

# DEER Alternative



**CALIFORNIA**  
TECHNICAL FORUM

**STAKEHOLDER PRESENTATIONS**  
**FALL 2015**

# Executive Summary



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- Introduction to the Cal TF
- EE Measure Development, Updating and Maintenance: Status Quo vs. Policy Goals
  - Compared to longstanding CPUC goals
  - Compared to state policy goals for EE
  - Compared to EPA Clean Power Plan (CPP) draft guidance for counting EE for CPP compliance
- Technical Reference Manual Research and Best Practices
- Path Forward
  - Electronic TRM
  - Proposed implementation process

# The California Technical Forum (Cal TF)



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## *What is the Technical Forum?*

A group of in-state and out-of-state technical experts that work in a collaborative and transparent way to review new and updated energy efficiency measures and other technical information related to the integrated demand-side management portfolio.

# Cal TF: A Broad Collaborative

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CPUC Office of Ratepayer  
Advocates



**SMUD**

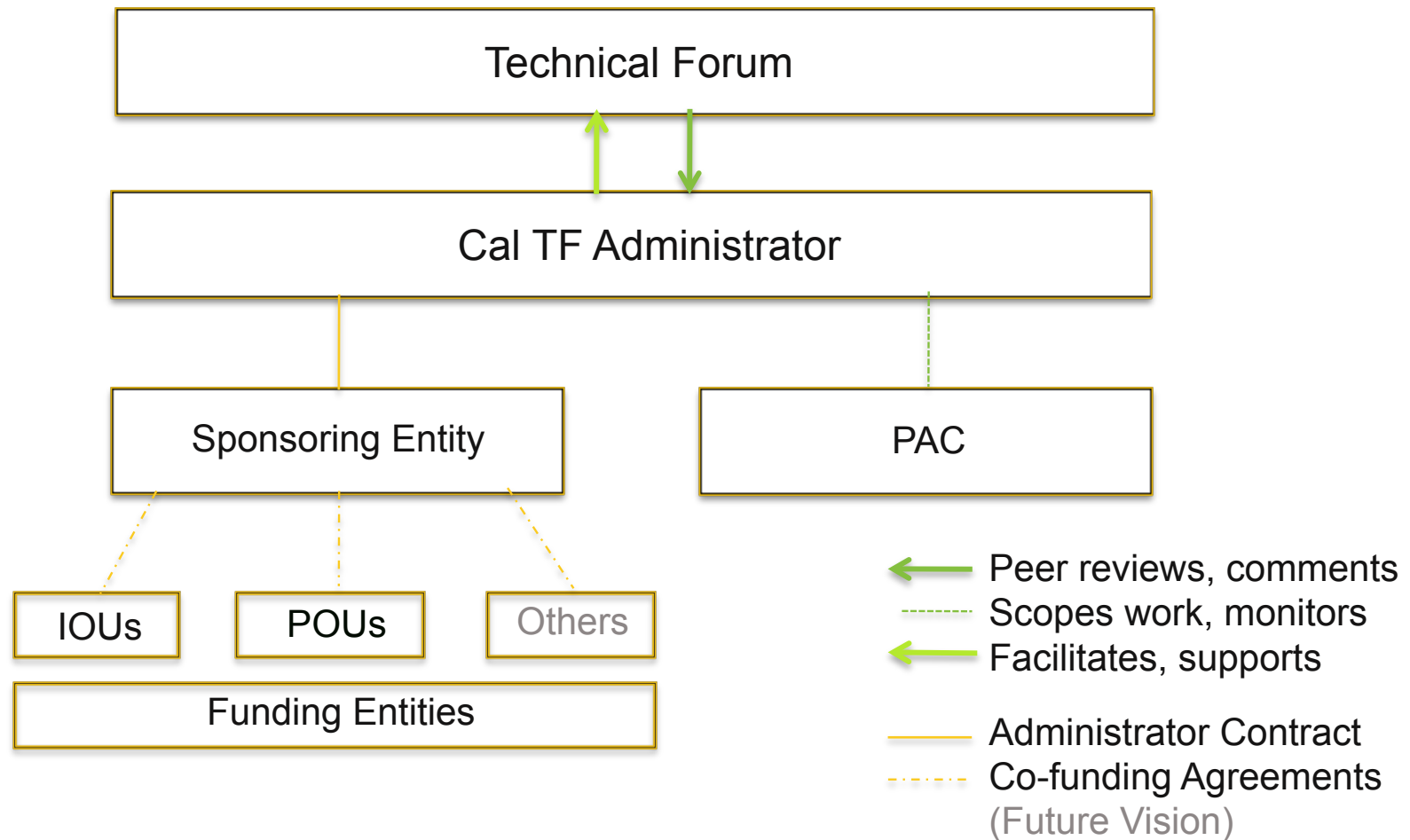


California  
Energy Efficiency  
Industry Council



# The Collaborative Supports the Technical Experts

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# Technical Forum Members



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- **Selected through a competitive RFQ process with a ~50% selection rate.**
  - ❑ CPUC provided input on selection criteria
- **2015 TF Composition:**
  - ❑ 35 members
  - ❑ 450+ years combined industry experience
  - ❑ Technical expertise in wide range of energy efficiency technologies
  - ❑ 30% from outside of California

# EE Measure Development: Commission Goals Compared to Status Quo



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- Collaborative
  - Only utilities and CPUC staff involved in measure development
    - ✦ Process is adversarial rather than collaborative
- Transparent and Well-Documented
  - Extensive Cal TF staff DEER documentation work has yielded very little clear documentation
  - Most DEER measure parameters cannot be traced to sources; DEER measures parameters generally not reproducible
- Uses Best Available Information
  - CPUC measure approval often delayed until more data is collected
- Balances Accuracy, Precision, Timeliness, Cost, and Certainty
  - DEER is very complex - Leads to false precision
  - New measure development is lengthy and expensive
  - Measure values are not fixed from cycle to cycle – Over a dozen changes to DEER this year alone

## EE Measure Development: State Policy Goals Compared to Status Quo



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- Use credible, statewide consistent values for forecasting and planning
  - POUs were unable to continue using DEER
    - ✦ Too complex, opaque, hard-to-use and understand
- Increase inter-agency and regional coordination
  - CEC and CPUC use different modeling tools to calculate energy savings.
    - ✦ CEC uses EnergyPlus for Title 24 compliance and CPUC uses DOE-2.2 for developing DEER energy savings values
- Energy efficiency as a resource
  - Efficiency can't be a credible resource if IOUs and POUs use different approaches and values for calculating savings from energy efficiency
- **Double energy efficiency savings by 2030**
  - Protracted review and approval of new/updated measures (e.g. LEDs) will make state goals for energy efficiency more difficult to achieve



## EE Measure Development: Draft US EPA Clean Power Plan Guidance Compared to Status Quo



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- On August 3, 2015, the US EPA released draft guidelines to ensure EE measures are “quantifiable and verifiable” for Clean Power Plan compliance purposes.
- Status quo does not conform to EPA draft guidance for EE:
  - ❑ **DEER measure parameters are not transparent or well-documented; Workpapers are not publically available**
    - ✦ 2.4.2. Applicable Guidance: “Based on measure definitions, applicable conditions, assumptions, calculations, and references that are well documented in *work papers that are publically available*.”
  - ❑ **California workpaper developers use conservative values to speed workpaper approval by CPUC staff**
    - ✦ 2.6.2 Applicable Guidance: “Should be designed neither to provide optimistic savings estimates... nor to provide conservative estimates.”
  - ❑ **The system is not collaborative**
    - ✦ 2.8.2. Applicable Guidance: “Participate in collaborative and joint research to improve breath and quality.”

# Technical Reference Manual Research

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- Technical Reference Manuals (TRMs) are the functional equivalent of DEER in other jurisdictions; they contain EE measures, measure parameters and measure documentation.
- Reviewed over 20 TRMs from jurisdictions across the country to identify best practices for measure development and measure repositories
- Interviewed developers and users in with strong TRMs
  - ❑ Massachusetts
  - ❑ New York
  - ❑ Pennsylvania and Mid-Atlantic
  - ❑ Illinois
  - ❑ Texas
- Reviewed prior literature/analysis on TRMs
  - ❑ Most analyses are about 5 years old
    - ✦ TRMs have evolved considerably since then
- Identified best practices for:
  - ❑ Process – process for developing and updating EE measures
  - ❑ Structure – structure for maintaining measures and associated documentation
  - ❑ Content – technical guidelines, directives and practices for developing/updating EE measures

# TRM Best Practices – Process

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- Technical collaboratives open to the public
- Predictable and regular update processes
  - ❑ Existing measures must be updated regularly
- Participation by regulatory staff is **key**
  - ❑ Speeds issue resolution
  - ❑ Speeds regulatory review
  - ❑ Fosters technical understanding between regulators and other stakeholders
  - ❑ Builds regulator confidence in results
- Results of collaborative consensus-building process generally adopted by decision makers with little change
  - ❑ Regulators maintain final approval authority but can depend on robust process and results to inform decision-making.
- Regulatory Commissions, not staff, approve final values

# TRM Best Practices – Structure

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- Standard format for each measure characterization, including:
  - ❑ Narrative explanation of measure
  - ❑ Base and measure case technical specifications
  - ❑ Energy and demand savings algorithms
  - ❑ Other key parameters (measure life, costs, etc.)
  - ❑ Pertinent implementation details (e.g. exclusions)
- All measure parameters clearly linked to measure
- Measure is well-documented and values are reproducible
  - ❑ Citations to primary sources, not other TRMs
  - ❑ Primary sources maintained and readily available
- Embedded calculators and look up tables
- Non-measure specific tools and information included as appendices
  - ❑ NY TRM has excellent descriptions of building prototypes

# TRM Best Practices – Content

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- Written guidelines for addressing recurring technical issues
  - ❑ NW RTF and Mid-Atlantic state use process language
    - ✦ Use of reproducible methods, diligent review of all sources...
  - ❑ PA and IL use more specific data hierarchies
  - ❑ NW RTF has several guidelines on measure complexity, statistical significance, other
- Careful consideration of modeling vs. engineering equations vs. field data
  - ❑ No “one size fits all”; consider pros and cons of different approaches
- Key parameters (from modeling or engineering equations) should be validated with real data!
  - ❑ Field conditions and human behavior may alter forecasted savings
  - ❑ Collect data through implementation or early EM&V
  - ❑ Identify and implement use of AMI data (e.g. EnergySavvy) and other tools (DOE Building Performance Database)

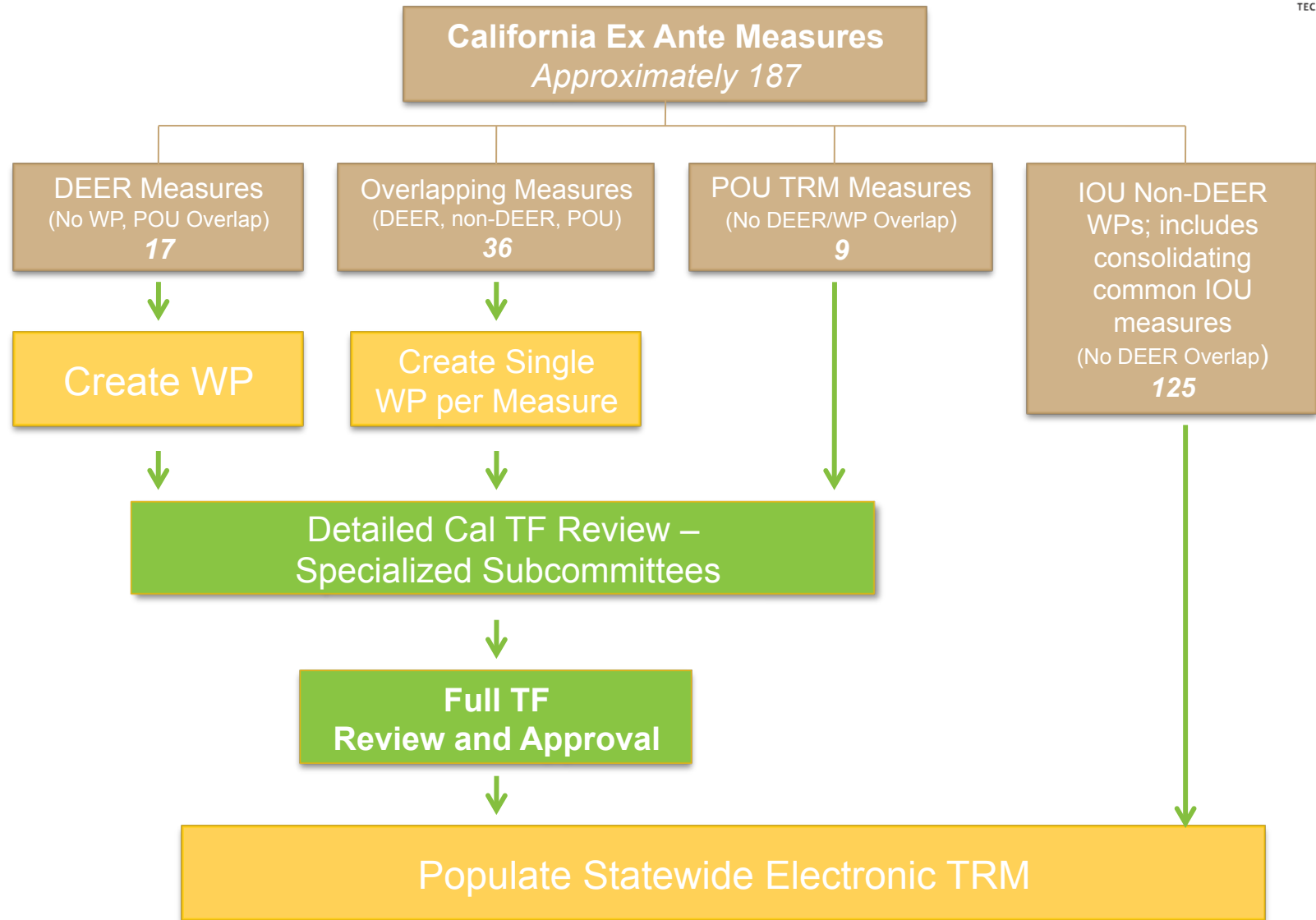
# DEER Alternative: Statewide Electronic TRM – Key Features



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- All measures are fully documented with a workpaper
  - All measure parameters are clearly documented and linked
  - Source documents are clearly cited and hosted in the tool
- Modeled values are linked to models
  - Uses EnergyPlus for measures that should be modeled
- Automates measure updates when inputs change—weather files, code updates, etc.
  - Also, includes clear update and revision histories for each measure
- Clear and documented workflow management
  - Identifies who has updated and/or reviewed a measure
- Generates all key outputs for CPUC ex ante database, utility and CPUC cost-effectiveness analysis and reporting, CEC forecasting
- Keyword searchable
- Permits restricted access to protect confidential information
- Open source repository for EE measures

# Proposed Implementation Process



## Conclusion: Benefits of the Electronic TRM



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- Rigorous, well-documented EE measures
- Common repository for all California measures
- Statewide consistent energy savings values
- Collaborative, consensus-based, public and inclusive process
- Use of open source electronic TRM and tools



# Appendix

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- The move to “Electronic TRMs”
- Concrete examples of Status Quo Challenges (NRDC request – to be added)

# Appendix:

## The Move to Electronic TRMs



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- Key benefits to be gained:
  - Improves documentation
    - ✦ Ability to embed tools and supporting documents
    - ✦ Enables more detailed revision histories
  - Reduces cost and increases efficiency of data management
    - ✦ Through APIs, automatic download of values into utility tracking and planning databases
  - Highly transparent workflow management for new and updated measures.
  - Keyword searchable
- Available tools include:
  - VEIC
  - Nexant iEnergy
  - Energy Platforms
  - Frontier
  - U.S. Department of Energy Platforms