

# Measure Cost Guidance

## Subcommittee Meeting #3



**CALIFORNIA**  
TECHNICAL FORUM

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# Agenda

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- Introductions & Objectives
- Brief Recap
- Remaining questions (Guideline #3)
  - End uses included - keep lighting? add any others?
  - Should this guideline explicitly address installation costs?  
If yes, what are the most prominent data sources and how should they be prioritized?
  - Is the table format useful for measure developers?
- Comments on draft white paper?
- Subcommittee consensus on fundamental principles and guidelines
- Close & next steps

# Recap: Objectives and Timeline

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- Goal
  - Create guiding principles for measure developers (utility and 3Ps)
- 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 data sources & analytical methods to ensure accuracy, transparency, and cost-efficiency
- Work to date
  - June: Presented summary of current practices and history of CA cost studies
  - July: Presented proposed fundamental principles and draft guidelines  
Circulated draft white paper
  - August (today): Final subcommittee meeting

# Guideline 3: Data Sources & Analytical Methods

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- Guideline provides measure developers with a matrix of alternative data sources and methods (by use category)
- Goal is to provide measure developers with strengths/weaknesses to inform cost analysis approach
- Goal is to provide general guidance across end uses that will apply to most measures

# Guideline 3: Data Sources & Analytical Methods

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(Example)

## Summary of Data Sources and Methods – Other Use Categories

Use Category	Data Sources	Analytical Method	Pros & Cons
Appliance or Plug Load Appliances Consumer Electronics Room AC	Retailer – Point of sale (POS) data	Hedonic cost model  <i>* Best for HIMs or if analysis will include multiple measures</i>	<ul style="list-style-type: none"> <li>✔ Includes product features</li> <li>✔ Isolates EE portion of cost differences</li> <li>✔ Large sample size</li> <li>✔ Includes sales volumes</li> <li>✔ Actual prices paid</li> <li>✘ Data purchase/collection costs can be high</li> <li>✘ Data requirements and data processing needs are high</li> </ul>
	Retailer – <u>webscraping</u>	Weighted Average  Simple Average	<ul style="list-style-type: none"> <li>✔ Large sample size</li> <li>✔ Cost efficient</li> <li>✘ List prices do not reflect actual prices paid</li> <li>✘ Sales volume/market share for weighting could be difficult to develop</li> <li>✘ Does not isolate EE portion of cost differences</li> </ul>
Commercial Refrigeration	(not applicable)	Built-up Costs	<ul style="list-style-type: none"> <li>✔ Could include installation cost</li> <li>✔ Reflects all components of complex projects</li> <li>✘ Requires industry expertise</li> <li>✘ No sales volume</li> </ul>
Food Service	AutoQuotes	Simple Average or Median	<ul style="list-style-type: none"> <li>✔ Cost efficient</li> <li>✔ Industry accepted quote service</li> <li>✘ List prices do not reflect prices charged to customers, unless estimate of discount developed</li> <li>✘ No sales volume</li> </ul>

# Guideline 3: Data Sources & Analytical Methods

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## Question #1: Are these the right Use Categories to include?

- HVAC (incl service)
- Service & Domestic Hot Water
- Lighting
- Appliance & Plug Load
- Commercial Refrigeration
- Commercial Food Service

## Use Categories not included:

- Building envelope
- Compressed air
- Irrigation
- Process
- Recreation
- Whole building

# Guideline 3: Data Sources & Analytical Methods

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**Question #2: Should this guideline address installation costs more explicitly?**

**(If yes) What are the most prominent data sources and how should they be prioritized?**

Primary data sources:

- Contractor invoices
- Artificial bids
- Market actor surveys/interviews

Secondary data sources:

- Construction estimating services (RSMeans)
- Trade organizations/publications (CBRE CostLab, homeadvisor.com)
- DOE

# Guideline 3: Data Sources & Analytical Methods

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## Question #3: Is the current table format useful for measure developers? (Is there a better format?)

### Summary of Data Sources and Methods – Other Use Categories

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# Comments

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Subcommittee comments on draft white paper?

*(open discussion)*

# Cost Analysis Fundamentals

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Measure cost analysis and resultant cost estimates should ...

1. Comply with regulatory requirements
2. Represent average prices paid by customers
3. Represent current market conditions
4. Represent an “apples-to-apples” comparison between base and measure case costs, using cost data from similar sources, of the same vintage, and computed using same analytical method
5. Represent costs associated the change in energy performance from the baseline to measure case of the technology
6. Investment in measure cost data development and analyses should be commensurate with the measure contribution of impacts to the portfolio
7. Be transparent and well-documented to foster consistency and reproducibility.

# Recommended Guidelines

*(blue text are edits since draft paper circulated ... for parallel construction)*

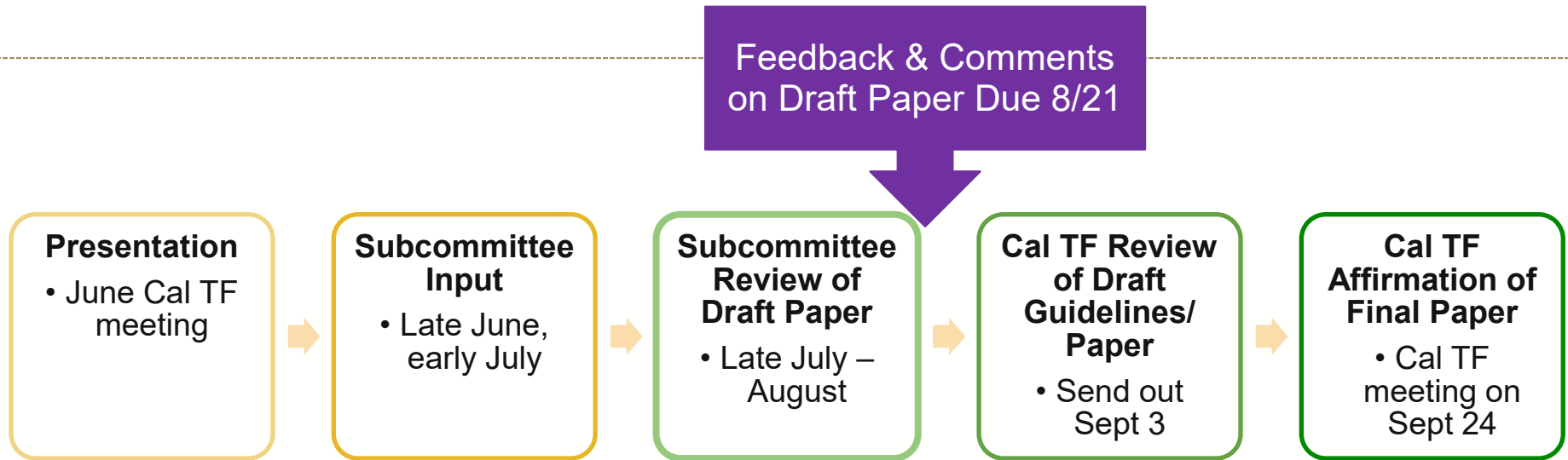
- Guideline 1: Develop Measure Costs that Align with TRC and Claims Requirements
- Guideline 2: **Include** all **Appropriate Equipment and Non-equipment Material Costs and Labor** Costs ~~to be included~~ in Measure Cost Estimate
- Guideline 3: **Utilize the “Best Available”** Data Sources and Analytical Methods
- Guideline 4: Develop Separate Estimates for Material Costs and Installation Labor
- Guideline 5: Develop Costs that Align with Base and Measure Case Definitions, Using the Same Data Sources, of the Same Vintage, and Same Analytical Methods
- Guideline 6: **Adjust** Cost Estimates ~~Should~~ **To** Reflect the California Market ***If Necessary***

# Recommended Guidelines

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- Guideline 7: ~~Estimated Measure Costs Should~~ **Collect Data Such That Estimate Represents Average of Costs Actually Paid**
- Guideline 8: Independently Validate Cost Estimates
- Guideline 9: Document Analytical Methods, Values, and Sources of All Data Used for the Measure Cost Calculation
- Guideline 10: **Review Measure Cost Estimates to Ensure Estimates Align with Current Market Conditions** ~~Vintage of Cost Data and Timing of Measure Cost Review~~
- Guideline 11: Define Data that Should be Collected During Implementation
- Guideline 12: Document Infrastructure Costs During Implementation (fuel substitution measures only)

# Next Steps



- Final comments to Jennifer by COB Friday 8/21
- Final draft to be circulated to full TF by 9/3
- Affirmation during Sept Cal TF meeting on 9/24

**Thank you!**