

Measure Cost Estimation: Current Practices & Proposed Guidance



CALIFORNIA

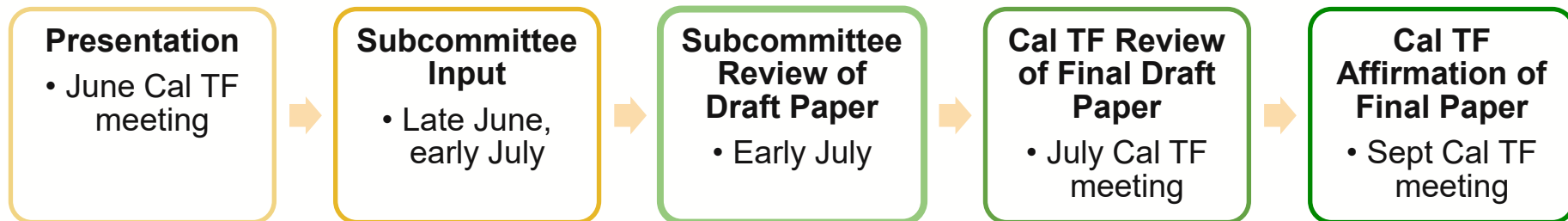
TECHNICAL FORUM

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Overview

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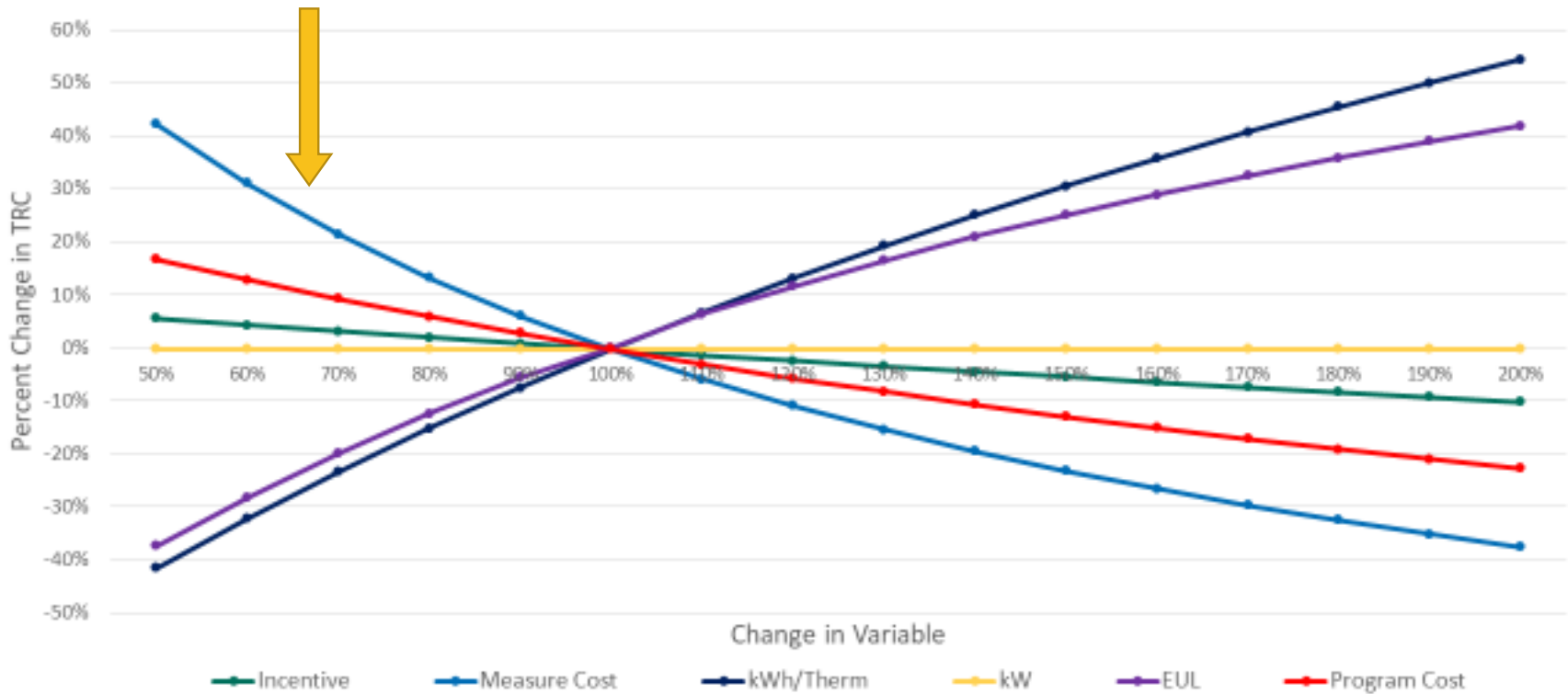
- **Goal**
 - Characterize current practices to estimate measure costs
 - Create guiding principles for measure developers
- **Value**
 - Create broad understanding of measure cost requirements and “fundamentals”
 - Facilitate the consistency of data sources and methods
 - Provide greater transparency into measure development
 - Provide measure developers with trade-offs associated with each method to ensure accuracy, transparency, and cost-efficiency
- **Next Steps**



Importance of Measure Costs

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- Program/portfolio cost effectiveness (TRC)
- Cost is a key driver



Source: "Cost-Effectiveness Training" (1/7/2019)

Fundamentals

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Measure cost estimates should

- Comply with regulatory direction
- Represent average prices actually paid by customers
 - Estimates of prices for high efficiency technology and standard efficiency or in situ counterpart
 - Whether incremental or full measure costs are used depends upon measure application type
- Represent current market conditions
- Enable an “apples to apples” comparison between base and measure case costs
- Exclude cost associated with product or feature choices not directly related to EE.

Background

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- *California Standard Practice Manual* (2001) establishes requirements for project and measure costs as required inputs for cost effectiveness tests.
 - “all equipment costs, installation, operations and maintenance, cost of removal (less salvage value), and administration costs” regardless of who pays for them.
- CPUC provided the “guide rails” that DEER assumptions, methods, and data shall be utilized for all non-DEER measures, if appropriate and available.
 - D.12-05-015
- If DEER values and methods are not available, new values may be proposed for CPUC Staff review and approval

Background

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- California measure cost studies
 - *1996 Measure Cost Study (Xenergy, 1996)*
 - *2001 DEER Update Study. (Xenergy, 2001)*
 - *2004-2005 Database for Energy Efficiency Resources (DEER) Update Study (Itron, 2005)*
 - *2008 DEER measure cost update (Summit Blue, 2008)*
 - *2010-2012 WO017 Ex Ante Measure Cost Study (Itron, 2014)*
- **WO017**
 - DEER and Non-DEER measures
 - Extensive data collection
 - Emphasis on hedonic price modeling to isolate incremental cost of energy performance
 - Detailed review of data sources, limitations, pros/cons, etc.

Background

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- In May 2020, CPUC Staff acknowledged that cost values in DEER are becoming outdated and thus should not be used for future measure updates or for new measures
- IOUs have already been adjusting WO017 costs for inflation and using other sources for measures not covered in WO017

Approach

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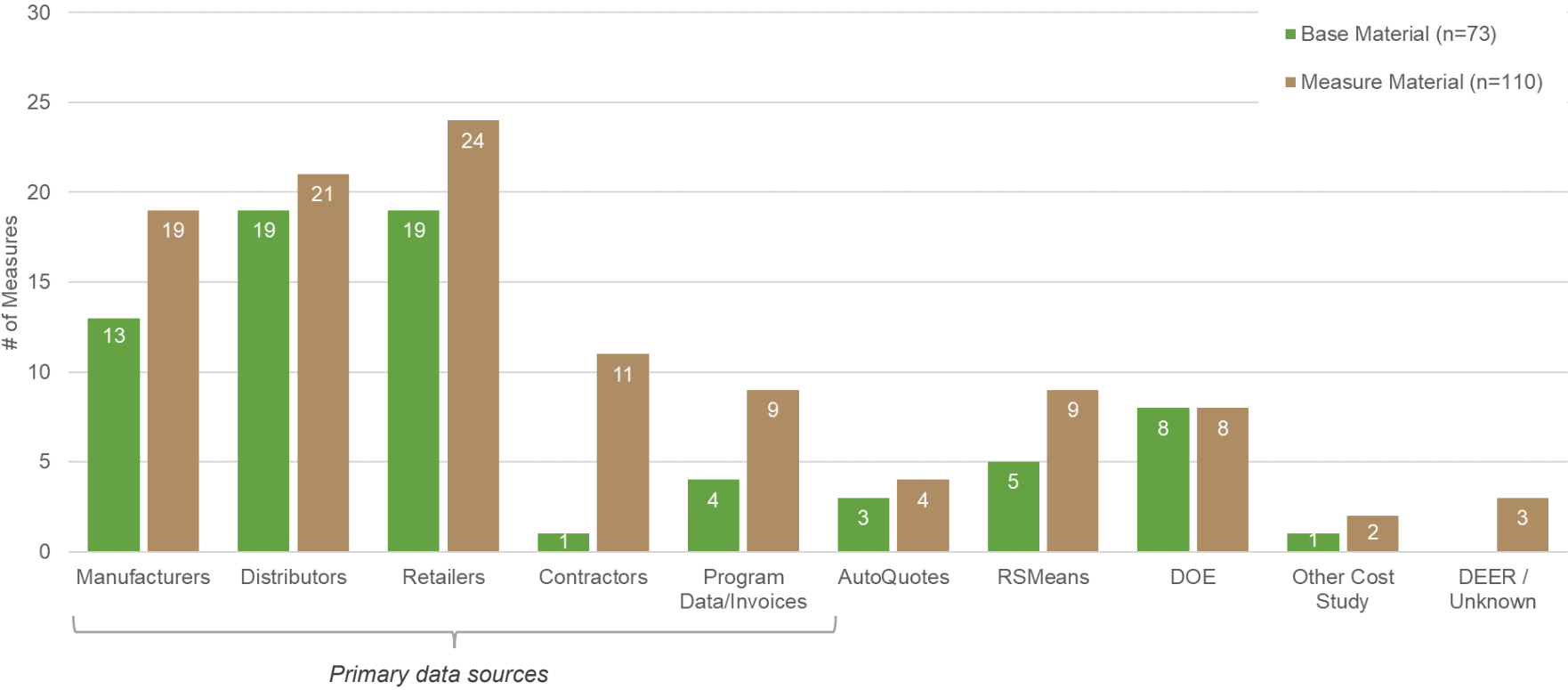
- Cal TF Staff reviewed measure cost documentation of 116 affirmed and approved statewide measures
- Categorized data sources for material and installation labor costs:
 - Data sources are an important consideration with respect to the overall quality of a measure cost estimate.
- Examined vintage of data
 - Vintage of cost data is an important consideration to ensure measure cost estimates reflect current market conditions
- Categorized methods to develop point estimates
- Consistency checks to assess “apples to apples” comparisons

Caveat: had to assign single category, even if multiple categories were present

Current Practices: Material Costs

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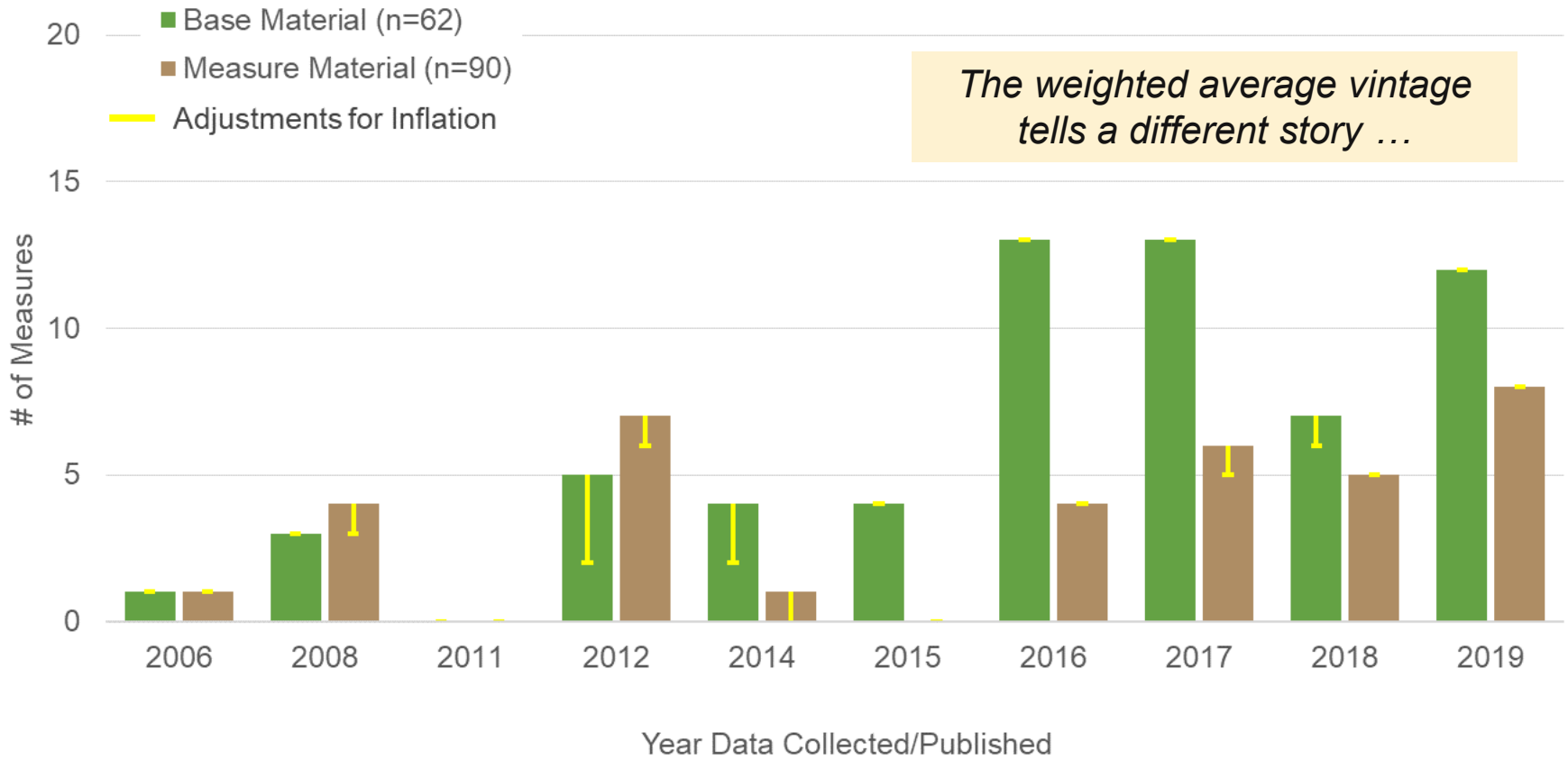
Material Cost Data Sources



Current Practices: Material Costs

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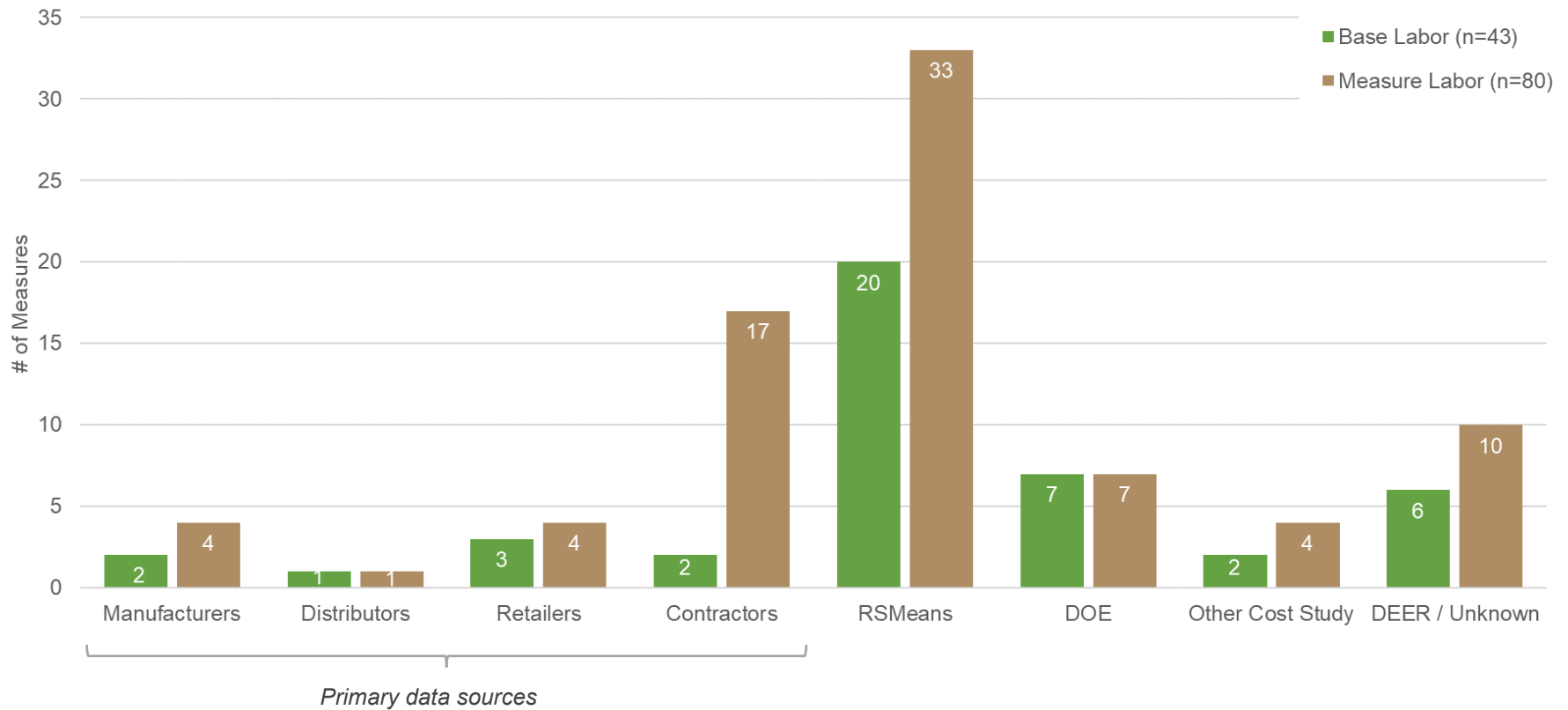
Vintage of Material Cost Data



Current Practices: Installation Costs

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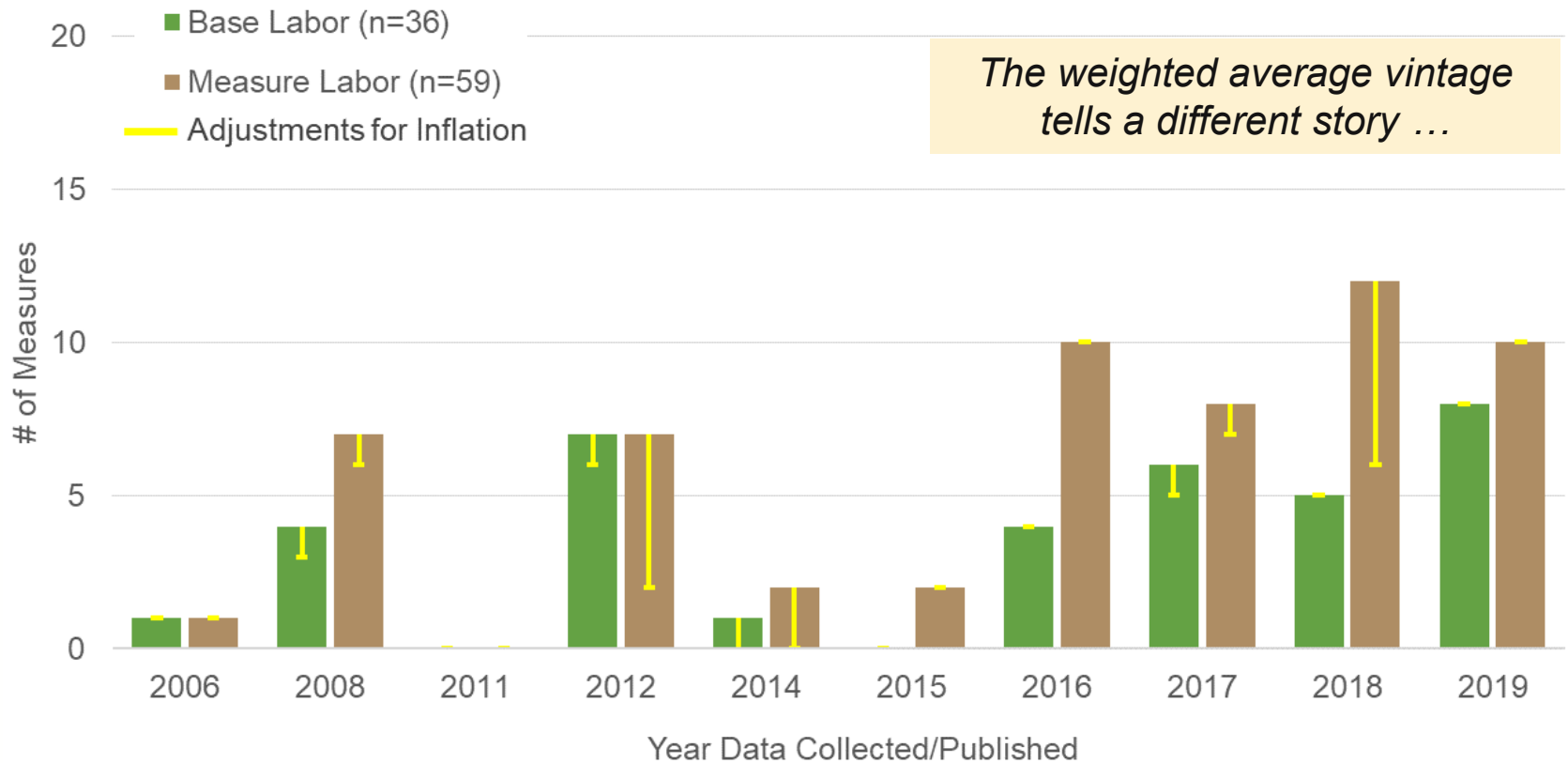
Installation Labor Cost Data Sources



Current Practices: Installation Costs

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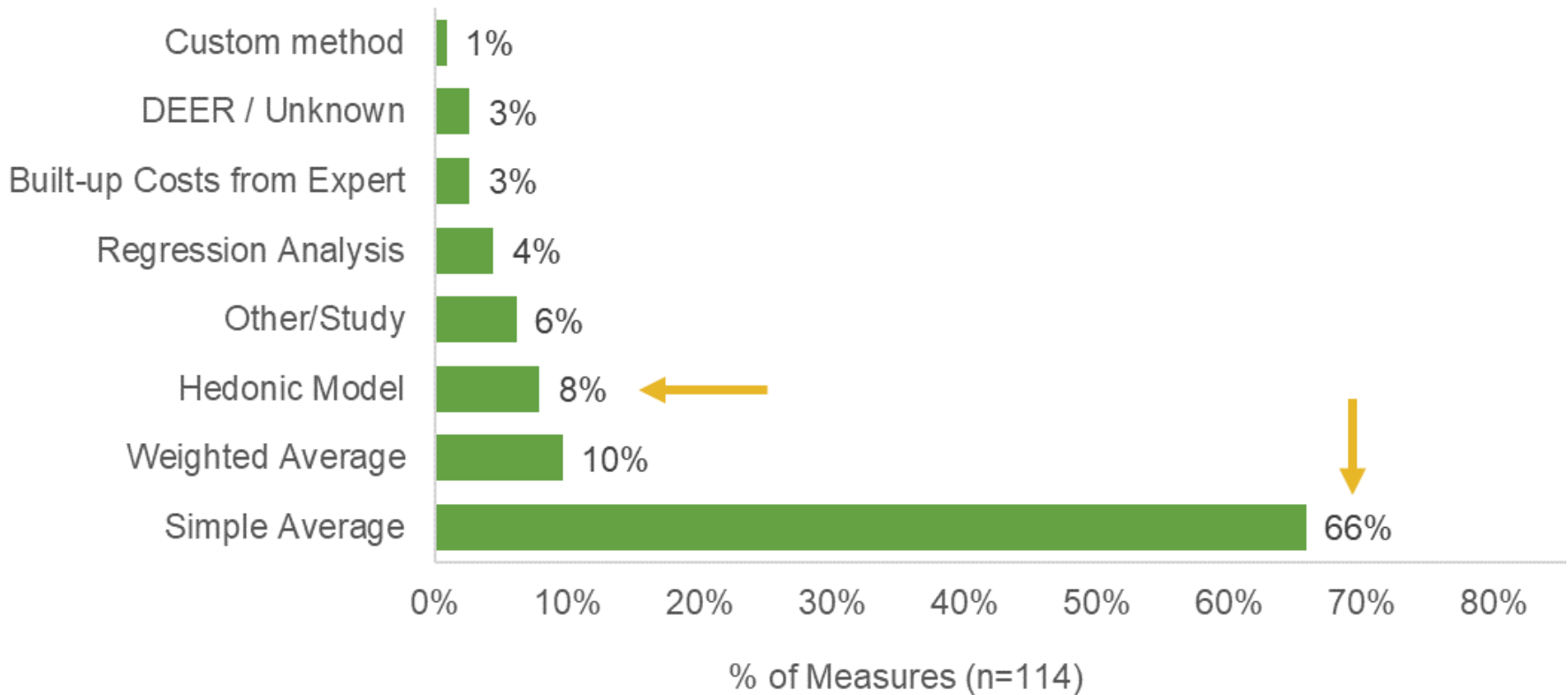
Vintage of Labor Cost Data



Current Practices: Analytical Methods

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Measure Case Material Cost Analytical Methods



Proposed Guidelines: Measure Developers

1. Align with TRC Requirements

- ❑ Required baselines and cost basis

2. Develop Data Collection and Analysis Plan that Considers:

- ❑ Equipment supply chain
- ❑ Data sources and methods used to estimate costs for similar measures
- ❑ Data needs (base/measure equipment, labor, O&M, etc.)
- ❑ Data availability
- ❑ Variability of equipment prices within measure offerings and between measure offerings, variability across vendors
- ❑ Sample size
- ❑ Data processing
- ❑ Data limitations and potential biases
- ❑ Analytical method
- ❑ Data validation

3. Develop Separate Estimates for Material Costs and Installation Labor

- ❑ Transparency
- ❑ Accurate comparisons

Proposed Guidelines: Measure Developers

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4. Cost Estimates Should Reflect the California Market

- California vs other state or national average (not necessarily at climate zone/metro level unless warranted)

5. Independently Validate Cost Estimates

- High impact measures

6. Develop Base and Measure Costs Using the Same Data Sources, of the Same Vintage, and Using Same Methods (if possible)

- Ensures “apples to apples” comparison of base and measure

7. Document Analytical Methods, Values, Vintage, and Sources of All Data

- Transparency, reproducibility

8. Integrate Measure Cost Data Needs into Program Implementation and Program Tracking

- Build dataset of products, attributes for future

9. Cost Estimates to Reflect Average of Actual Prices Paid

- Understand when/how weighting of data is necessary
- Prices from trade allies account for contractor markups, volume discounts, etc.

Proposed Guidelines: Measure Developers

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10. Review and Update Costs Regularly

- High impact measures
- Keep in pace with market
- Need to define appropriate cadence and triggers

11. Document Infrastructure Costs During Implementation *(fuel substitution measures only)*

Proposed Guidelines: Crosscutting

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1. Conduct and/or Leverage Targeted Market Assessments

- ❑ Common recommendation
- ❑ Periodic market studies to keep the pulse of market trends that would trigger the need for a cost update
- ❑ Serve multiple purposes
- ❑ Cost efficient

2. Synchronize Measure Cost Reviews and Updates on a Regular Basis for Groups of Measures to Leverage Economies of Scale and Potential Cost Sharing Opportunities

- ❑ Bring back hedonic price models?
- ❑ Foster consistency of methods and data sources
- ❑ Cost/time efficiency
- ❑ Related to #10

3. Integrate Data Needs into eTRM

- ❑ “You can’t manage what you don’t measure”
- ❑ Leverage eTRM to support planning for measure updates

Discussion

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High-level comments on proposed guidelines:

- Any initial reactions?
- Any additional guidelines?
- Should guidelines be tailored to different end uses?
- Should specific guidelines be developed for high-impact measures?

Next Steps

Sign up for the subcommittee! (Contact Jennifer Holmes)

- Subcommittee will meet ~2x in next 2 weeks

Potential Subcommittee topics:

- What should the triggers be for updating cost data?
- What are the pros & cons of different data sources (refresh what we know)
- What are the best available data sources for different end uses/measure groups? (develop prioritization)
- What are next best alternatives to hedonic price models to be able to isolate energy performance of cost difference? (develop prioritization)
For which measures should hedonic price models be a requirement?
- How do costs vary by delivery type? Is this another variable that needs to be considered during cost development?