



Energy Efficiency Business Plan Metrics Energy Division Staff Proposal

Workshop
May 26, 2017





Introduction: Energy Efficiency Business Plan Metrics Workshop

- Purpose of this workshop – to start a conversation about sector level metrics in the Business Plans
- Review how Staff developed the common sector metrics attached to the May 10 Metrics Ruling
- Issues not addressed today will be short listed for future conversation(s) through the CAEECC Ad Hoc meeting process
- Ground Rules





Ground Rules

- Only one person speaks at a time
- Raise your hand to be called on
- Ask one question at a time and wait for the answer
- Respond when called on to the topic under discussion
- Controversial topics will be short-listed for future potential future workshops
- Hold questions till all ED staff presentations are completed





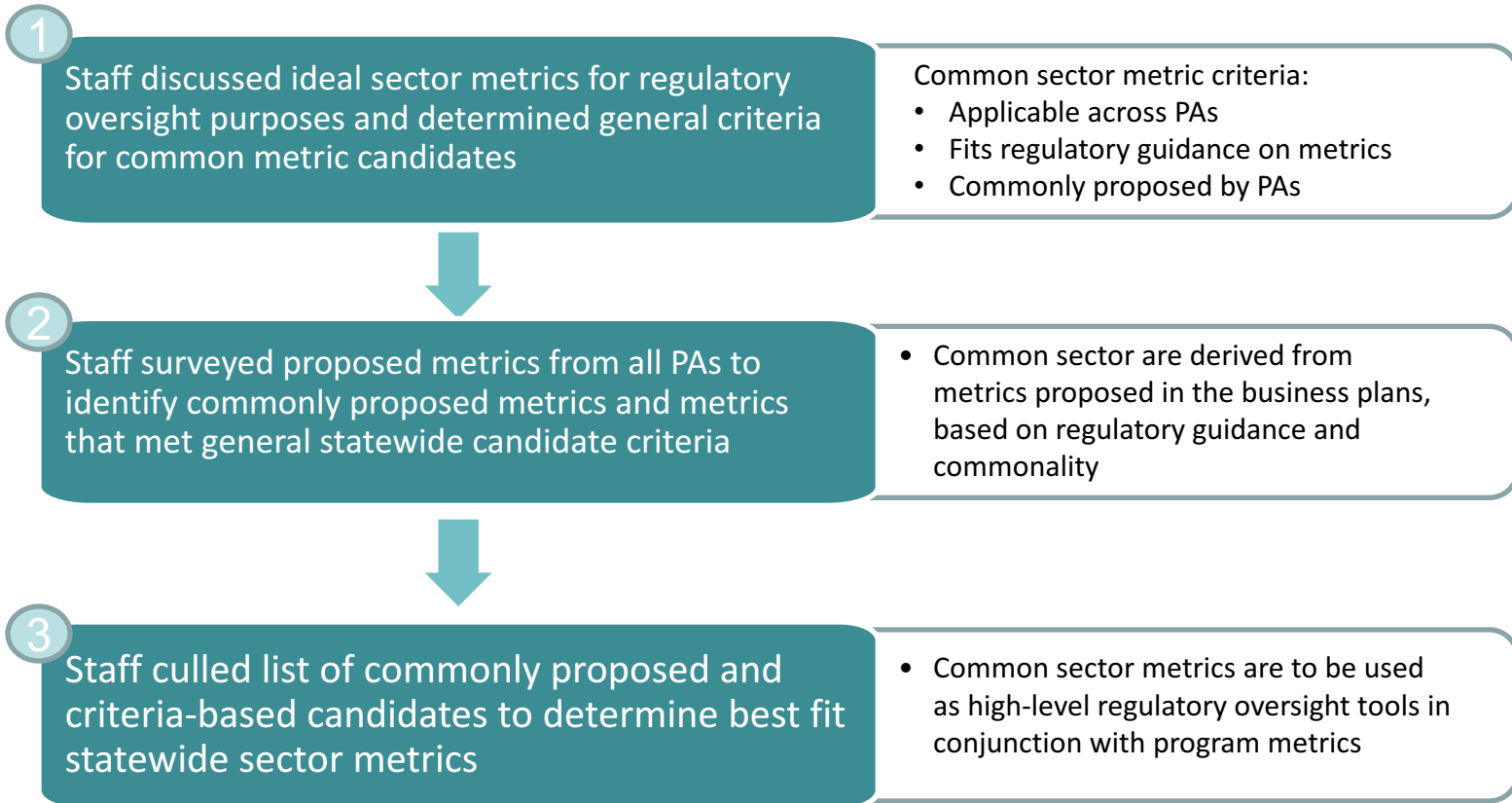
Agenda

<u>Time</u>	<u>Topic</u>
9:30-9:35	Introduction and Background (CPUC)
9:35-9:50	Metrics 101 – Facilitator
9:50-10:00	ED Staff Metrics Development Process
10:00-10:10	Residential Sector Metrics
10:10-10:20	Codes and Standards Sector Metrics
10:20-10:30	Commercial Sector Metrics
10:30-10:40	Industrial & Agriculture Sector Metrics
10:40-10:50	Public Sector Metrics
10:50-11:00	Workforce, Education and Training Sector Metrics
11:00-11:10	Emerging Technology Metrics
11:10-11:45	Sector-specific metrics questions
11:45-12:45	Lunch
1:00-3:00	General Metrics Discussion
3:00-3:10	Break
3:10-4:00	Wrap-up, Next Steps and Adjourn





Commission Process for Common Sector Metrics Development





Residential Single Family and Multifamily Metrics

A common theme across the Business Plans is “deeper energy savings” in the residential sector

PA-Proposed Metrics Include

- Counts of measures or activities – website visits; “participation”; engagements; tool use; number of projects; number of trainings (without a context)

Proposed Changes to Make Metrics more Useful

- Counts may be useful when tied to anticipated outcomes, such as:
 1. Website visits and event participation can be tied to increased activity/knowledge/awareness
 2. # of projects as % of eligible/targeted properties
 3. Contractor training tied to improved energy savings per project





Residential Single Family and Multifamily Metrics

Key theme is to focus on the programs' **impact*** at the sector level

- This means we must understand **the eligible population** (by # of eligible participants/units, # of properties, # of owners, etc. within the context of a target or goal for the sector).
- **Adding context to** the proposed PA metric that are activity counts (measure installs, savings, owners reached, etc.) enables us to determine our progress towards a goal (for example where did start on measure installs and how are doing toward a target of goal that you set).





Proposed Single Family and **Multifamily** Statewide Metrics

Common Problem	Common Metric
Capturing energy savings	<ul style="list-style-type: none"> Annual gas, electric, and demand savings for SF and MF customers (in-unit, common area, and master-metered accounts, tracked separately for multi-family)
Depth of interventions	<ul style="list-style-type: none"> Average gas, electric, and demand savings per participant (and at property level for multi-family)
Penetration of energy efficiency programs in the eligible market	<ul style="list-style-type: none"> Percent of participation relative to eligible population (by unit and by property for multi-family) Percent of participation in disadvantaged communities (defined by zip code and/or census tract in CalEnviroScreen Tool) Percent of square feet of eligible population participating (by property) Percent of participation by customers defined as “hard to reach”





Proposed Single Family and **Multifamily** Statewide Metrics

Common Problem	Common Metric
Cost per unit saved	<ul style="list-style-type: none">• Levelized cost of energy efficiency per kWh, therm and kW
Energy intensity	<ul style="list-style-type: none">• Average energy use intensity of single-family and multi-family buildings (average usage per household; average usage per square foot – not adjusted – and including in-unit accounts)





Codes & Standards





Advocacy

Energy Savings & CASE studies IOU metric is adequate

- California Codes & Standards Metrics
 - Energy Savings: kWh, MW, MMTherms
 - CASE studies supplied (energy savings)
 - Code Change Theory Reports (attribution to IOUs)
- Federal Advocacy Metrics
 - Energy Savings: kWh, MW, MMTherms
 - Code Change Theory Reports
 - No CASE studies but other reports, support letters, ASRAC involvement





Reach Codes

Number implemented

- Need to determine outcome and not just effort
- Determine the number of local governments implementing Reach codes
- Determine energy savings due to Reach codes





Compliance

- Mostly training, classes, tools to help with compliance and understanding the code
- Need to have context and metric of reaching target audience
 - How many of the market actors by segment have been reached
 - E.g.: number of building officials participating in classes compared to the total number of building officials in the IOUs territory
- Number of participants using compliance tool such as *EnergyCodeAce*





Code Readiness

- Will allow advanced new codes to show up sooner for code adoption
- Needs a tangible outcome based metric
 - Number of successful projects
 - Number of systems or appliances vetted





Codes & Standards

Common Problem	Common Metric
Capturing energy savings	Energy Savings: GWH, MMTherms and MW (demand)
Activity in advocating for codes and standards tied to adoption in CA	Number of CASE studies and a subset of the number that actually were used to implement codes and standards
Local government participation and success in adoption of reach codes	The number of local government Reach Codes implemented (this is a joint IOU and REN effort)
Activity in advocating for codes and standards tied to adoption at the federal level	Number of federal standards adopted for which a utility advocated





Commercial Sector Small, Medium & Large





Example 1: Problematic Metric

- PA goal: Increase participation
- Problem: Metric does not include -Baseline, targets and source are not available; no quantified targets
- Metric should include baseline, target and source, penetration should be part of the metric (not #; % of customers or % of sq foot eligible)





Common Metric Problems

- Metric did not include a problem
- Problem and metric are the same re-worded statement
- Incomplete and non-realistic information /percentages
- Metric/quantifications TBD (incomplete information)
- Evidence of market penetration %





Example: Good Metric

- Problem statement
- Desired Outcome
- Intervention Strategies
- Sector Metric
- Baseline
- Metric data source
- Short, Mid, Long term targets to meet goals





Recommended Statewide Metrics Commercial Sector small/medium/large

Common Problem	Common Metric
Capturing energy savings	Annual gas, electric, and demand savings Annual gas, electric, and demand savings as a percentage of overall sectoral usage
Depth of interventions	Energy savings (kWh, kW, therms) per project (building) Energy savings (kWh, kW, therms) per square foot
Penetration of energy efficiency programs and benchmarking in the eligible market	Percent of participation relative to eligible population for small, medium, and large customers Percent of square feet of eligible population Percent of participation by customers defined as “hard to reach”
Cost per unit saved	Levelized cost of energy efficiency per kWh, therm and kW
Investment in energy efficiency	Dollars of investments (all sources)





Industrial and Agricultural Sectors





Industrial Sector Business Plan Metrics

- Issues with some Business Plan industrial sector metrics:
 - Problem statement not clearly connected to metrics
 - Some have no targets; some targets seem ambitious; no explanation of basis for metrics, e.g., why five percent increase?
 - Some look more like program level metrics





Industrial Sector Metrics Issues – Example

<p>SEM solves multiple customer problems, but its scale and adoption differs by customer size.</p>	<p>Increase adoption of SEM by Small Industrial customers through a tailored approach</p>	<ul style="list-style-type: none"> • SEM • Customer Incentives • Intelligent Outreach 	<p>Number of Small Industrial customers using SEM</p>
	<p>Increase adoption of SEM by Mid-Size Industrial customers through a tailored approach</p>	<ul style="list-style-type: none"> • SEM • Customer Incentives • Intelligent Outreach • Financing 	<p>Number of Mid-Size Industrial customers using SEM</p>
	<p>Increase adoption of SEM by Large Industrial customers through a tailored approach</p>	<ul style="list-style-type: none"> • SEM • Customer Incentives • Intelligent Outreach • Financing 	<p>Number of Large Industrial customers using SEM</p>
<p>Customer participation differs by customer size.</p>	<p>Increase participation rate from Small customers</p>	<ul style="list-style-type: none"> • SEM • Customer Incentives • Intelligent Outreach 	<p>Number of new Small Industrial participants</p>
	<p>Increase participation rate from Mid-size customers</p>	<ul style="list-style-type: none"> • SEM • Customer Incentives • Intelligent Outreach • Financing 	<p>Number of new Mid-Size Industrial participants</p>
	<p>Increase participation rate from Large customers</p>	<ul style="list-style-type: none"> • SEM • Customer Incentives • Intelligent Outreach • Financing 	<p>Number of new Large Industrial participants</p>





Industrial Sector Metrics – A Good Example

Goals	Intervention Strategies	Metric	Baseline	Metric Source	Short Term Target (1-3 years)	Mid Term Target (4-6 years)	Long Term Target (7-8+ years)
Save 608 GWh, 67 MW, and 38.6 MM Therms	All	Electricity saved (First Year Net)	Average of 126 Gross GWh/yr across 2011-2015	Annual Ex Ante Net savings from program database	79 Net GWh/yr (99 Gross GWh/yr)	75 Net GWh/yr (94 Gross GWh/yr)	73 Net GWh/yr (92 Gross GWh/yr)
		Demand saved (First Year Net)	Average of 19.4 Gross MW/yr across 2011-2015		9 Net MW/yr (11 Gross MW/yr)	8 Net MW/yr (10 Gross MW/yr)	8 Net MW/yr (10 Gross MW/yr)
		Therm Saved (First Year Net)	Average of 14.1 Gross MM therms/yr across 2011-2015		5.0 Net MM therms /yr (6.2 Gross MM Therms/yr)	4.8 Net MM therms /yr (6.0 Gross MM Therms/yr)	4.7 Net MM therms /yr (5.8 Gross MM Therms/yr)





Recommended Industrial Statewide Metrics

Common Problem	Common Metric
Capturing energy savings	Annual gas, electric, and demand savings in industrial sector Annual gas, electric, and demand savings as a percentage of overall sectoral usage
Penetration of energy efficiency programs and diversity of participants	Percent of participation relative to eligible population for small, medium and large customers
New participation	Percent of customers participating that are new participants (annually)





Agriculture Sector Metrics

- Ag metrics generally suffered from same problems as industrial metrics
- One PA had only one metric – increased participation
- Metrics for participation and increased awareness are based on “number of completed projects” which does not align with customer participation (one customer could have more than one project)





Agriculture Sector Metrics -- Good Example

Agricultural Sector

Table 9 - Agricultural Sector Metric Table -								
10-Year Vision								
Energy efficiency will support the long-term economic and environmental success of California agriculture.								
Problem Statement	Desired Outcome	Intervention Strategies	Sector Metric	Baseline	Metric Source	Short Term Target (1-3 years)	Mid Term Target (4-7 years)	Long Term Targets(8-10+ years)
A considerable number of small agricultural customers lack technical and financial resources.	1. Substantial increase in deeper, comprehensive natural gas energy efficiency savings from smaller-sized customers.	Partnering	Increase energy efficiency savings in smaller-sized (<50k therms) customer group.	2015 Savings Levels.	Program tracking data.	Increase energy efficiency savings from smaller-sized customers by 5% over 2015 levels by Year 3.	Increase energy efficiency savings from smaller-sized customers by 15% over 2015 levels by Year 7.	Increase energy efficiency savings from smaller-sized customers by 25% over 2015 levels by Year 10.
		Intelligent Outreach						
		Technical Assistance						
		Customer Incentives						
		Direct Install						
		Midstream Energy Efficiency Financing						
The agricultural sector has competing priorities, which may overshadow energy efficiency.	2. Increase investment in natural gas energy efficiency to lower operational costs and improve competitiveness.	Partnering	Increase participation in energy efficiency programs.	2015 Participation Levels.	Program tracking data.	Increase participation in energy efficiency programs by 5% over 2015 levels by Year 3.	Increase participation in energy efficiency programs by 15% over 2015 levels by Year 7.	Increase participation in energy efficiency programs by 25% over 2015 levels by Year 10.
		Intelligent Outreach						
		Technical Assistance						
		Strategic Energy Management						
		Customer Incentives						
		Direct Install						
Midstream Energy Efficiency Financing								
A diverse agricultural sector base makes it difficult to offer	3. Substantial increase in natural gas energy efficiency savings among all agricultural	Partnering	Achieve greater levels of energy efficiency savings from all agricultural	2015 Savings Levels.	Program tracking data.	Increase energy efficiency savings from agricultural sector by 5% over 2015 levels	Increase energy efficiency savings from agricultural sector by 15%	Increase energy efficiency savings from agricultural sector by 25% over 2015
		Intelligent Outreach						
		Technical Assistance						
		Strategic Energy Management						
		Customer Incentives						





Recommended Agriculture Statewide Metrics

Common Problem	Common Metric
Capturing energy savings	Annual gas, electric, and demand savings Annual gas, electric, and demand savings as a percentage of overall sectoral usage
Penetration of energy efficiency programs and diversity of participants	Percent of participation relative to eligible population for small, medium and large customers
Cost per unit saved	Levelized cost of energy efficiency per kWh, therm and kW





Public Sector





Common Problems

- Ambiguously defined or difficult to measure
- Tracking across years would not provide insight in program success
- Written as goals rather than metrics
- Don't align with stated strategies and goals





Examples – Problematic Metrics

Proposed Metric	What's Missing
Regional energy database completed	The metric is binary, either “complete” or “not complete.” It makes little sense to track the completion of a single project on an ongoing basis, as there are no continuous decision making processes dependent on it.
Increase in absolute number of sector-wide implemented EE measures	It is not clear how this metric provides insight into the success of the associated intervention strategy, “demonstrating EE value through enhanced ME&O.”





Examples – Better Metrics

Metric	How to Improve
Number/floor area of ZNE facilities constructed	This metric is close, but needs some refinement. For instance, in lieu of a standardized definition of “ZNE,” the metric should specify: designed or verified, site or source, etc. It would also help to include context in the metric such as “percent of new constructed facilities/floor area as ZNE.”
Increase the number of buildings benchmarked through Energy Star Portfolio or other benchmarking tools	The thought behind this metric is a good one. It is worded as a goal, but tracking the number and/or square footage of buildings benchmarked through Energy Star Portfolio Manager would be worthwhile. It was not one of the recommended primarily because of divergence from other Program Administrators’ proposals.





Why We Need Standard Metrics

- Aggregate and compare programs across sectors and administrators
- Provide high-level snapshots to the Public, Commissioners, Legislature, and Governor
- Ensure consistency in data collection by implementers throughout the state





Recommended for Statewide Use

Common (Statewide) Problem	Common (Statewide) Metric
Capturing Energy Savings	Annual Public Sector Gas, Electric, and Demand Savings
Depth of Interventions	Energy Savings (kWh, kW, Therms) per Project Energy Savings (kWh, kW, Therms) per Square Foot
Penetration of EE Programs and Benchmarking in the Eligible Market	Percent of Participation Relative to Eligible Population Percent of Square Feet of Eligible Population Participating in EE Programs
Higher Cost per Unit Saved than Statewide Average	Levelized Cost of Energy Efficiency per kWh, kW, and Therm
Low Financial Investment in Energy Efficiency	Dollars of Investments (all sources) for Energy Efficiency in Public Sector
Tracking Building Energy Intensity	Average Energy Use Intensity of Public Buildings Percent of Square Feet of Eligible Population Benchmarked





Workforce Education & Training





Summary of feedback on metrics/targets

WE&T metrics, as a difficult to measure non-resource program, require context and explicit definitions within metrics, in order to provide uniformity across statewide metrics

- **Targets need context**
 - “Increasing a certain metric by X%” needs justification for why that is a reasonable increase for that particular metric
- **Ambiguous terms within metrics need explicit definitions**
 - Terms like: *market needs, market penetration, collaborations* can be defined or measured in various ways that have large impacts on the robustness of the metric
- **Some metrics too broad for a multifaceted workforce**
 - Metrics may need to be applied at a workforce segment level in order to understand progress by segment and to better target workforce segments that are lagging behind





Suggested Improvements for WE&T metrics

Proposed Metric or Target	Suggestion for Improvement	Suggested Metric or Target
Curriculum developed and shared with external organizations	Workforce contains specific segments (e.g. building officials, architects/designers, HVAC contractors) that could be tracked separately to understand the progress by segment	# of partnerships by workforce segment ¹
Target: increase the number of collaborations by 5% over 2015 levels by Year 3	Provide justification for why 5% makes sense as an increase for number of collaborations. What does this tell us about the impact of the collaborations?	<i>Target: 40% of building inspector training programs in service territory have incorporated energy efficiency curriculum</i>

¹ Partnerships defined as “a curriculum developed with external partner with an agreement between IOU and partner org. to implement”





Proposed WE&T Statewide Metrics

Common Problem	Common Metric
Leverage effective partnerships	<ul style="list-style-type: none"> # of partnerships by workforce segment
Penetration of training and diversity of participants	<ul style="list-style-type: none"> # of participants by workforce segment % of participation relative to eligible target population for curriculum
Impact of training	<ul style="list-style-type: none"> # of participants who report they applied the training annually # of projects implemented in applying the training annually

Definitions:

- **Partnerships** - jointly developed curriculum + agreement to implement
- **Workforce segment** – market actor segment within EE workforce (e.g. architects/designers, building officials, HVAC contractors, etc.)





Emerging Technologies





IOU Proposed Metrics

- IOU Proposed Metrics
 - Largely program activity metrics
 - Some input and output tracking to the project development process
- General Comments
 - Key critical issues not tracked
 - Lack of sufficient detail or suitable content
- Possible improvements
 - More concrete input tracking
 - Tracking of post-ETP technology deployment
 - Measuring effectiveness of the program to inform program design





Example 1: Improvement of Proposed Metric

IOU Proposed Metric	# of adoptions into RA (portfolio) # of adoptions into C&S
IOU Proposed Metric	Estimated gross first-year kWh and kW saved
ED Proposed Metric	Continued tracking of technologies that have moved from ET into: <ul style="list-style-type: none">-portfolio-code-portfolio then code with associated dates and net and gross energy savings in the quarterly resource program savings reports.





Example 2: Addition of Metric

IOU Proposed Metric	None
ED Proposed Metric	What percent of ET-originated work papers require additional information before submission?





Proposed Emerging Technology Metrics

Common Problem	Common Metric
Savings are not being tracked	Continued tracking of technologies that have moved from ET into: <ul style="list-style-type: none"> -portfolio -code -portfolio then code <p>with associated dates and net and gross energy savings in the quarterly resource program savings reports.</p>
Input from other groups is not being tracked	-Track recommendations received and responses to recommendations from: <ul style="list-style-type: none"> -C&S/code readiness -industry groups -architect/implementer/builders groups -other TDAs, such as EPIC, CalSEED, CalCEF, Rocket Fund, FLoW -ZNE implementation teams
Output from ET is not explicitly aligned with long-term goals	Mapping of ET projects and technologies aligned with specific statewide goals, with specificity as to what aspect of each goal it is fulfilling. For example: <ul style="list-style-type: none"> -“4 ET projects are aligned with statewide ZNE-readiness” -List of ET projects that are aligned with ZNE-readiness
ET project results are not always aligned with work paper requirements	What percentage of ET-originated work papers require additional information before submission?
ET event success is not tracked	Report results of event surveys indicating whether an event had its intended effect
ET hasn’t increased the focus on market studies as recommended by ET EM&V	Percent of ET projects that include a market and/or barrier identification study
ET is not utilizing other programs to confront barriers to market penetration	<ul style="list-style-type: none"> -# of WE&T programs created around ET projects -# of ME&O programs created around ET projects -# of X programs (add other resources) created around ET projects





Questions

