Estimating the Size of the Energy Efficiency Services Sector (EESS) Workforce

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Study Motivation

- States are adopting policies and/or aggressive goals that ramp up existing EE efforts
- Energy Efficiency expected to play a key role in meeting power sector needs & greenhouse gas emission reduction goals

Question?

- Are there adequately trained people to design, manage, and install the efficiency measures needed to meet these goals?

Research Questions

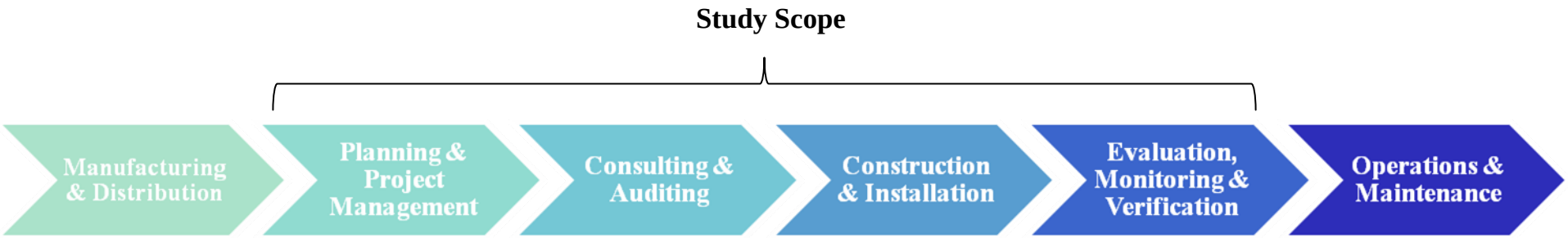
Over long-term, what are the requirements and needs for an expanding energy efficiency services workforce?

- What is the projected need for more workers?
- Where are the energy efficiency services jobs?

And the secondary focus is:

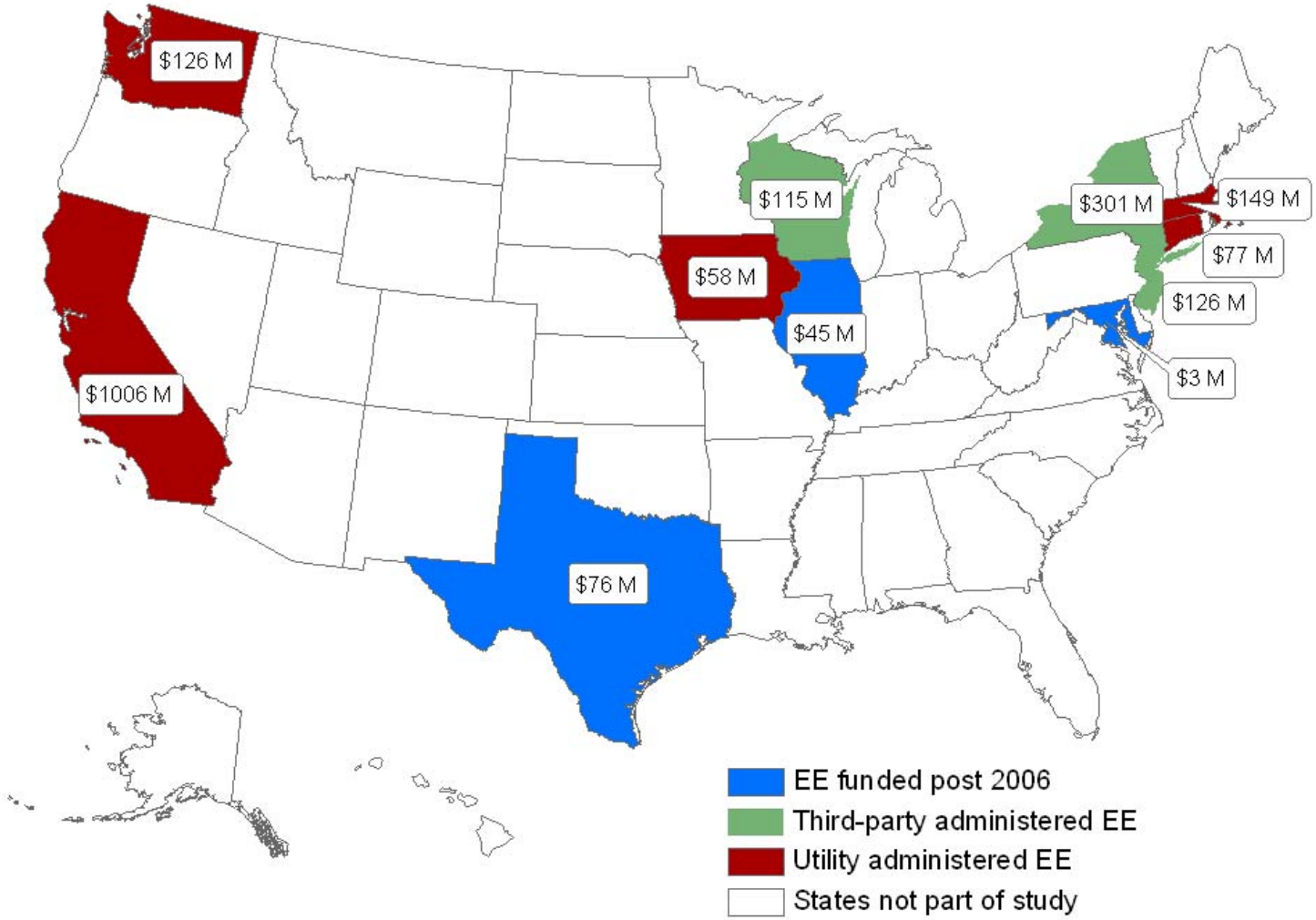
- What training and professional development will be needed?

Energy Efficiency Value Chain



- Study focus is on new emerging occupations which are mostly in the center of the chain
- Manufacturing, distribution, operations, and maintenance are dominated by existing positions
  - e.g. There is little difference in employment if market shifts from standard to high-efficiency air conditioners; primary result may be job substitution

11 State Survey: Represents ~75% of 2007 Budget for Ratepayer-funded Energy Efficiency



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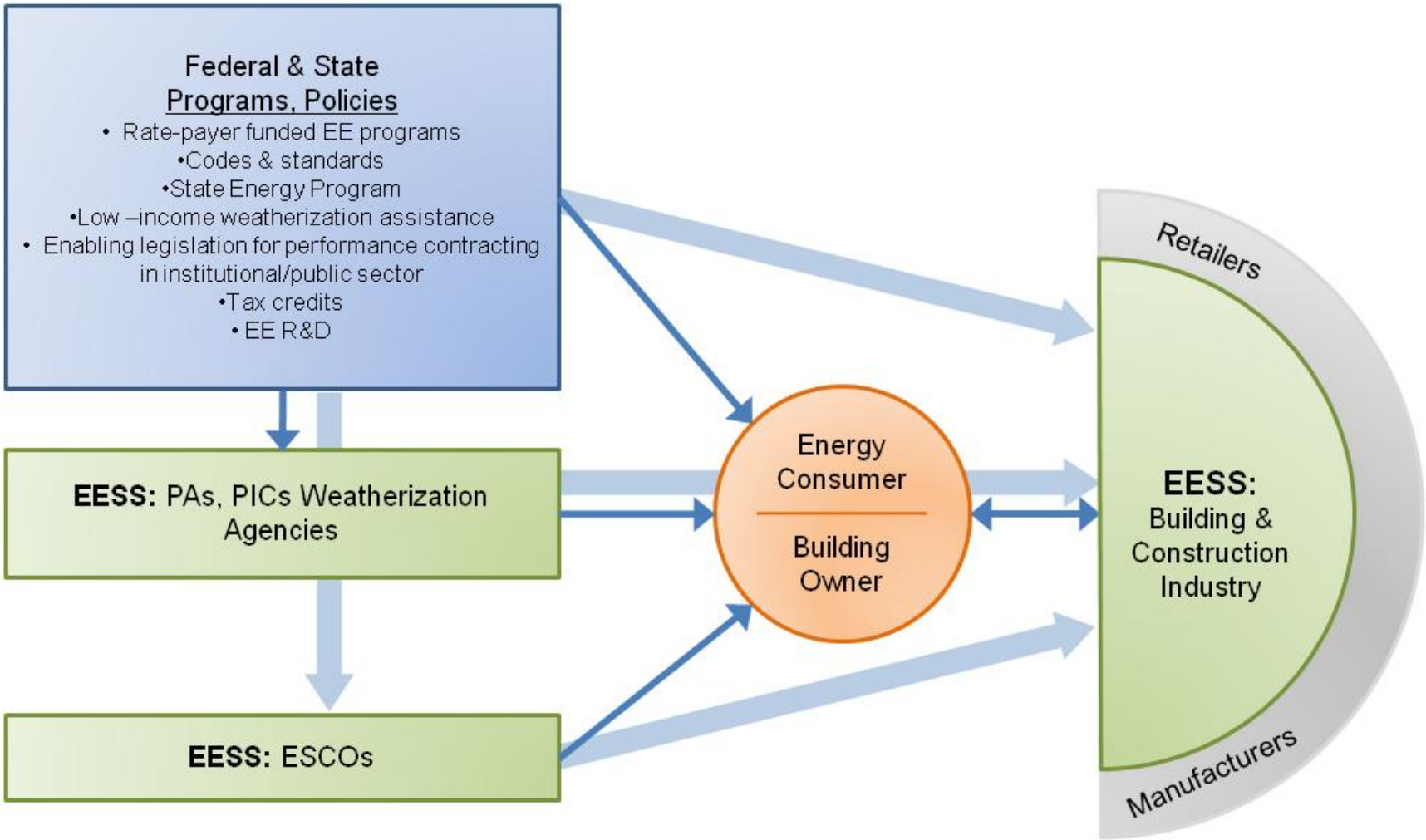
Data Collection: Surveys Plus More

Survey Respondent Groups	Number
Program Administrators (PA)	39
Program Implementation Contractors (PIC)	34
Energy Service Companies (ESCO)	9
Building and Construction Associations (Design, engineering, and building & construction trades)	176
Labor Unions	10
Education and Training Organizations	29
Expert informants	50
Literature Review	400+

The Energy Efficiency Services Sector



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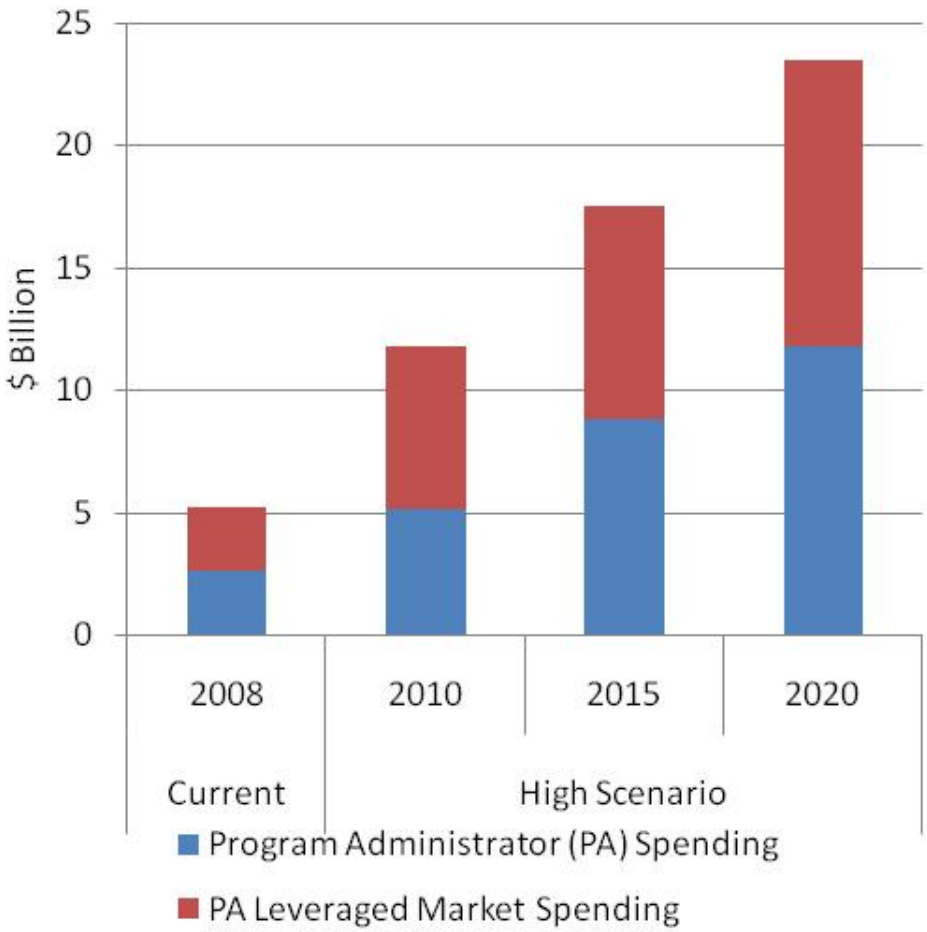
Ratepayer-funded Energy Efficiency: Current and Projected Spending



- Direct Program Administrator spending as well as leveraged spending from the customer cost contribution for the energy efficiency measures

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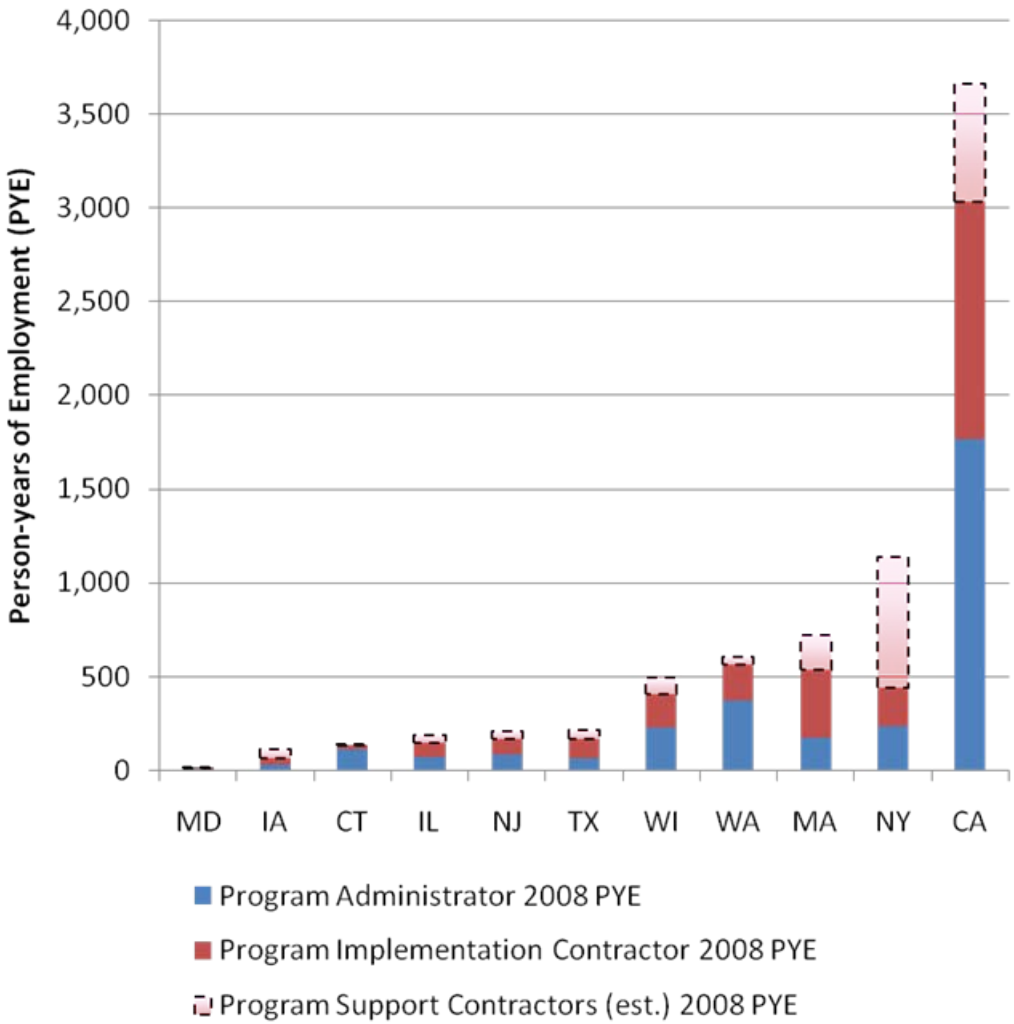
Program Administrators and Implementation Contractors Staffing (2008): FTE



- CA is ~50% of PA ,PIC, and PSC FTE
- Administrators in some areas use different organizational business models
- Administrators are likely to increase “outsourcing” to implementation contractors when facing regulatory constraints on staff

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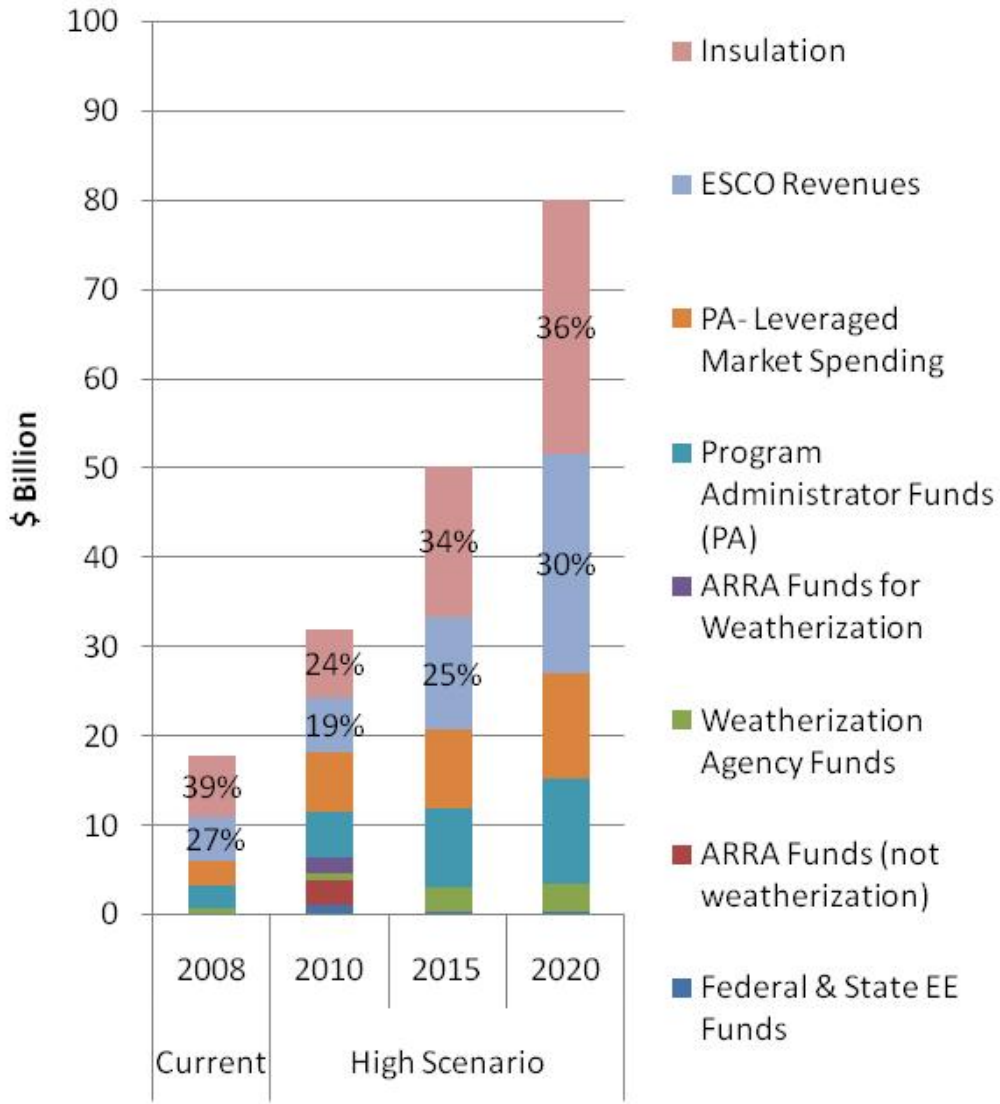
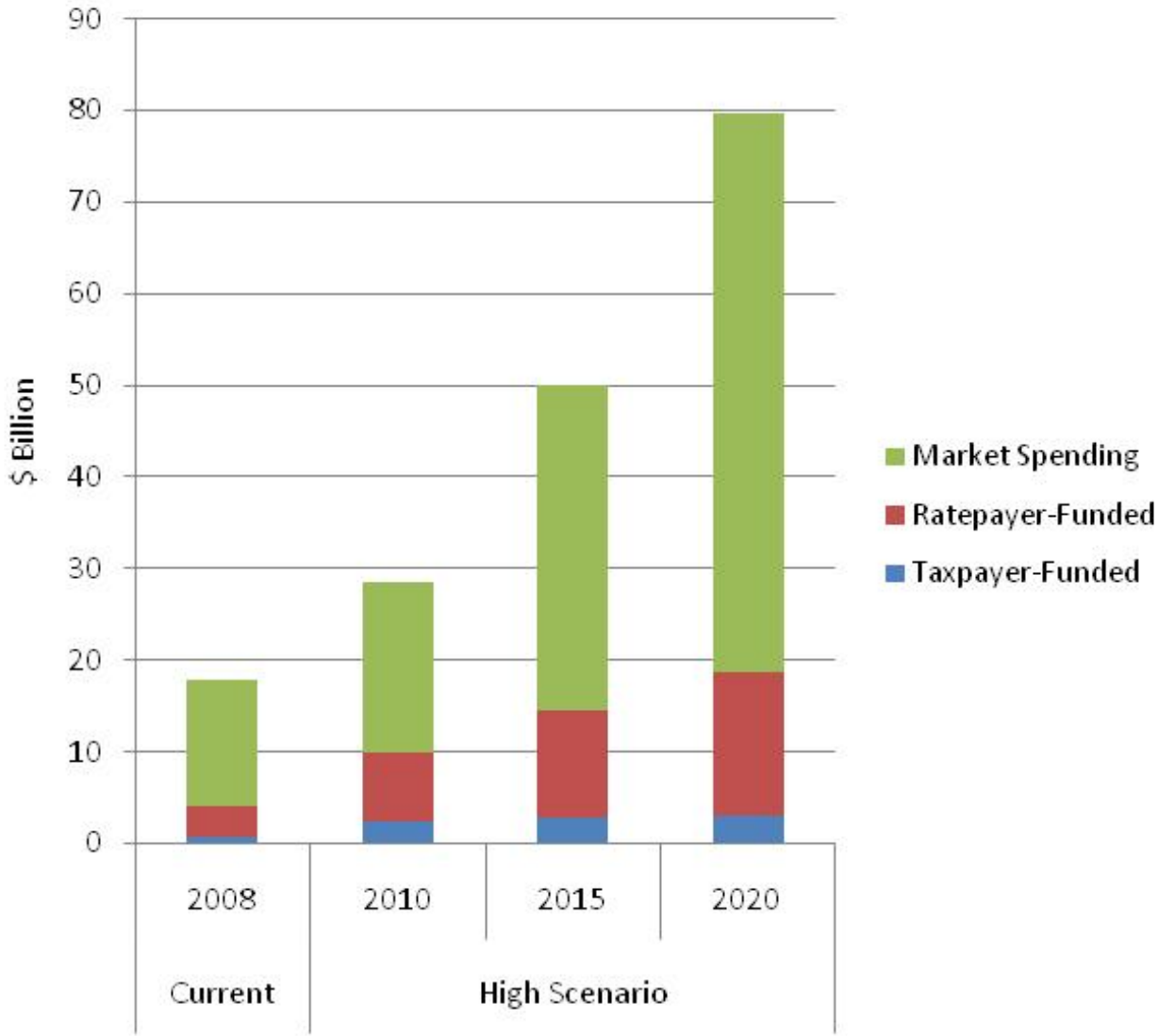
Estimated EESS Spending by Source: High Scenario



Estimated EESS Spending: High Scenario



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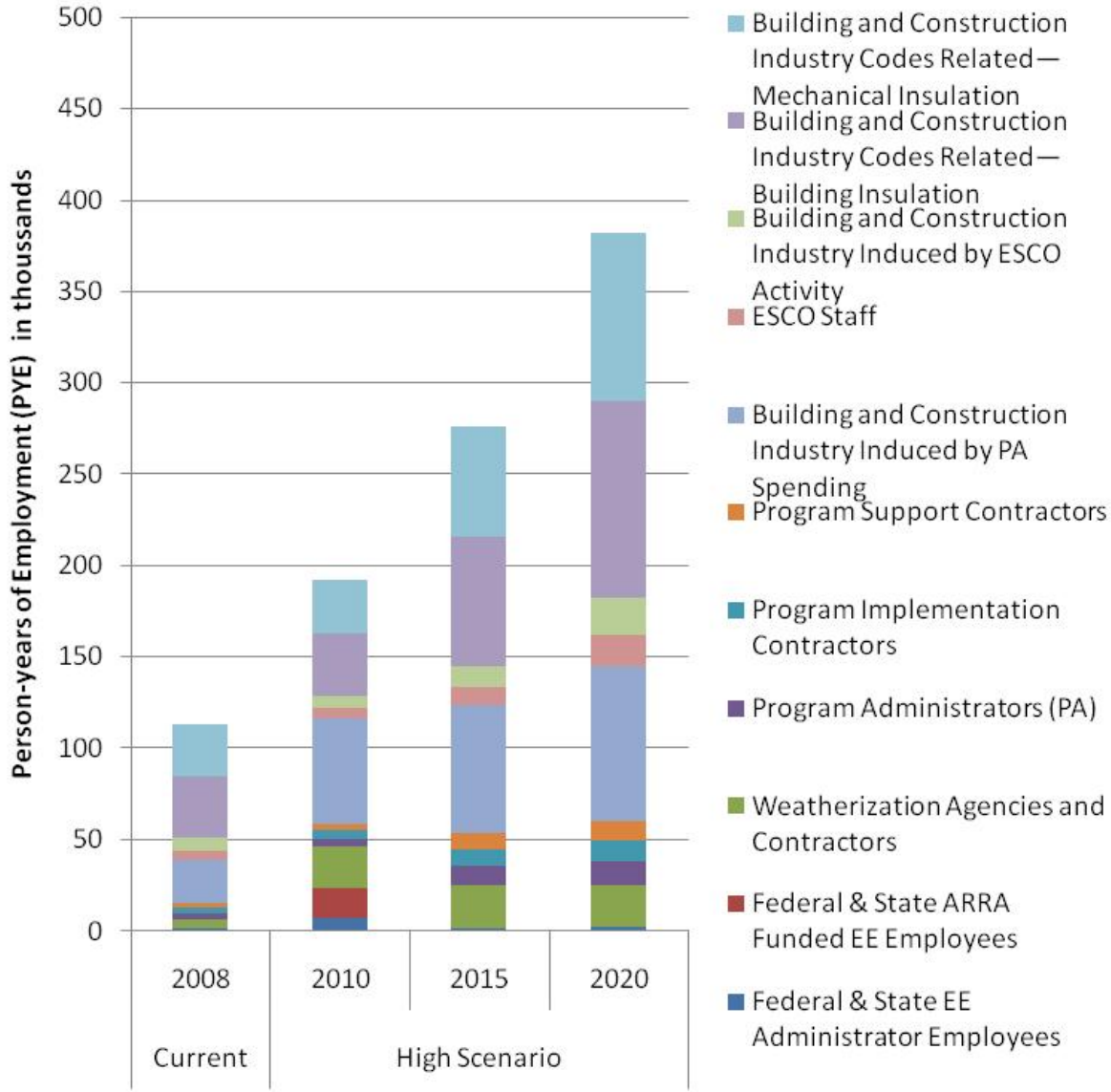
EESS Workforce Size - Current and Projected: High Spending Scenario



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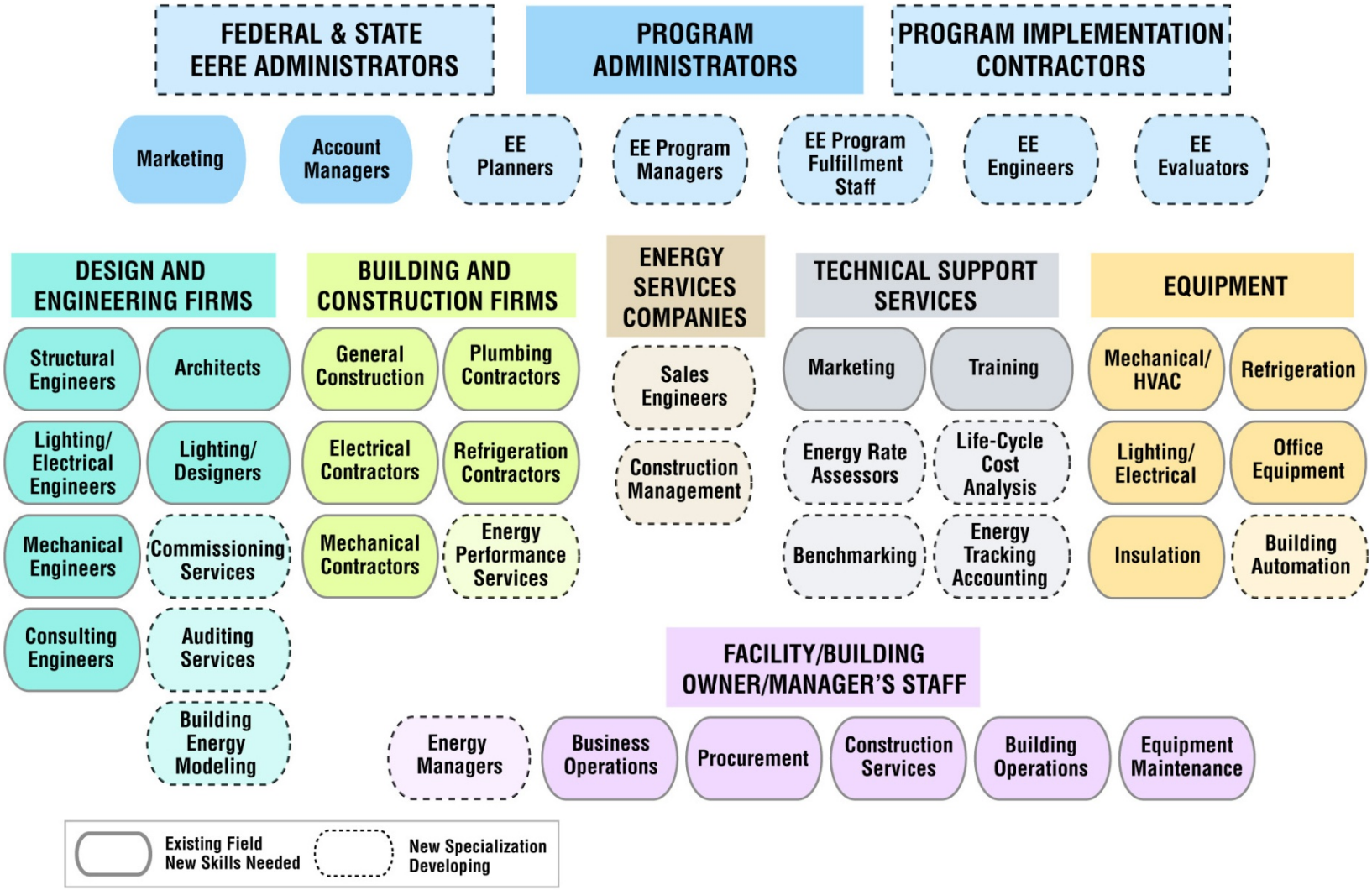
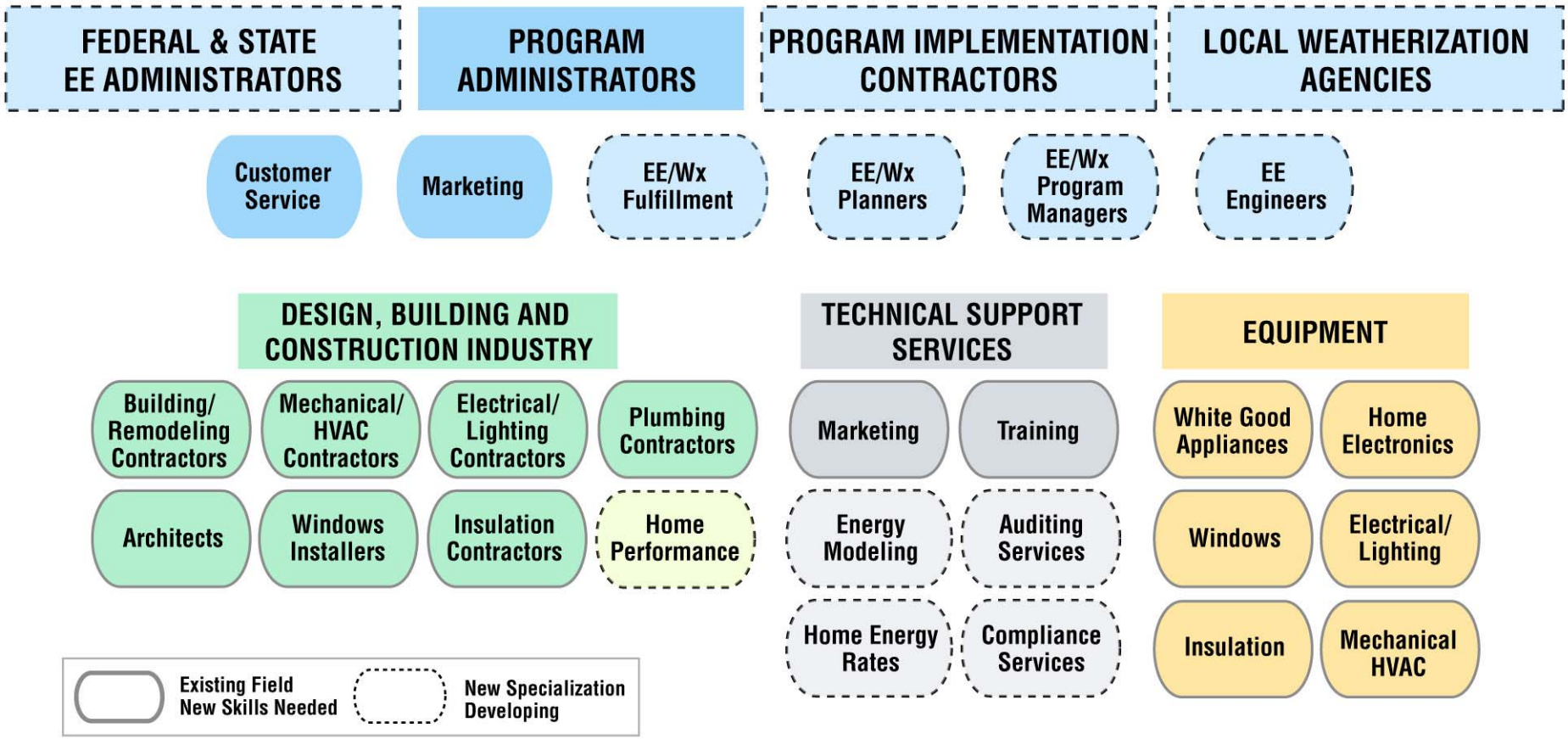
Commercial/Institutional Market: Emerging Jobs and Retained/Retrainable Jobs



Residential Market: Emerging Jobs and Retained/Retrainable Jobs



Emerging EESS Occupations Aligned with Value Chain

Study Scope

- Firms designing & manufacturing EE equipment
- Wholesale distributors of EE equipment
- Retail sales of EE equipment

- Program administrators
- Federal & State EERE
- Implementation Contractors
- Technical support services
- Energy managers
- Accreditation consultants

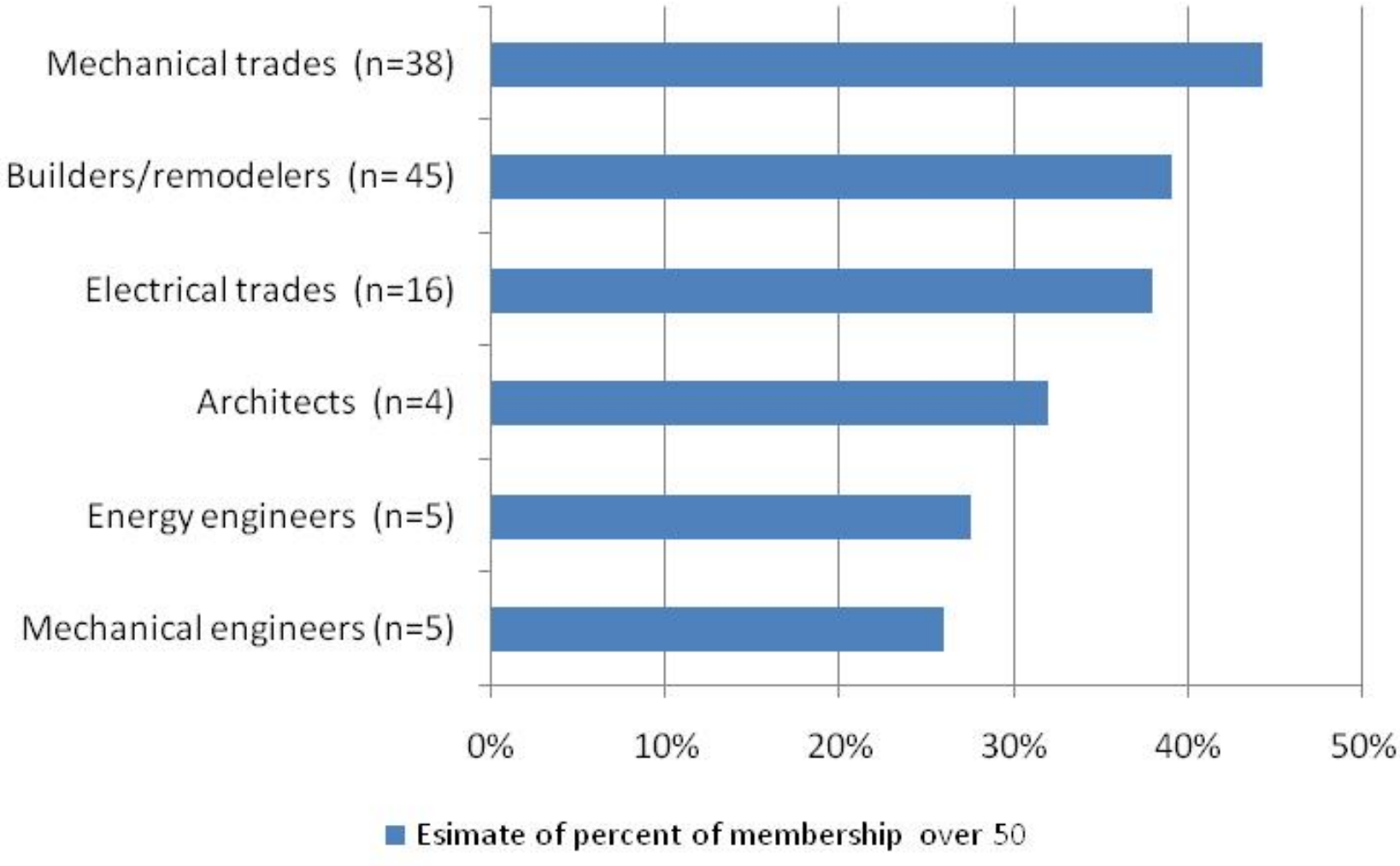
- Design & engineering firms
- Implementation contractors
- Technical support services
- ESCOs
- Local Wx agencies
- Energy management
- Accreditation consultants

- Design & engineering firms
- Building & construction firms
- Insulation firms
- ESCOs
- Technical support services
- Local Ex agencies

- Program administrators
- Program implementation contractors (EM&V)
- ESCOs
- Technical support services
- Energy management
- Accreditation consultants

- Building owners/managers
- Facility operations

Building Industry Associations: Aging Labor Force (% older than 50)



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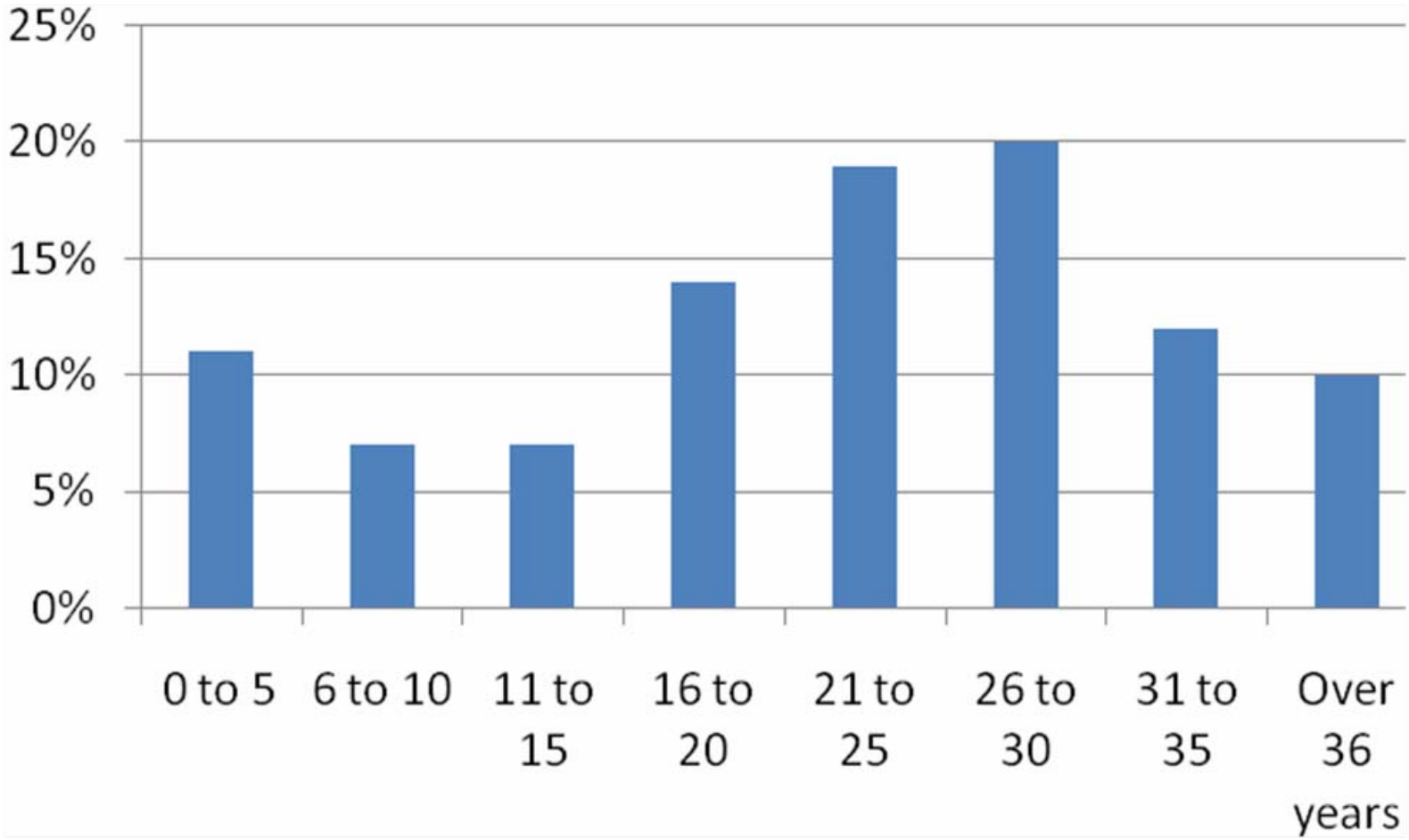
Years of Experience of Energy Engineers



Building and Construction Jobs

- Building trades most likely to face workforce shortages in the next 15 years
  - Seems to vary by state and region
  - Challenge is finding qualified people
  - Service technicians are in shortest supply as they are the highest trained
  - Young people less attracted to building trades
  - Apprenticeship openings appear limited

What Does the Future EESS Look Like?

- Administrators and implementation contractors are expanding and hiring
- Some administrators will hire internally, most will use implementation contractors
- Bottleneck to growth is twofold:
  - experienced management and energy engineering talent are hard to find
  - B&C trades are not aware of expanding funding and not pursuing training

Building & Construction Industry

- Building and construction trades are somewhat training resistant – especially in less unionized areas
- Retirement is a growing issue for building and construction industry
- The number of trainers is limited in B&C trades
- Current approach to training for energy efficiency is largely on-the-job for all of EESS including B&C

Managers

- Hardest positions to fill engineers and mid-level experienced managers
- Experienced managers provide training
- Bimodal age distribution of program administrator and implementation staff results in fewer experienced staff to fill growing needs for managers and trainers/mentors

Engineers

- Energy engineers are difficult to find, no degrees, no recognition of discipline
- Bimodal age distribution limits number of mid-career available engineers in the market
- Need energy efficiency and emerging EESS occupational categories to be included in occupational handbook and BLS economic census data

Conclusions – Workforce Growth

- Workforce growth driven primarily by EE spending scenarios at state level plus federal low-income expenditures
- Current workforce is too small and will be challenged even to meet near-term needs (e.g. ARRA)
- Workforce could easily increase by four-fold by 2020
- Carbon legislation will spur greater growth

Conclusions – Workforce Growth

- Largest EESS workforce growth will be in B&C industry yet B&C industry is unaware of pending growth and has limited training in place;
  - primary focus on immediate concerns related to economic downturn
- Key issue: Inform the B&C market of the pending growth in energy efficiency work and what the work entails

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