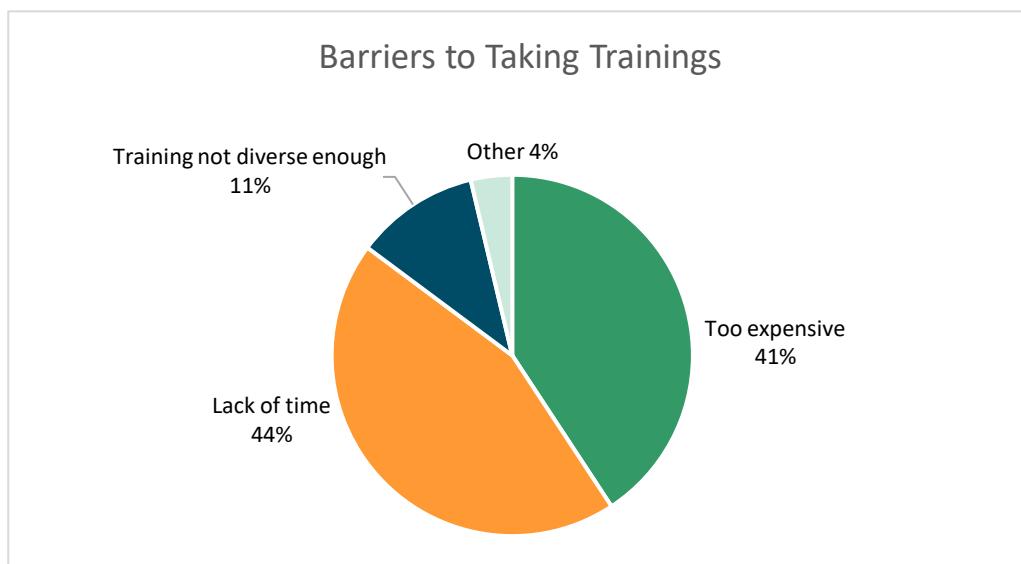
### Private Sector - Preferred Length of Training



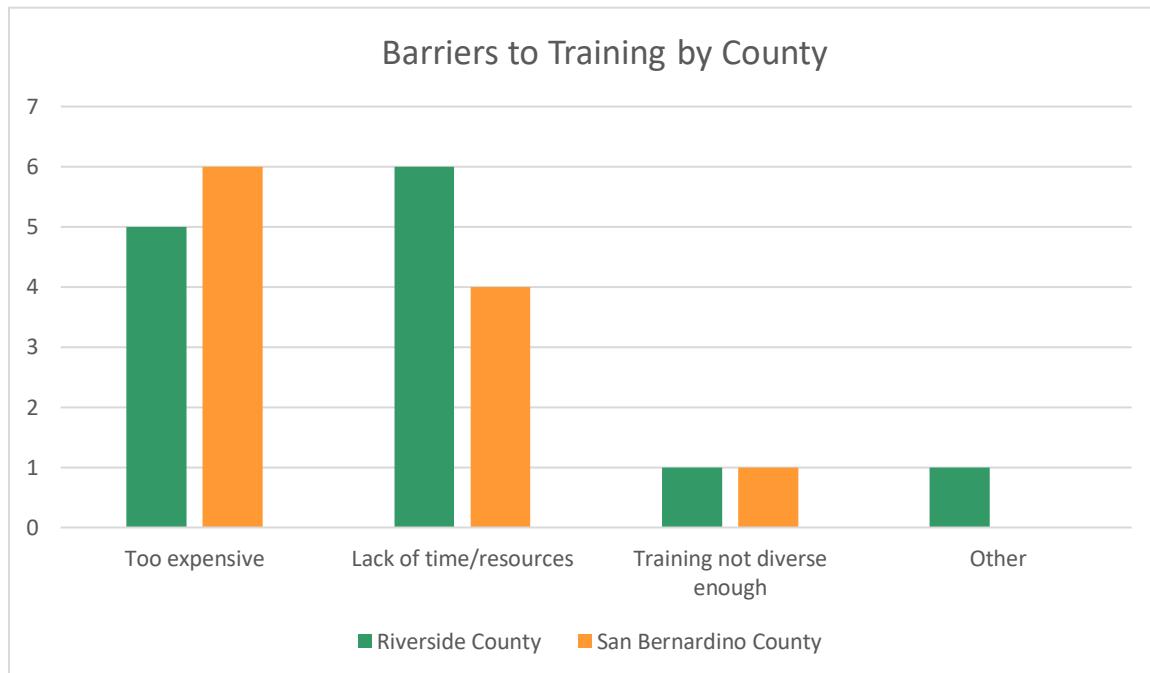
Private sector respondents showed a preference for morning trainings 10AM – 12PM, followed closely by early morning trainings before 10AM. Lunch time trainings were the least popular. As above, selecting none of the provided options was considered as having no preference.



The two biggest barriers to taking trainings were money and time. As I-REN trainings are free, they can meet the needs of those who find other trainings too expensive; flexible and on demand trainings can help with those who have limited time. No one selected the “challenges with technology” option, indicating that online trainings should not pose a challenge to private sector audience attendance. Diverse trainings can be provided by assessing interest in different topics through surveys like this one.



Taking into account that there were slightly more responses from Riverside County residents than San Bernardino residents, the barriers to trainings are roughly equal between the two.

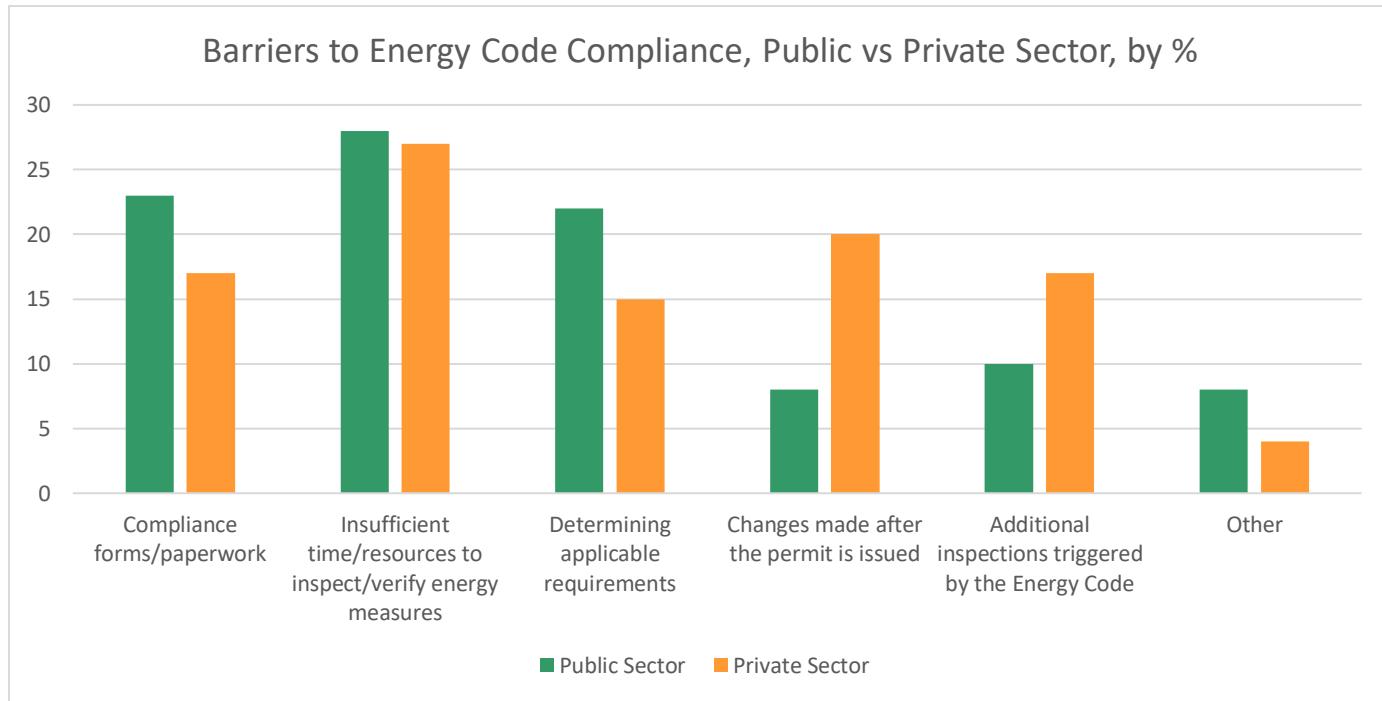


## PUBLIC VS PRIVATE SECTOR

This section of the report compares responses between the public and private sector. This can be useful when planning events or materials that hope to target both audiences.

### Barriers to Energy Code Compliance

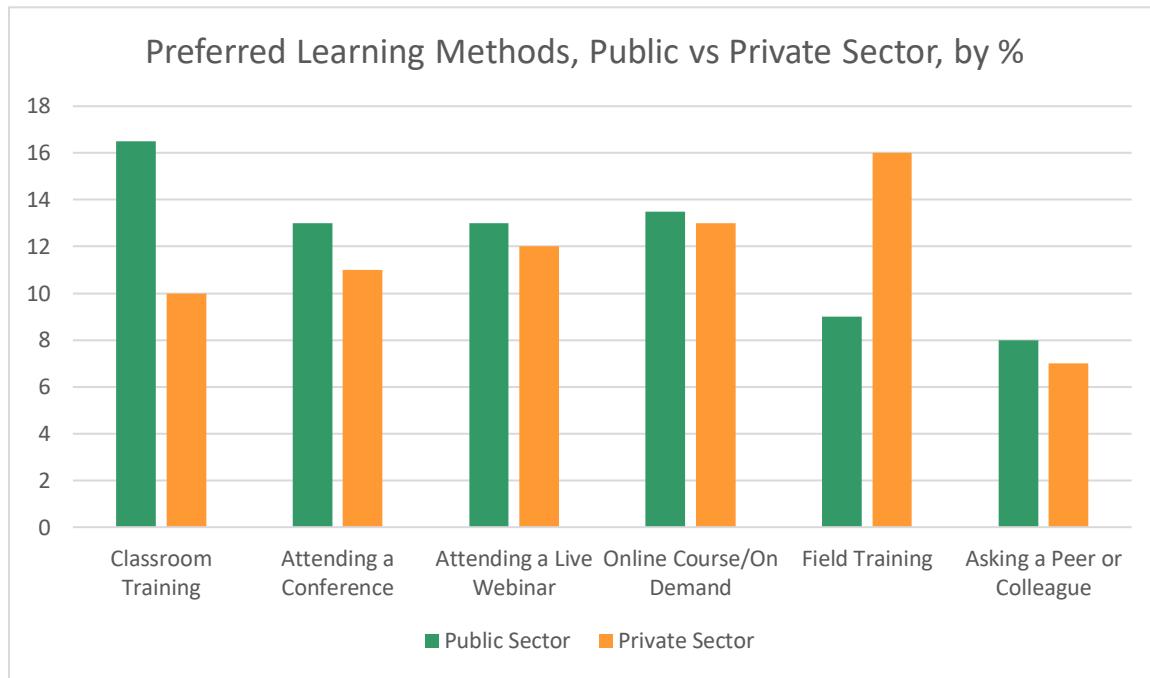
Both public and private sector respondents agreed that insufficient time/resources to inspect/verify measures is the biggest barrier to Energy Code compliance, and that compliance forms/paperwork also present a significant barrier.



However, their opinion on barriers varied by sector for the remaining options. For the private sector, changes made after the permit issued and additional inspections triggered by the Energy Code were bigger barriers than they were for the public sector.

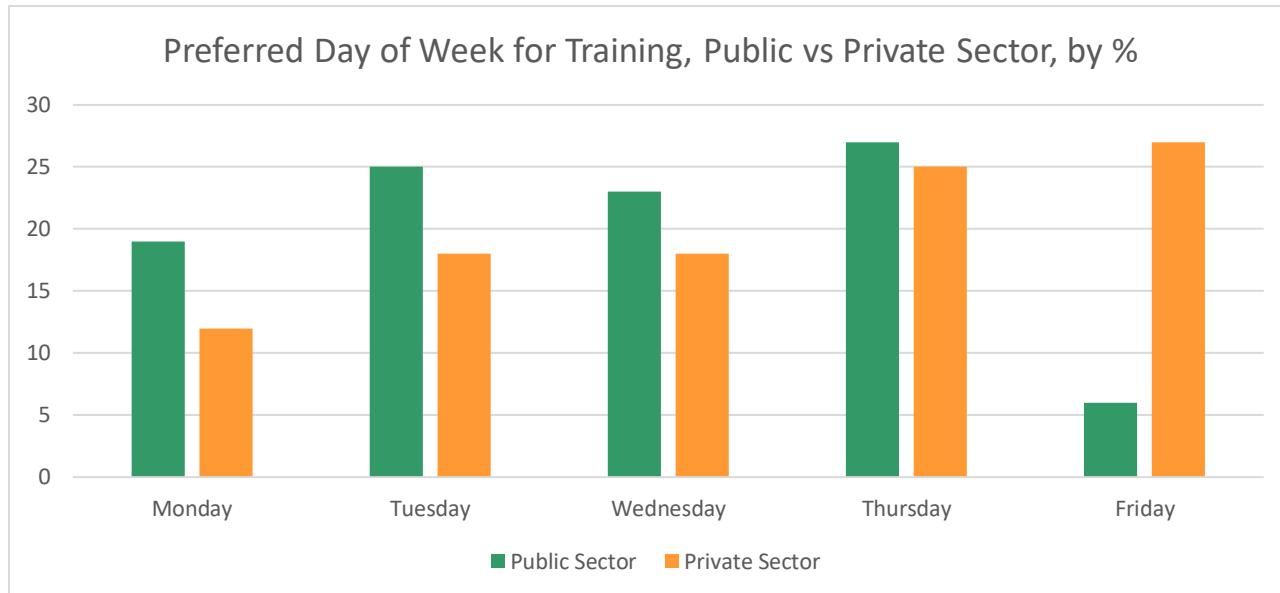
These insights suggest which topics should be marketed to both sectors (such as resources to help inspect/verify energy measures), and which topics would benefit from more selective marketing (such as responding to changes made after a permit is issued).

## Preferred Learning Methods

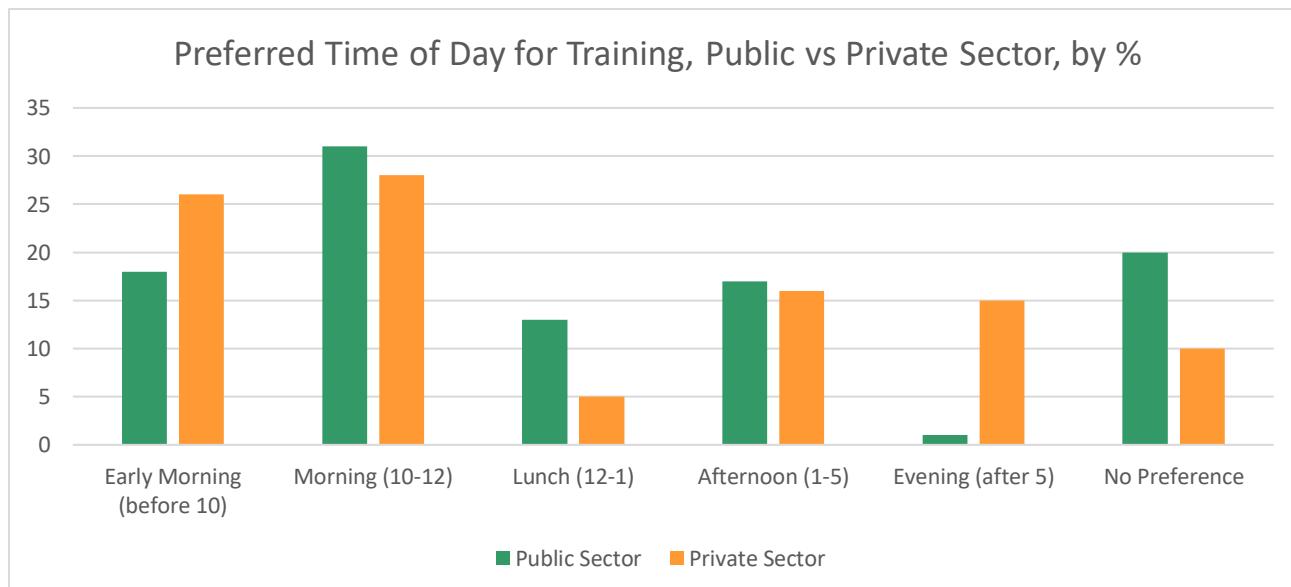


The public and private sector shared the same top six preferred training methods, although the public sector preferred classroom training while the private sector preferred field training, which is consistent with their responsibilities.

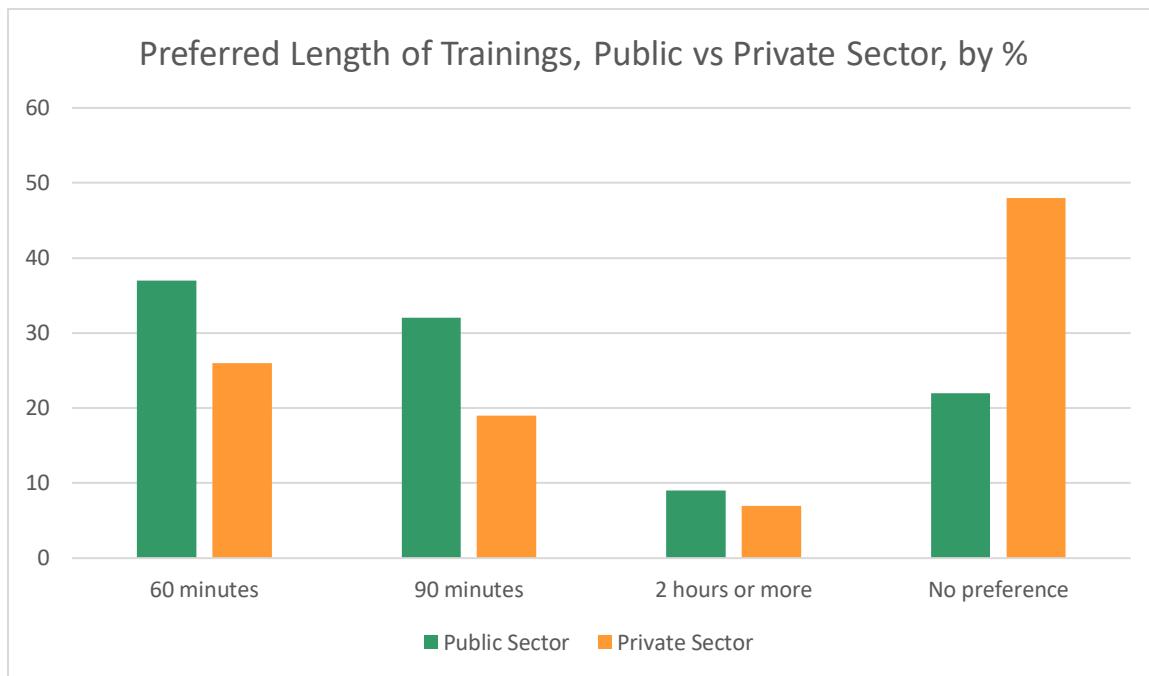
## Training Topics & Timing



Thursday had the most overlap between the two sectors for a preferred day of training. Public sector respondents also favored Tuesday and Wednesday, while private sector respondents selected Friday as their other preferred training day. Selected dates for trainings could be paired with the desired audience.



Early morning and morning were the most popular time choices between both sectors, though private sectors were more open to trainings after 1PM.



Both the public and private sector respondents were split between a preference for 60 or 90 minute trainings, with many also expressing no preference. Both sectors showed little desire for trainings lasting 2 or more hours. The current format of 90 minute sessions, with 60 minutes of attendance being required for a ICC CEU certificate, should serve both sectors well.



Overall, the public and private sector survey respondents showed a strong overlap in desired training topics, with energy code navigation and compliance documentation being the top two for both sectors. Heat pumps, basic building science, mechanical measures, and plans and specifications were also popular for both sectors. The public sector respondents reported a higher interest in SolarAPP+ than the private sector, while the private sector respondents indicated a higher interest in quality insulation installation.

# Key Takeaways & Recommendations

## Participant Recommendations

For the public sector survey, in-person orientations proved to be a successful method to gain responses. As these events took place across both Riverside and San Bernardino Counties, responses between the regions were fairly evenly split. I-REN should be conscious of who the stakeholders they seek information from are; about half of the respondents from the public sector survey indicated that they were in an “other” category, where the survey did not list their profession. This indicates that I-REN’s orientations drew a different audience than was expected, which gives important insight into which stakeholders are currently the most interested in I-REN’s services and which stakeholders will require further outreach.

When gathering feedback in the future, I-REN should leverage resources to bring surveys to in-person events. While email is in theory a way to reach a diverse audience, especially given I-REN’s rural communities, the team had difficulty in getting professionals who were unaware of I-REN to take the private sector survey. In the future, email may be better used to gather feedback for those who have been involved with an I-REN activity in some capacity (such as a training), rather than those who are new to I-REN.

Below are the key takeaways from each sector’s survey responses. Where relevant, takeaways/preferences are listed in order from most common/largest response, to least common/smallest response.

Survey Question	Public Sector Takeaway	Private Sector Takeaway
<b>Location by County</b>	54% Riverside, 46% San Bernardino	54% Riverside, 46% San Bernardino
<b>Most Common Job Title</b>	<ul style="list-style-type: none"> <li>Sustainability manager/director</li> <li>Chief building official</li> <li>‘Other’ respondents</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>‘Other’ or write-in responses</li> </ul>
<b>Preferred Energy Code Resources</b>	<ul style="list-style-type: none"> <li>Colleagues</li> <li>CEC</li> <li>Newsletters</li> </ul>	<ul style="list-style-type: none"> <li>CEC</li> <li>Colleagues</li> <li>Trade organizations</li> </ul>
<b>Interest in Reach Codes</b>	56% maybe, 40% yes, 4% no	N/A

Survey Question	Public Sector Takeaway	Private Sector Takeaway
<b>Barriers to Energy Code Compliance</b>	<ul style="list-style-type: none"> <li>• Insufficient time/resources</li> <li>• Compliance forms/paperwork</li> <li>• Determining applicable requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient time/resources</li> <li>• Changes made after permit is issued</li> <li>• Compliance forms/paperwork</li> </ul>
<b>Most Complex Energy Code Areas</b>	Commercial additions and alterations	N/A
<b>Training Topics</b>	<ul style="list-style-type: none"> <li>• Energy Code Navigation</li> <li>• Compliance Documentation</li> <li>• Lighting Measures</li> <li>• Classroom training, online/on demand courses, and attending a live webinar are the top preferred training methods</li> <li>• Commercial projects most commonly outsourced to third party plan checkers</li> </ul>	<ul style="list-style-type: none"> <li>• Energy Code Navigation</li> <li>• Compliance Documentation</li> <li>• Heat Pumps</li> <li>• Top reasons to take trainings include to deliver a high level of service to customers, learn about new technologies, and stay competitive in the marketplace</li> <li>• Field training, online/on demand course, and attending a live webinar are the top preferred training methods</li> <li>• Preferred over the phone and online support from Energy Code expert</li> </ul>
<b>Training Times</b>	<ul style="list-style-type: none"> <li>• Thursdays and Tuesdays</li> <li>• Morning (10AM-12PM) and early morning (before 10AM)</li> <li>• 60 minute trainings preference</li> </ul>	<ul style="list-style-type: none"> <li>• Fridays and Thursdays</li> <li>• Morning (10AM-12PM) and early morning (before 10AM)</li> <li>• No training length preference</li> <li>• Lack of time and training cost can create barriers to attendance</li> </ul>

## Next Steps

I-REN is a relatively new program, and these survey results represent a snapshot of the Energy Code needs of Riverside and San Bernardino counties as I-REN begins its work.

Once I-REN has increased its public and especially private sector contacts through engagement with the C&S program, it could be useful to repeat the survey with a larger sample size, and to help measure the impact of the C&S program on Energy Code knowledge in the I-REN region. In those surveys, I-REN could be an option for how people learn about Energy Code trainings, which would allow us to gauge what kind of impact our C&S program is having on the Energy Code learning space. We could also include a question about familiarity with topics from I-REN's most popular trainings, as well as questions about interest in new emerging topics that respondents are curious about, to help keep I-REN's trainings stay on the cutting edge.