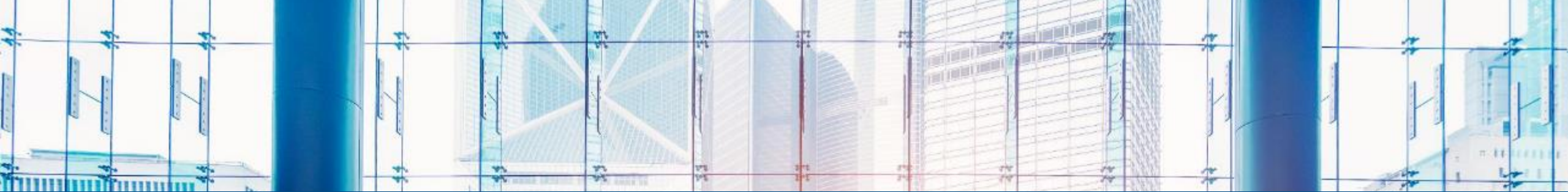


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<b>TN #:</b>	238818
<b>Document Title:</b>	Presentation - Workforce Development Opportunities & Challenges related to Building Decarbonization
<b>Description:</b>	S3.7D Cori Jackson, UC Davis
<b>Filer:</b>	Raquel Kravitz
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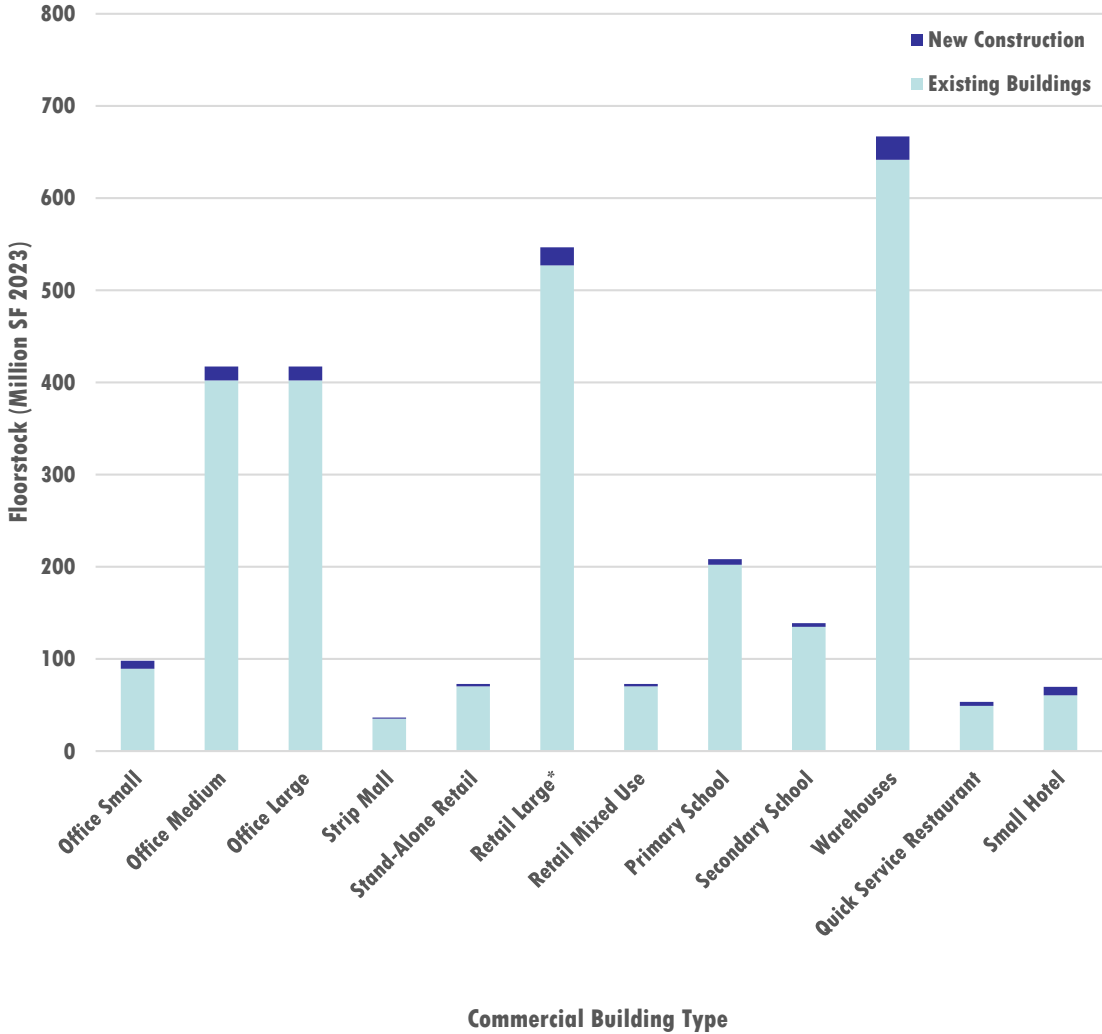


# Workforce Development

*Opportunities & Challenges related to Building Decarbonization*



# California Building Stock



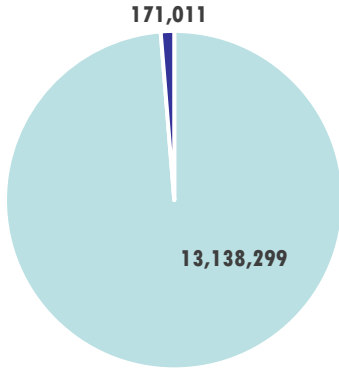
## Annually, Commercial Sector

- Existing buildings: 96%
  - New construction: 4%
- available for decarbonization measures.

## Residential Sector

- Existing buildings: 98%
- New construction: 2%

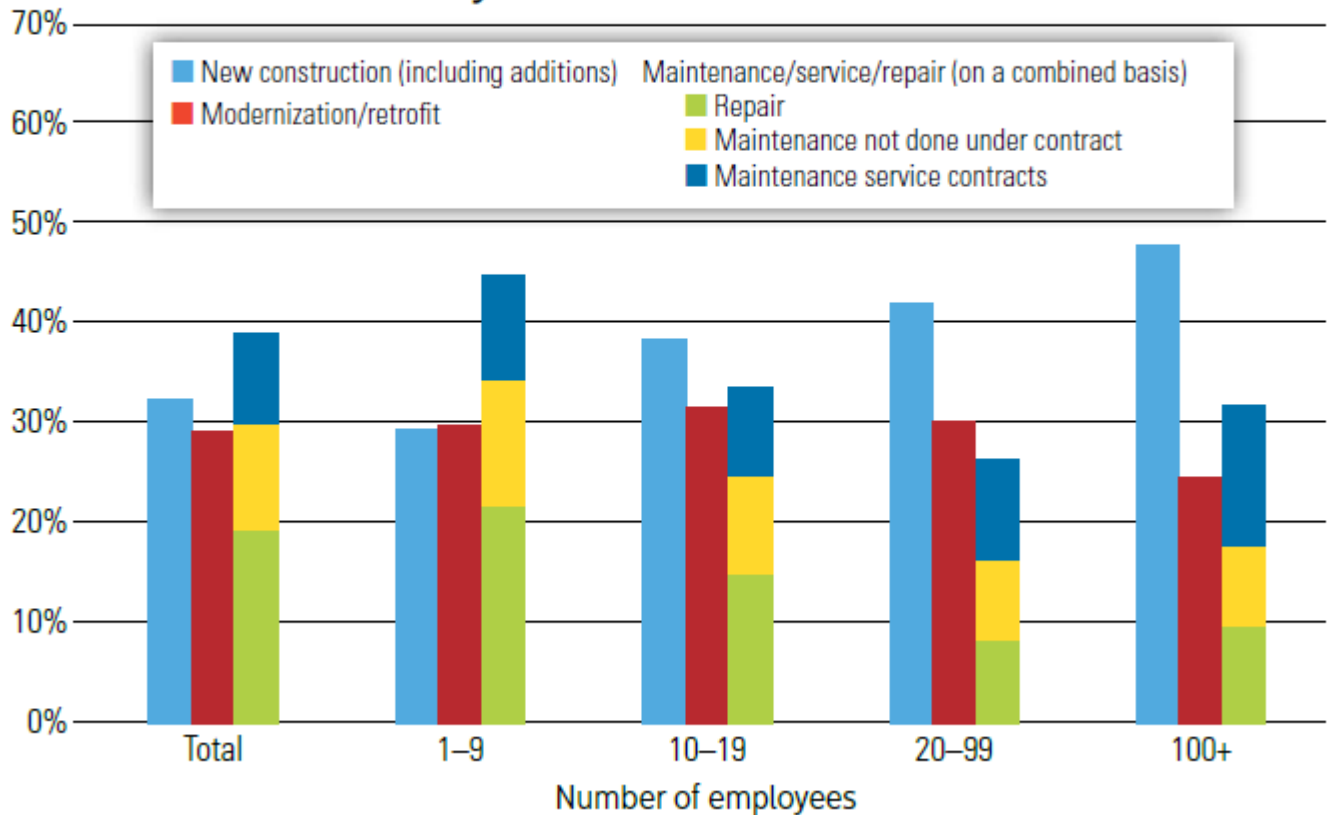
Residential Buildings



Existing Buildings New Construction

# Projects and Revenue

**FIGURE 6** Average Revenue from Types of Work Performed in Previous Year by Sector



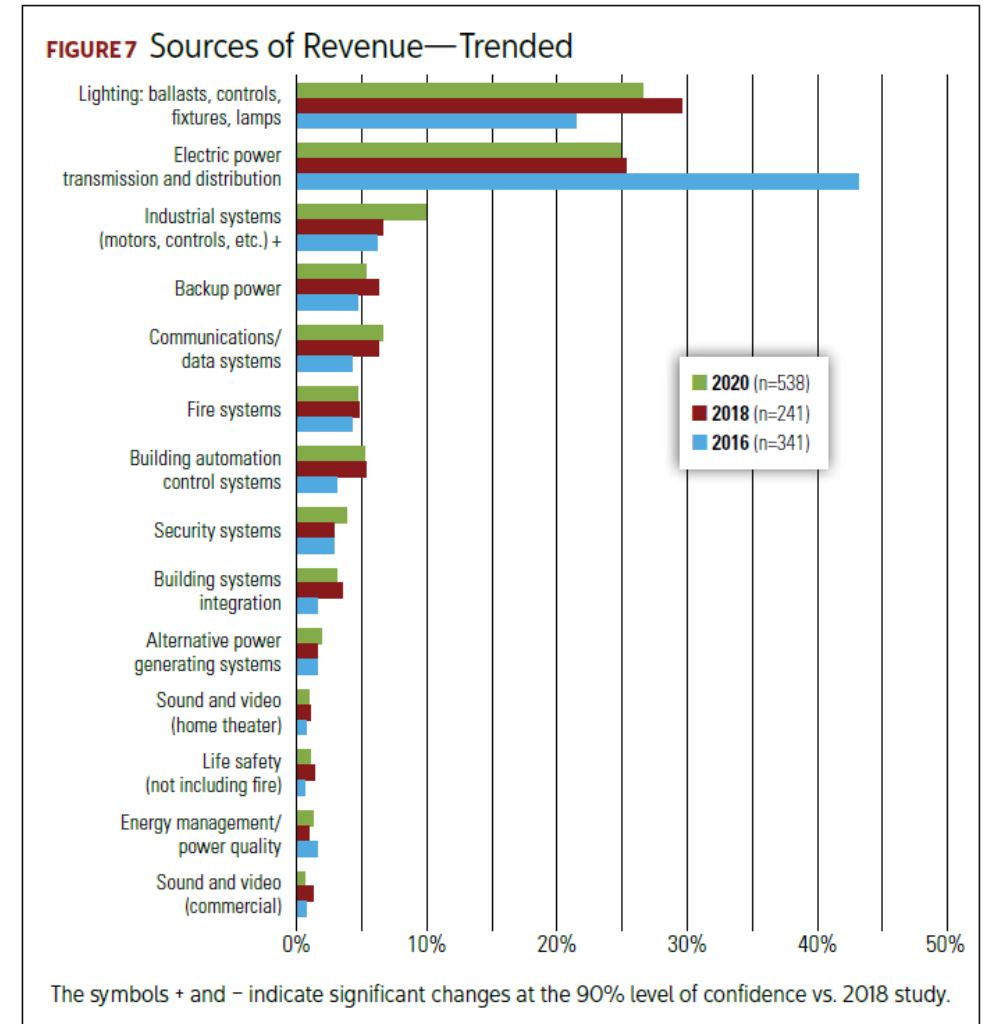
- 35-50% new construction
- 25-30% modernization & retrofits
- 25-40% maintenance & repair

# Project Revenue & Employment Opportunities

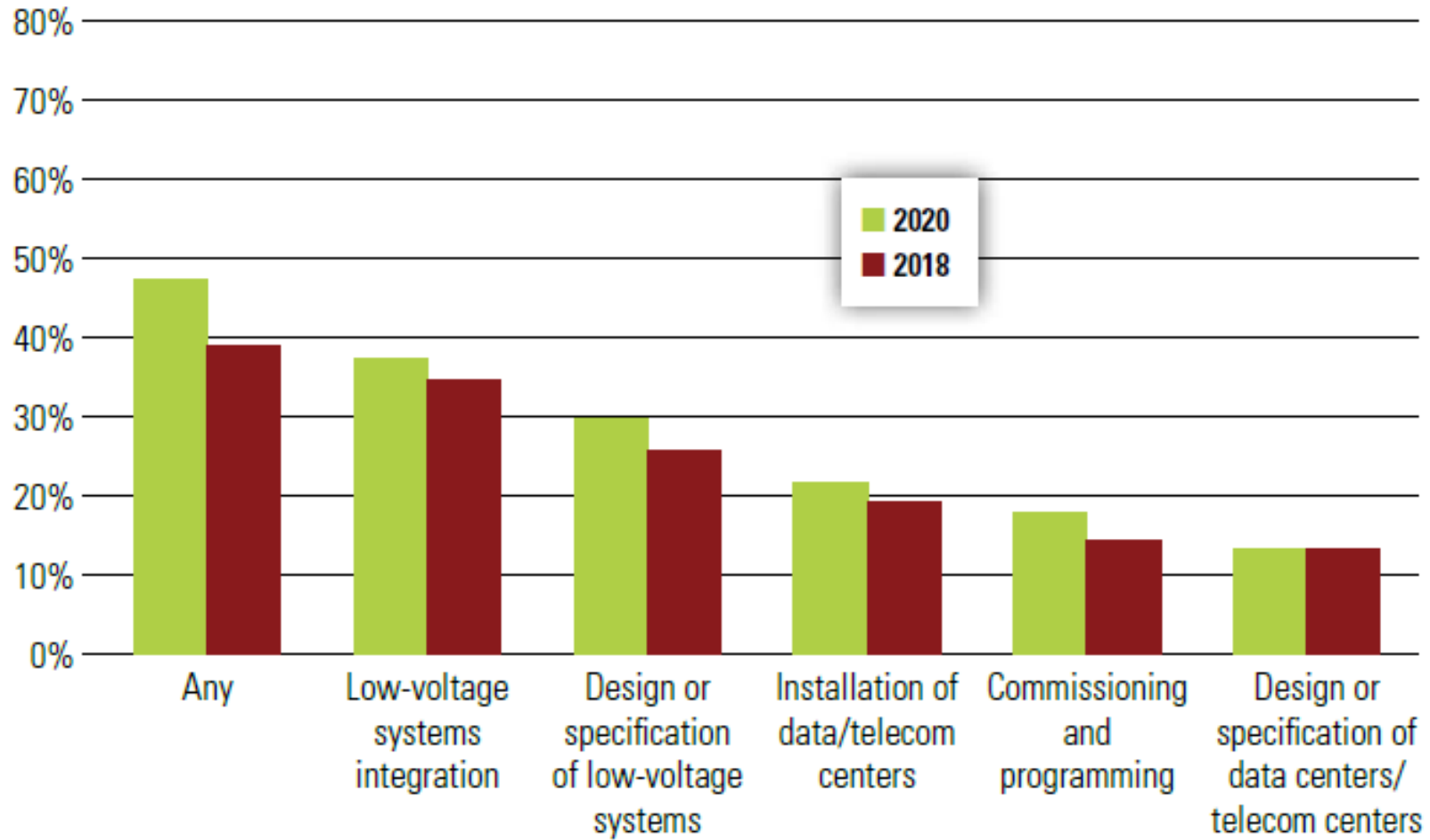
- Control, Automation & Communication Technology
- Verification, Validation
- Performance Metering
- Data Analysis → Optimization

Less than 10% of revenue attributed to:

1. Building systems integration
2. Building automation and control systems
3. Communication and data systems
4. Energy management



**FIGURE 11** Firm's Active Engagement in Systems Integration or Data/Telecom Centers



# Workforce Challenges

- New technology coupled with an aging workforce that is choosing retirement over retraining
- Transition to a digital infrastructure that blurs the line between installation, start-up and commissioning
- Wireless and two-way communication
- Integrated systems that require cross-disciplinary knowledge and skills and/or collaboration between different trades
- Lack of computer, programming and cybersecurity curriculum and training within the trades
- Low rates of compliance and enforcement of energy standards
- Lack of financial incentives impacting capital/first costs

# Workforce Development Solutions

At all levels of the building pipeline, design through operation, we need to recognize and accept that training and educational opportunities and programs focused on building decarbonization are equally important as the building technology and equipment.



- Incentivize and invest in education and training as an energy, efficiency and decarbonization measure.
- Adopt requirements for training and certification to better ensure quality.
- Address standards enforcement
- Embrace and support California's Jobs and Climate Action Plan for 2030







Questions?

