



# Energy Efficiency Services Sector: Workforce Education and Training Needs

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# The EESS is Driven by Policy



*Historically, a majority of the activity in the EESS is spurred directly and indirectly by government policies and ratepayer-funded programs.*

## Federal & State Programs, Policies

- Codes & standards
- State Energy Program
- Weatherization assistance
- Enabling legislation for performance contracting in government buildings
  - Tax credits
  - EE R&D
- Rate-payer funded efficiency programs

Retailers

**EESS:** Program administrators (PA),  
Program Implementation Contractors  
(PIC) Weatherization Agencies

Energy  
Consumer

Building  
Owner

**EESS:**  
Building &  
Construction  
Industry

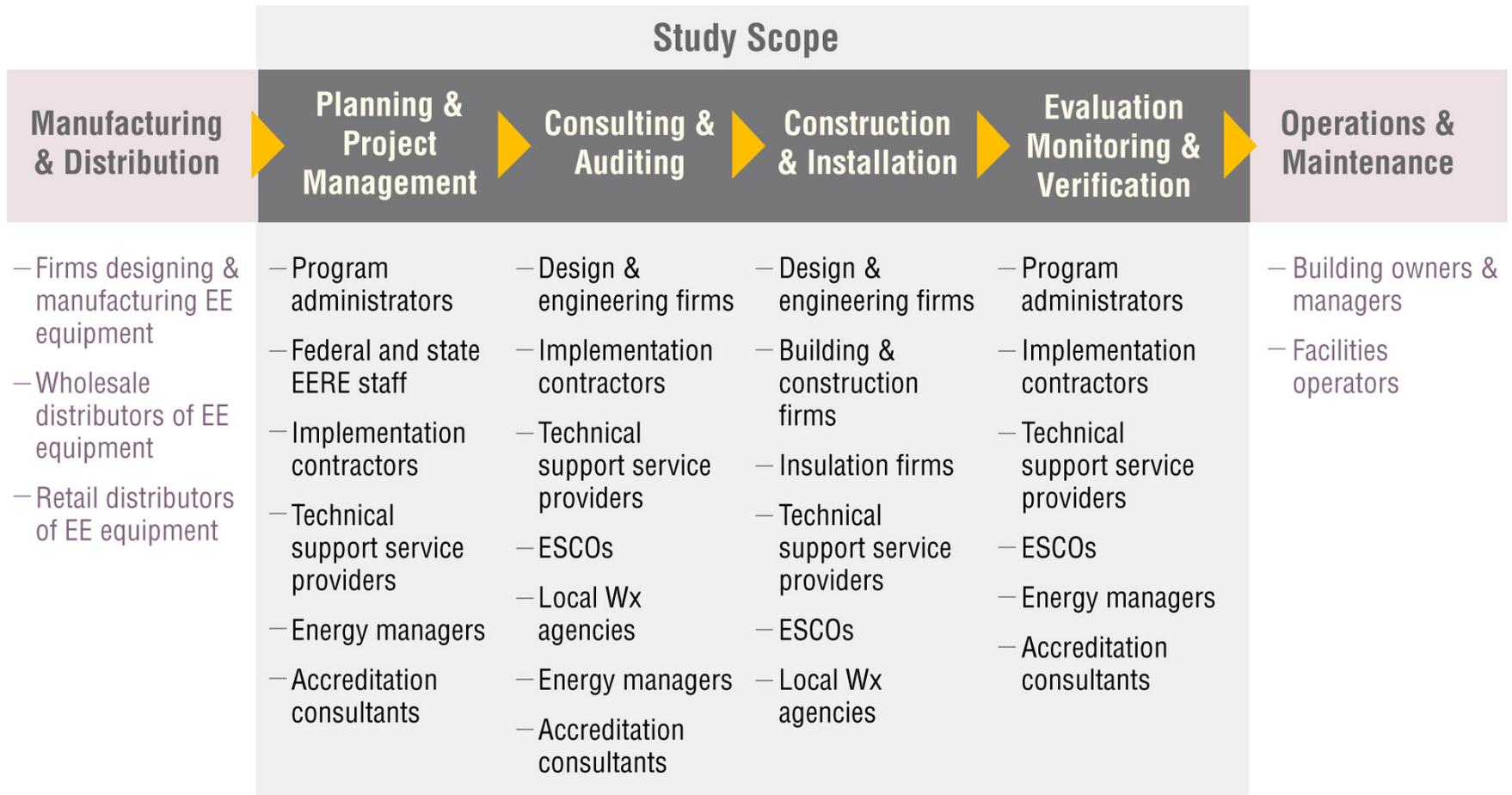
**EESS:** Energy Service Companies  
(ESCO)

# Defining the EESS

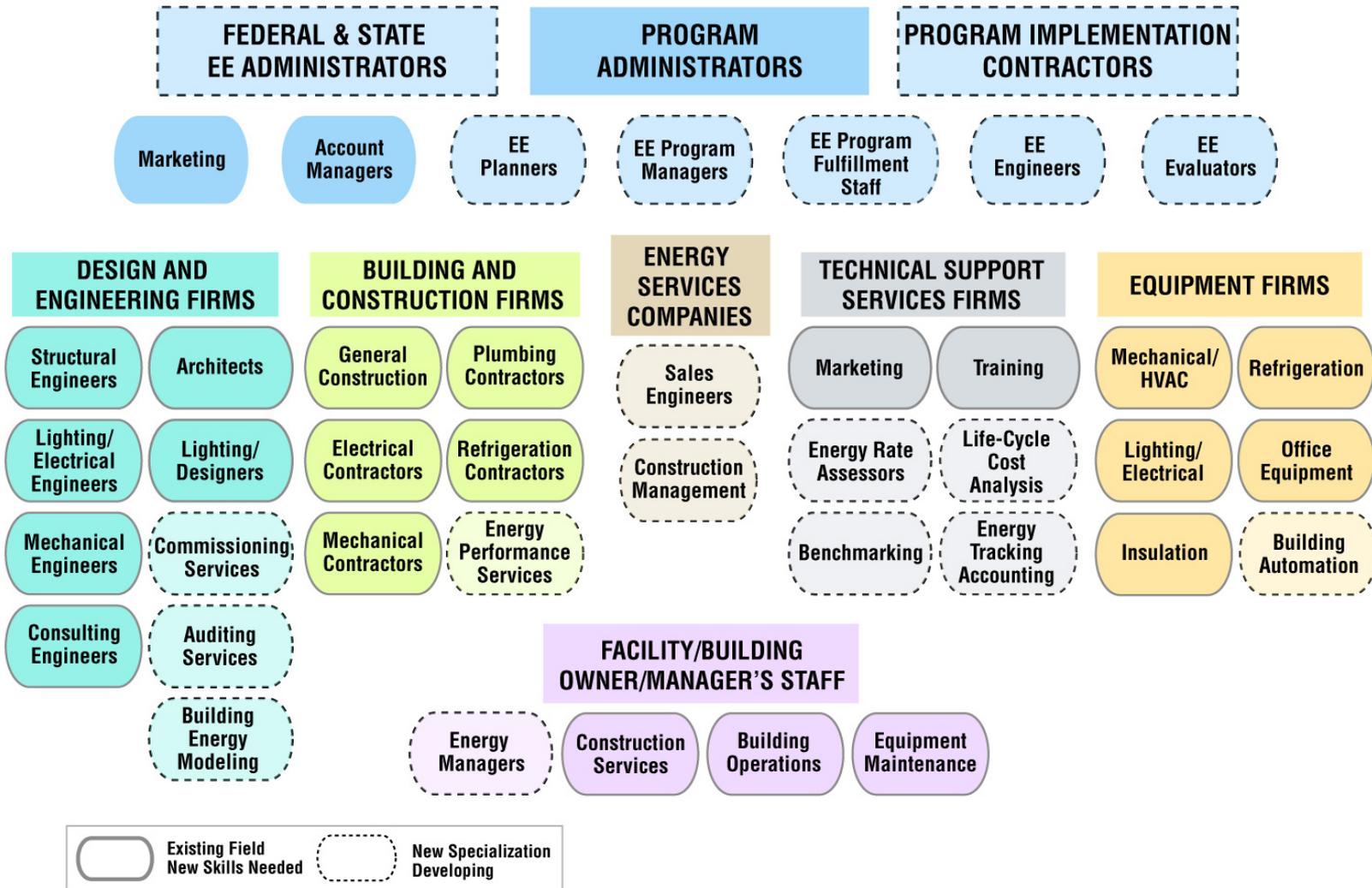


This study includes the portion of the EESS market supply chain that focuses on deployment and installation of energy efficiency products and measures. Within this, we further limit our scope to those EE products and services whose demand is driven *primarily* by the energy savings.

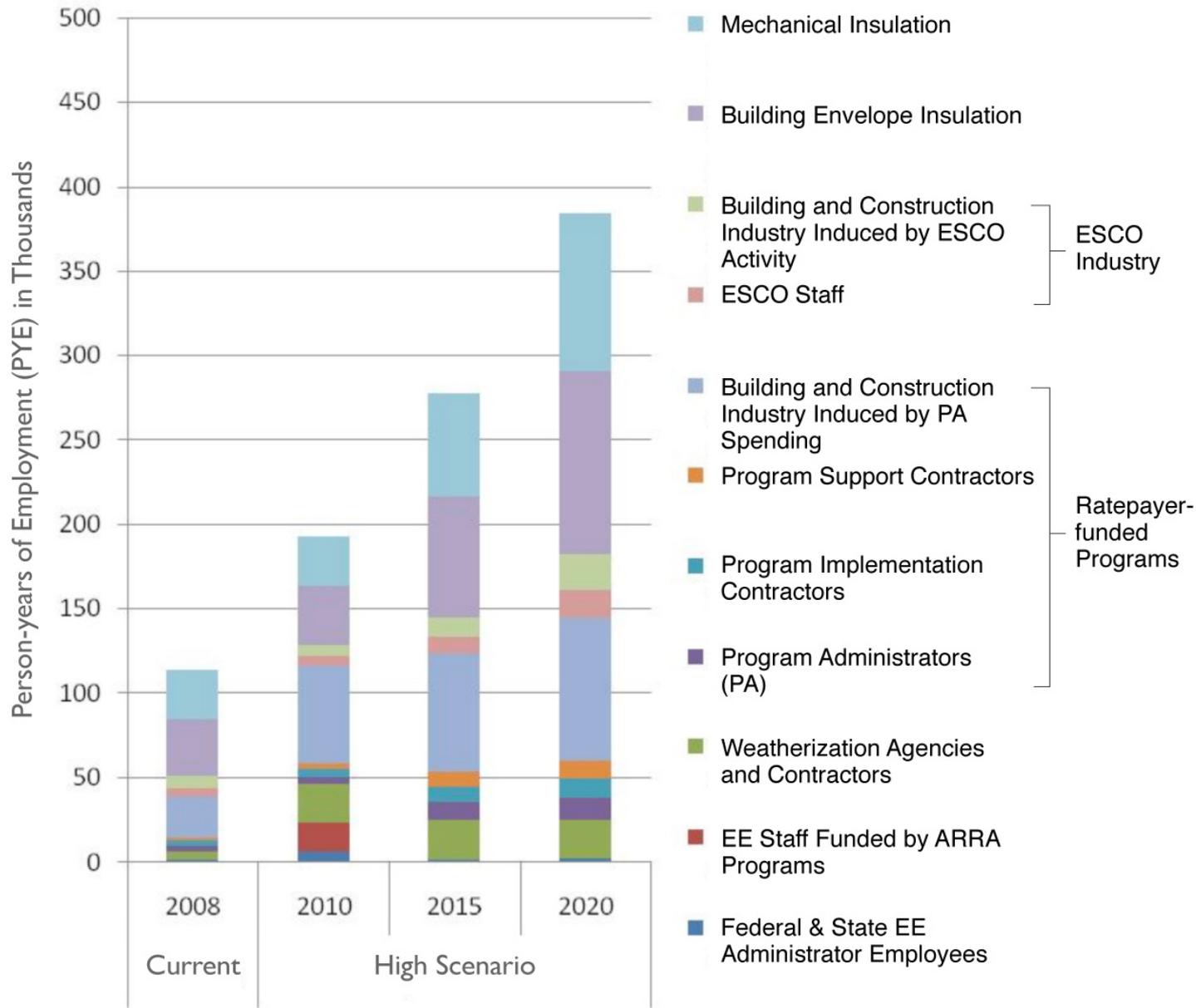
## Study Scope



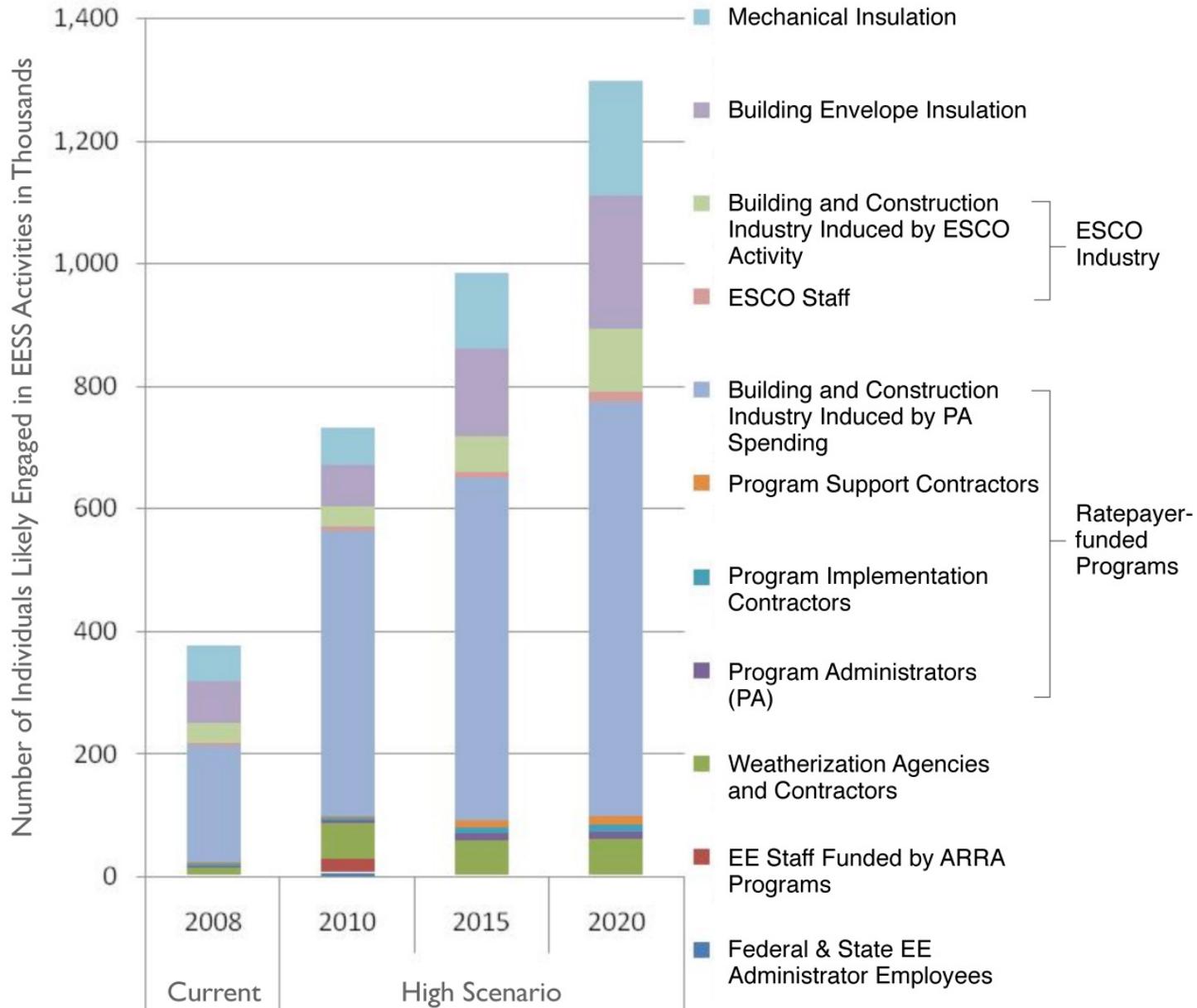
# Commercial-Institutional EESS



# Energy Efficiency Services Sector Workforce Size: Current and projected levels of employment in PYE



**Energy  
Efficiency  
Services Sector  
Workforce Size:  
Current and  
projected levels  
of individuals  
employed**



# EESS Workforce Size



## Current Size:

- 114,000 person-years of employment (PYE)
- Approximately 380,000 individuals employed

## Projected Size in 2020:

- Approximately 400,000 PYE (high-growth scenario)
- Up to 1.3 million individuals employed

→ A projected 2-fold (low-growth scenario) to 4-fold (high-growth scenario) increase in employment by 2020

# Key Challenges for EESS Workforce Growth



- Shortage of management-level applicants with experience in energy efficiency
- Shortage of experienced energy efficiency engineers
- **Building and construction industry:**
  - Limited awareness that the EESS is poised to expand significantly and their skills will be required
  - Retirement is a growing concern
  - Limited number of skilled trainers for EE

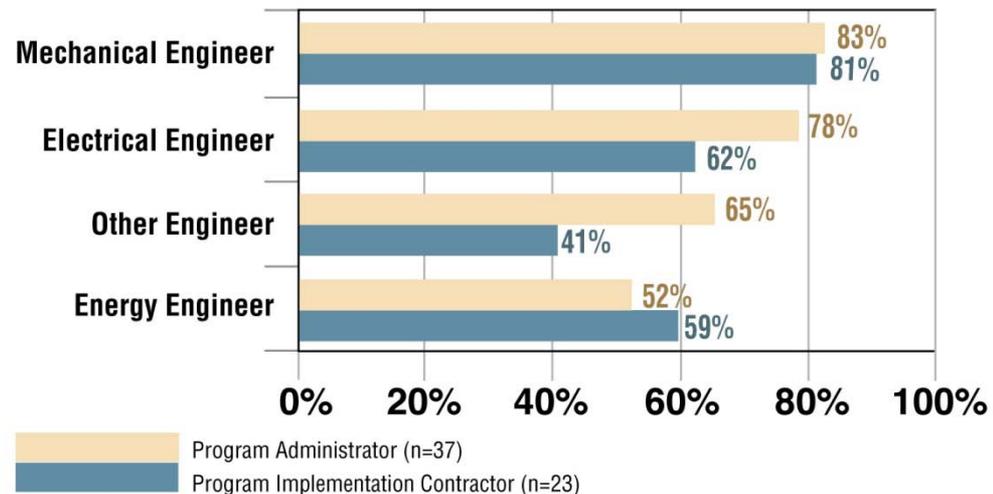


# Enough Engineers?



*The most likely source for new EESS engineers is to transition engineers from other fields into energy efficiency. But until energy engineering is recognized as an engineering discipline this may be difficult.*

- Few engineers enter the field with EE experience
- The demand for engineers with knowledge of efficiency is currently met by hiring other types of engineers and training them on the job
- Many industries compete for engineering talent, and engineers often do not know the EESS field exists



Preferred Engineers for Program Administrators and Implementation Contractors

# Enough Managers?



*30% of survey respondents indicated that it is as difficult to find experienced EE managers as engineering talent.*

- The primary limitation on implementation contractor firm growth, or expanded program offerings for some administrators, is the lack of management-level applicants with EE experience
- Experienced managers are vital mentors for the next generation of managers and staff

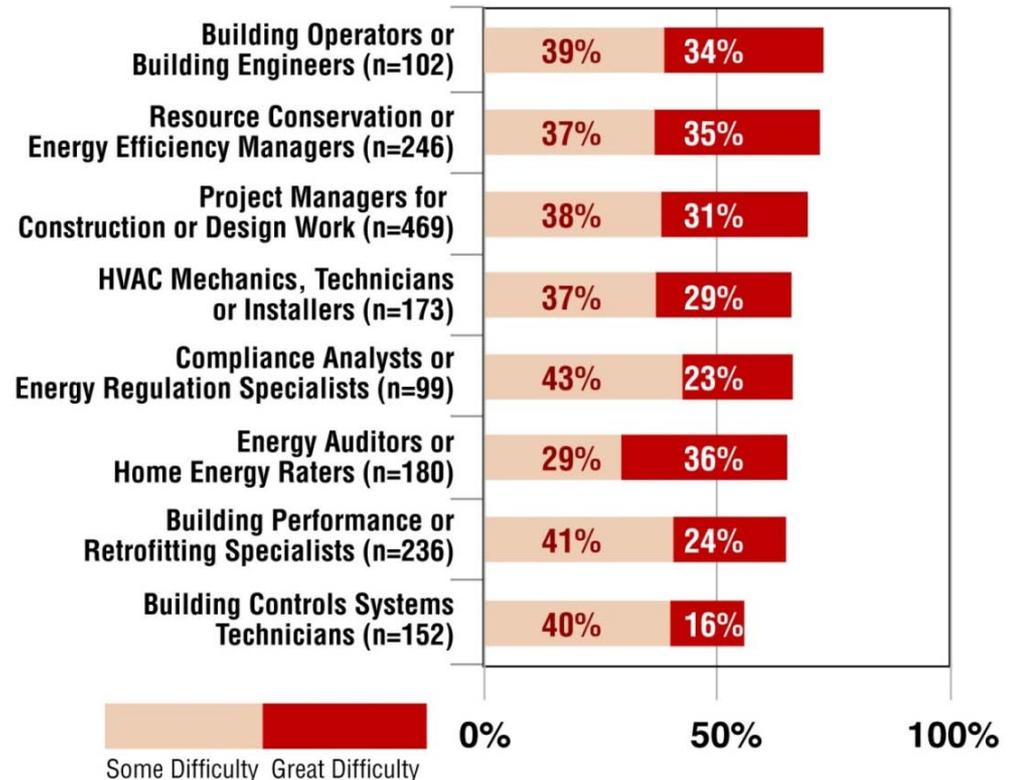


# Difficulty Hiring?



*Respondents believe there are challenges hiring into the EESS for ANY position other than entry level.*

- Managers and engineers with experience in energy efficiency especially difficult to find
- Filling experienced positions often occurs by hiring from other firms
- Labor union respondents also report some difficulty recruiting qualified applicants into apprenticeship programs



Difficulty in hiring for the 8 efficiency-specific occupations in California.

# A Variety of EE Trainings are Emerging and Growing



- Residential Energy Services Network (RESNET)
- Weatherization Assistance Program (WAP)
- Association of Energy Engineers (AEE)
- Building Performance Institute (BPI)
- Association of Energy Services Professionals (AESP)
- Some community colleges
- Some four-year programs
- Union apprentice programs (though EE-specific curriculum appears limited)



# Recommendations



- **EE Workforce Education and Development as separate programmatic element in EE program plans**
- **Conduct EE Workforce Training & Needs Assessment**
- **Target EE training for the Trades (65-70% of EESS workforce)**
- **Increase short-duration, applied trainings on EE topics to augment on-the-job training**
- **Increase funding to “train the trainers”**
  - **Growth rates strain current capacity; lack of qualified trainers likely in future**
- **Prepare the next generation of EESS Professionals**
  - **Few colleges offer EE-specific curriculum**
  - **Universities/colleges: Develop building science centers and EE policy/planning centers**
- **New tool on horizon: Workforce Guidelines for Home Energy Retrofits**
  - **Voluntary quality standards for certification and training programs**

# Contact

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**Energy Efficiency Services Sector: Workforce Education and Training Needs**

**<http://eetd.lbl.gov/EA/EMP/reports/lbnl-3163e.pdf>**

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## Extra Slides

# Jobs per \$1M Spending

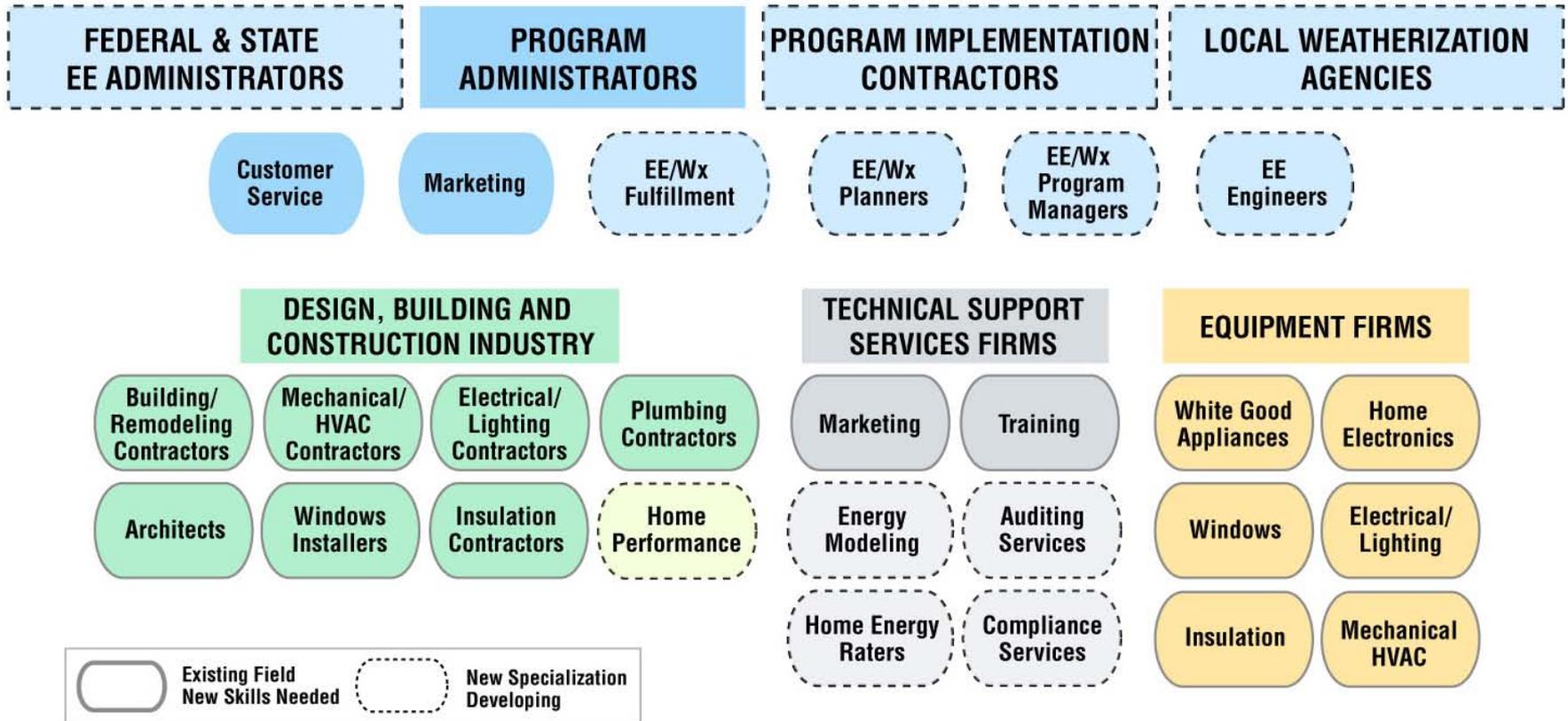


Activity	Person-Years of Employment (PYE) per \$1M
Ratepayer-funded Efficiency Activity	6.2
Low Income Weatherization	8.9
Energy Service Companies (ESCOs)	2.5
Insulation	8.9
Federal and State Govt EERE Offices	6.5

**Our results compared to other studies**

Study	Job Type	Person-Years of Employment (PYE) per \$M
UMASS-PERI and (2008)	Green Jobs (direct)	9.4
Apollo (2004)	Energy Efficiency	9.2
ACEEE (2008)	Energy Efficiency ("premium" efficiency)	9.8
ASES (2007)	Energy Efficiency (direct)	3.8
Clean Energy Fund (2009)	Energy Efficiency	4.7

# Residential EESS



# Breakdown of Current Jobs



~**55%** of current PYE – **Trades people and professionals** responsible for building envelope insulation and mechanical insulation

~**30%** of current PYE - **Rate payer-funded energy efficiency** efforts, including the staffs of program administrators, implementation contractors; as well as the building and construction professionals and trades people that design and install the equipment leveraged by ratepayer-funded programs

~**10%** of current PYE - **ESCO** efforts, including ESCO staff and the contractors they hire among the building and construction industry

~**5%** of current PYE – **Weatherization assistance** efforts of the federal and state governments

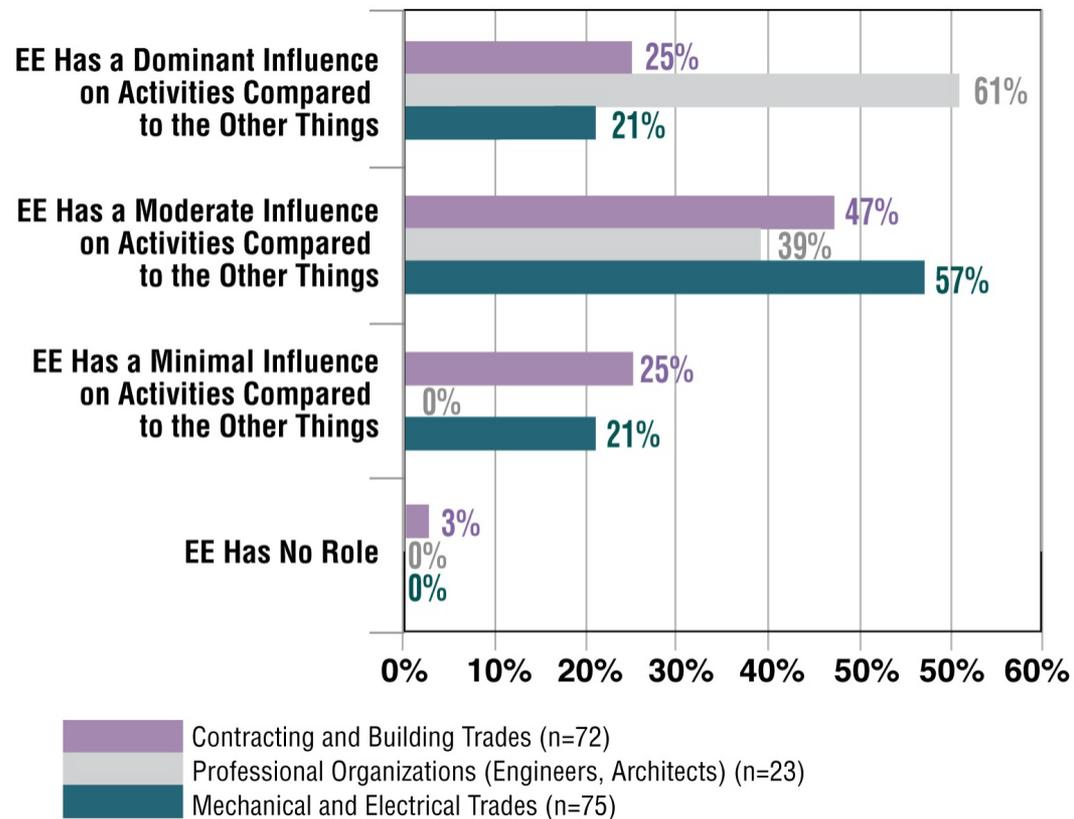


# Ready for Growth?



*Relatively low level of awareness in the building and construction industry about growth potential in the EESS*

- Pgm. Administrators estimated that their staff will grow ~19% by 2010
  - Implementation Contractors estimated that their staff will grow ~64% by 2010
- In contrast, less than 50% of 160 respondents that represented building and construction industry associations and trades could even estimate the percent of the current workforce that was involved in EE



The influence of energy efficiency on the building industry.

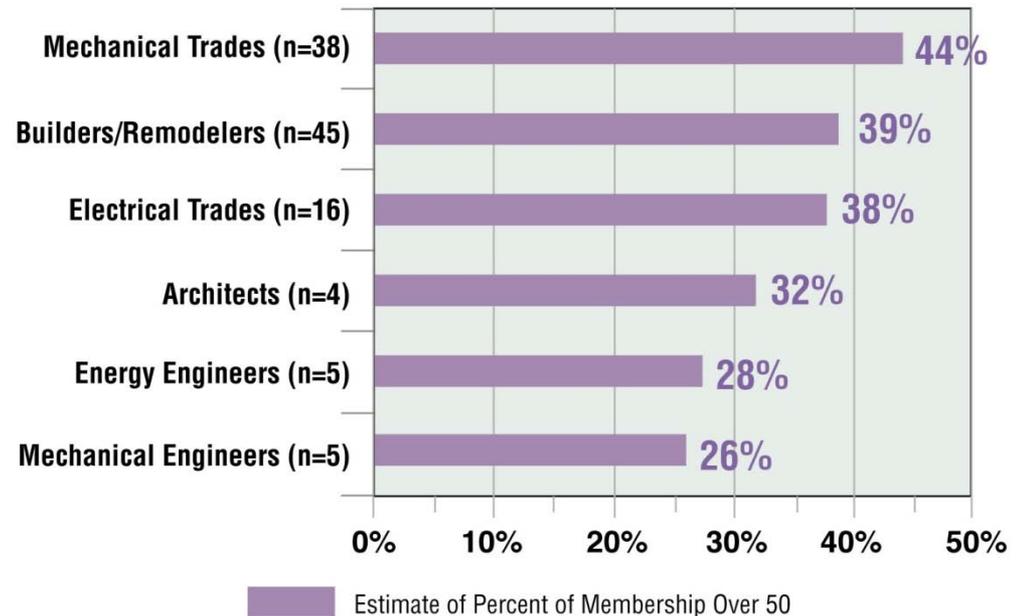
# Aging Workforce?



*Retirement is not currently a concern for program administrators or implementation contractors; however, the building and construction industry is facing substantial changes in the workforce due to retirements between 2015 and 2025*

## Percent of staff likely to retire in next 5 years:

- Program Administrators – Minor issue for some (~15%)
- Implementation Contractors & Program Support Contractors – Not an issue (~5%)
- ESCOs – Not an issue (~5%)
- Building and Construction Industry – **Growing concern (>35%)**



Building Industry Workforce Older than 50

# Transforming Existing Jobs



*Many jobs in the EESS are not new jobs, but rather jobs that need to evolve to provide more energy efficient versions of current (and future) products and services.*

Two primary paths for entering the EESS workforce:

- **Existing occupations** (e.g., HVAC technicians, lighting contractors, construction trades, project managers) which are **transformed** into more energy efficiency-focused positions via retraining
- **Emerging occupations** that are somewhat unique to the EESS (e.g., home energy raters, commissioning services, energy/home performance services, energy auditors)

