Energy Efficiency Cost-Effectiveness Calculation

- CPUC adopted Standard Practice Manual

Total Resource Cost (TRC) Test

- Measures the net costs of EE program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.
- TRC ratio = TRC Benefits/TRC Costs, where
  - TRC Benefits = the avoided supply costs which includes the reduction in transmission, distribution, generation, and capacity costs valued at marginal cost for the periods when there is a load reduction. The avoided supply costs should be calculated using net program savings, savings net of changes in energy use that would have happened in the absence of the program.
  - TRC Costs = the net program costs paid by both the utility and the participants plus the increase in supply costs for the periods in which load is increased. Thus all equipment costs, installation, operation and maintenance, cost of removal (less salvage value), and administration costs, no matter who pays for them, are included in this test.

Program Administrator Cost (PAC) test

- Measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant.
- PAC ratio = PAC Benefits/PAC Costs, where,
  - PAC benefits are similar to the TRC benefits.
  - PAC costs= program costs incurred by the administrator, the incentives paid to the customers, and the increased supply costs for the periods in which load is increased.

ΠΟΡΤΦΟΛΙΟ ΤΡΧ ΧΟΣΤΣ

Μεασυρεσ $\sum$ [Παρτιχιπαντ Νετ Χοστσ φυλλ ορ ινχρεμενταλ ΝΠς × **Net-To-Gross** free riders only + **IOU Measure Related Costs**] × **Installations** not just paid + ΙΟΥ Πορτφολιο Αδμινιστρατιον Χοστσ

PORTFOLIO PAC COSTS

Μεασυρεσ $\sum$ [[ΙΟΥ Μεασυρε Ινχεντιωε Χοστσ + **IOU Measure Related Costs**] × **Installations** not just paid] + ΙΟΥ Πορτφολιο Αδμινιστρατιον Χοστσ

Χολορ Λεγενδ:
ΧΠΥΧ Αδοπτεδ,
ΧΠΥΧ Χοστ Αυδιτ
ΕΔ ΕΜ&ς εξ ποστ,
ΔΕΕΡ, ορ
ΙΟΥ εξ αντε δατα

PORTFOLIO TRC and PAC BENEFITS

Μεασυρεσ $\sum$ [[**Measure Annual Unit Energy Savings** Post-use minus pre-use × **Number of Installations** × **Net-To-Gross**] × **Measure Avoided Costs**]

where **Measure Avoided Costs** per IOU, CTZ, District, Voltage $= \sum_{\text{Ελεχτ, Γασ}}$ $\sum_{\text{Θυαρτερλψ}}^{\text{ΕΥΑ}}$ [**Measure Load Shapes** 8760 electric & monthly gas × **IOU Avoided Costs** 8760 electric per CTZ, District, Voltage & monthly gas]

E3 Avoided Cost Methodology

- Provide Transparent and defensible avoided cost methodology
- Requires 8760 load shape data
- Feeds avoided costs into the cost-effectiveness calculations

Framework of the E3 Avoided Cost Methodology

Electric Avoided Costs or Benefits

$$TotalBenefit_{a,h,t} = GenMC_{a,t,y} + Externality_{a,t,y} + TransMC_{a,t,y} + DistMC_{a,t,y} + Reliability_{a,t,y} + DemandReductionBenefit_{a,t,y}$$

Gas Avoided Costs or Benefits

$$TotalBenefit_{a,t,y} = Commodity_{a,t,y} + Transportation_{a,t,y} + Externality_{a,t,y} + DistMC_{a,t,y} + DemandReductionBenefit_{a,t,y} \text{ (if available)}$$

Where a = area, t = time dimension, y = year.

E3 Cost Effectiveness Calculator

Input:

- Avoided Cost from E3 Avoided Cost Calculator
- Participants and Administrative costs
- Measure parameter data (unit installations, kWh, kW, therms, EUL, NTG)

Output:

- Annual and lifecycle savings
- TRC
- PAC
- Emissions reductions